SEWERAGE AND WATER BOARD

OF NEW ORLEANS

CONTRACT NO. 30266
SOLICITATION NO. 2025-SWB-51

NEW 16" SEWER FORCE MAIN ON LAFITTE ST. (N. DORGENOIS ST.-N. GALVEZ ST.) & NEW 48" SEWER FORCE MAIN ON N. GALVEZ ST. (CONTI ST.-LAFITTE ST.) (Re-Bid)

PROPOSALS DUE ON

January 2, 2026 AT 11:00 A.M., CENTRAL TIME

SEALS

Stantec Consulting Services Inc.

CIVIL	
Sparkle D. W. Noble State of Louisiana License No. 35113	Seal & Signature applies to all project plans and specifications for S&WB Contract No. 30266, except for plan sheet inserts that have been signed by ILSI Engineering.

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END OF SECTION

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SEWERAGE & WATER BOARD OF NEW ORLEANS
NEW 16" SEWER FORCE MAIN ON LAFITTE ST. (N. DORGENOIS ST.- N. GALVEZ ST.) & NEW 48" SEWER FORCE MAIN ON N. GALVEZ ST (CONTI ST.-LAFITTE ST.) (Re-Bid)
CONTRACT NO. 30266
SOLICITATION NO. 2025-SWB-51 (Re-Bid)

Sealed Bids for construction of Contract 30266 NEW 16" SEWER FORCE MAIN ON LAFITTE ST. (N. DORGENOIS ST.- N. GALVEZ ST.) & NEW 48" SEWER FORCE MAIN ON N. GALVEZ ST (CONTI ST.-LAFITTE ST.) (Re-Bid)

Bid Documents and proposal forms are available for download on **November 24, 2025**, at the following websites:
SWBNO: https://www2.swbno.org/business_bidspecifications.asp
LAPAC: https://wwwcfprd.doa.louisiana.gov/OSP/LaPAC/dspBid.cfm?search=department&term=181

A **NON-MANDATORY** pre-bid conference will be held on **December 9, 2025, at 11:00 a.m.** Central Time at the Sewerage and Water Board of New Orleans, Purchasing Conference Room RM 131, located at 625 St Joseph St., New Orleans, Louisiana, 70165 or if you are unable to attend this in-person meeting, you can also join via teleconference call:

Microsoft Teams

Join the meeting now

Meeting ID: 241 941 623 231 77
Passcode: vR2Ev7Cz
Dial in by phone
+1 504-224-8698,,483138749# United States, New Orleans
Phone conference ID: 483 138 749#

All inquiries shall be directed to Connor Metcalf, Procurement Analyst, at cmetcalf@swbno.org. The deadline for inquiries is on **December 11, 2025, at 5:00 p.m.** Central Time**.**

Bids are due on **January 2, 2026, at 11:00 a.m.** Any Bids received after the specified time will be rejected.

Bids will then be publicly opened and read on **January 2, 2026, at 11:30 a.m.** at Sewerage and Water Board of New Orleans, 625 St. Joseph Street, Purchasing Conference Room 131, New Orleans, Louisiana.

Microsoft Teams

Join the meeting now

Meeting ID: 226 495 676 099 92
Passcode: Rc2mj6H4
Dial in by phone
+1 504-224-8698,,626000919# United States, New Orleans
Phone conference ID: 626 000 919#

LATE BIDS WILL NOT BE ACCEPTED.

INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS

1.1. Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

1.1.1. *Issuing Office*—The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered: Sewerage and Water Board of New Orleans, 625 St. Joseph Street, Procurement Department Room 133, New Orleans, Louisiana 70165.

2. COPIES OF BIDDING DOCUMENTS

2.1. Complete sets of the Bidding Documents are available in electronic form on the Sewerage & Water Board of New Orleans website: https://www2.swbno.org/business_bidspecifications.asp (Click on Doing Business, then Advertisements & Specifications) Reproduction costs for any of the downloaded electronic Bidding Documents shall be borne by the Contractor.

2.2. Complete sets of Bidding Documents shall be used in preparing Bids. Neither Owner nor Engineer assumes responsibility for errors or misinterpretations resulting from use of incomplete sets of Bidding Documents.

2.3. Drawings included in the Bidding Documents are electronic .pdf files generated from electronic drawing files. Any reduction from actual size is indicated by a note or scale bar on Drawing.

2.4. Owner and Engineer, in making Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license or grant for any other use.

3. QUALIFICATIONS OF BIDDERS

3.1. In order to perform public work, Bidder and its Subcontractors, prior to award of Contract or as otherwise required by the jurisdiction, shall hold or obtain such licenses as required by State Statutes, and federal and local Laws and Regulations.

3.2. Bidder is advised to carefully review those portions of the Bid Form requiring representations and certifications.

4. EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.1. Subsurface and Physical Conditions:

4.1.1. The Supplementary Conditions identify:

4.1.1.1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.

4.1.1.2. Those drawings known to Owner of physical conditions relating to existing surface and subsurface structures at the Site.

4.1.2. Copies of reports and drawings referenced will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings. Costs associated with making available copies of reports and drawings shall be borne by Bidder.

4.2. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner or others.

4.3. Hazardous Environmental Condition:

4.3.1. The Supplementary Conditions identify reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.

4.3.2. Copies of reports and drawings referenced will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings. Costs associated with making available copies of reports and drawings shall be borne by Bidder.

4.4. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02 through 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental

Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.

4.5. On request, Owner will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Owner deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.6. Related Work at Site: Reference is made to the General Requirements for identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request Owner will provide to each Bidder for examination, access to Contract Documents (other than portions thereof related to price) for such other work.

4.7. Safety: Paragraph 6.13.C of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.8. It is responsibility of each Bidder before submitting a Bid to:

4.8.1. Examine and carefully study the Bidding Documents, other related data identified in the Bidding Documents, and any Addenda.

4.8.2. Visit the Site to become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

4.8.3. Become familiar with to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

4.8.4. Carefully study all information provided and referenced in plans and specifications.

4.8.5. Consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents.

4.8.6. Agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) Bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

4.8.7. Become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

4.8.8. Promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in Bidding Documents and confirm that written resolution thereof by Engineer is acceptable to Bidder.

4.8.9. Determine Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of the Work.

4.9. Submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this article; that without exception the Bid is premised upon performing and furnishing the Work required by Bidding Documents and applying specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by Bidding Documents; that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder; and that Bidding Documents are generally sufficient to indicate and convey understanding of terms and conditions for performing and furnishing the Work.

5. SPECIAL PRODUCT REQUIREMENTS

5.1. Bidder's attention is directed to the Supplementary Conditions, Paragraph 6.03.

6. PREBID CONFERENCE

A **NON-MANDATORY** pre-bid conference will be held on **December 9, 2025, at 11:00 a.m.** Central Time at the Sewerage and Water Board of New Orleans, Purchasing Conference Room RM 131, located at 625 St Joseph St., New Orleans, Louisiana, 70165 or if you are unable to attend this in-person meeting, you can also join via teleconference call:

Microsoft Teams

Join the meeting now

Meeting ID: 241 941 623 231 77
Passcode: vR2Ev7Cz

Dial in by phone

+1 504-224-8698,,483138749# United States, New Orleans
Phone conference ID: 483 138 749#

6.1. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are required to attend and participate in the conference. An award will be issued to Bidders that have a representative at the pre-bid conference. Procurement will transmit to prospective Bidders of record such Addenda as Engineer considers necessary in response to questions

arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

7. SITE AND OTHER AREAS

7.1. The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner, unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

8. INTERPRETATIONS AND ADDENDA

8.1. All questions about the meaning or intent of the Bidding Documents are to be submitted to Connor Metcalf, Procurement Specialist, Cmetcalf@swbno.org. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda sent to all parties recorded by the office issuing documents as having received the Bidding Documents. Questions received after December 11, 2025 at 5:00 p.m. may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

8.2. Addenda may also be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

8.3. Addenda issued in response to questions will be issued no later than 72 hours prior to bid opening.

9. BID SECURITY

9.1. Bid shall be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid bond (on the attached form), issued by a surety meeting the requirements of Paragraph 5.01 and Paragraph 5.02 of the General Conditions.

9.2. Upon Notice of Award of the Contract, the Bid security of all bidders, other than the lowest two (2) formal bidders will be returned upon request. The return of the Bid security to whom the Contract is awarded is conditioned upon the successful bidder furnishing the insurance required in the specifications and appearance before the Notary for the Sewerage and Water Board of New Orleans within ten (10) consecutive calendar days after notice by the Executive Director or designee of the award of the contract and executing the contract and furnishing bond for the faithful fulfillment thereof according to the attached specifications. The Bid security of the next lowest bidder will be returned as soon as the successful bidder has executed the Contract and furnished bond upon request. If all bid proposals are rejected, all Bid security will be returned immediately upon request.

9.3. Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within 7 days after Bid opening upon request.

10. CONTRACT TIMES

10.1. The number of days within which, or the dates by which, Milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

11. LIQUIDATED DAMAGES

11.1. Provisions for liquidated damages, if any, are set forth in the Agreement.

12. SUBSTITUTE AND "OR-EQUAL" ITEMS

12.1. The Contract, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

13. WAGE RATES

13.1. The Work under these Bidding Documents is to be paid for by public funds; therefore, minimum prevailing wage rates published by the Secretary of the U.S. Department of Labor (see appended rate tables). Refer to Attachment #5 of the Supplementary Conditions for more information.

13.2. The successful bidder is to make available to the Board, complete records in connection with payment of employees during the term of the job in order to permit the Internal Audit Division to check as to adherence to the wage scale presently in effect in accordance with U.S. Government standards.

14. PREPARATION OF BID

14.1. With each electronic copy of the Bidding Documents, Bidder will be furnished one separate Bid Form, and, if applicable, the Bid Bond Form. Contractor is to print and complete all pertinent documents included as the Original Form of Proposal.

14.2. All blanks on the Bid Form shall be completed by typing or printing with ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each Bid item, unit price item, and alternate listed therein.

14.3. A Bid by a corporation shall be executed in the corporate name by the president or a vice president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

14.4. A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

14.5. A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

14.6. A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

14.7. All names shall be typed or printed in ink below the signatures.

14.8. The Bid shall contain an acknowledgement of receipt of all Addenda; the numbers of which shall be filled in on the Bid Form.

14.9. Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

14.10. The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number and class, if applicable, shall also be shown on the Bid Form.

15. BASIS OF BID; COMPARISON OF BIDS

15.1. Lump Sum:

15.1.1. Bidders shall submit a Bid on a lump sum basis as set forth in the Bid Form.

15.1.2. Bidders shall submit a Bid on a lump sum basis for the base Bid and include a separate price for each alternate described in the Bidding Documents as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate. In the comparison of Bids, alternates will be applied in the same order as listed in the Bid Form.

15.2. Unit Price:

15.2.1. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Unit Price Bid Table.

15.2.2. The total of all prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities

and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.

15.2.3. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

15.3. Alternates:

15.3.1. Alternates requiring pricing in the Bid Form are described in Section 01 11 01, Summary of Work, and in the Bid Form, if applicable.

15.3.2. Indicate in Bid Form the amount to be added or subtracted from the base Bid for alternates described.

15.3.3. Include cost of all related work, including modifying surrounding work to integrate the Work of each alternate.

15.3.4. Alternates listed on Bid Form will be reviewed and accepted or rejected at Owner's option. Accepted alternates will be identified in the Agreement if applicable.

16. SUBMISSION OF BID

16.1. The Bidders are to complete and submit the following documents at bid submission:

16.1.1. Louisiana Uniform Public Work Bid Form is to be completed

16.1.2. Bid Security or Bid Bond.

16.1.3. Corporate Resolution or Written Evidence of Authority

16.2. The two (2) lowest bidders will have three (3) working days following the bid opening to submit the following:

16.2.1. Additional Requirements, Bidder Declaration, Guarantees, and Emergency Procedures Document

16.2.2. Attestation Affidavit Form

16.2.3. Voluntary Extension

16.2.4. Affidavit of Non-Collusion

16.2.5. Conflict of Interest Disclosure Affidavit

16.2.6. Convicted Felon Affidavit

16.2.7. Non-Solicitation Affidavit

16.2.8. EDBP Summary Sheet and Acknowledgment Form

16.3. A Bid shall be submitted no later than the date and time prescribed, and at the place indicated in the Invitation to Bid. Enclose Bid in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), name and address of Bidder, and accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED.

Hard Copy Submission:
Signed hardcopy of the bid in a sealed envelope

Mark the front envelope with the following:
Solicitation # 2025-SWB-51 Contract 30266 (Re-Bid)
Company Name
Company Address
Company Contact Name, Phone Number, and Email Address
Contractor's License Number

Address envelope to:
Sewerage and Water Board of New Orleans
Attn: Connor Metcalf
625 St. Joseph St. Rm 133
New Orleans, LA 70165

Fax and email submission will not be accepted.

Mail or courier specifications:
The Bidder remains responsible for ensuring that the bid is delivered prior to the submission deadline with a proof of delivery. Failure to meet the submission deadline, irrespective of the mode of delivery, shall result in the rejection of the bid.

- Bid documents should be contained in a sealed envelope and be placed in the shipping envelope or box. If the mailed bid is not contained in a separate sealed envelope, the bidder takes the risk that the envelope may be inadvertently opened and the information compromised.
- Please add the Procurement Analyst's name in the Attention Line of the shipping label to ensure proper delivery.

16.4. In accordance with LRS 37:2163, Bidders are required to certify they hold an active Contractor's license and indicate license number on Bid envelope. Bid envelopes received with no Contractor license number will not be opened and will automatically be rejected and considered nonresponsive.

17. OPENING OF BIDS

Bids will be opened on January 2, 2026 at 11:30 a.m. at Sewerage and Water Board of New Orleans, 625 St. Joseph Street, Purchasing Conference Room 131, New Orleans, Louisiana and unless obviously nonresponsive, read aloud publicly. The amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids. The bid opening will also be available via teleconference:

Microsoft Teams

Join the meeting now

Meeting ID: 226 495 676 099 92
Passcode: Rc2mj6H4

Dial in by phone

+1 504-224-8698,,626000919# United States, New Orleans
Phone conference ID: 626 000 919#

18. BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.1. All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

19. EVALUATION OF BIDS AND AWARD OF CONTRACT

19.1. Pursuant to Louisiana Statute 38:2225, a resident Bidder shall be allowed a preference over a nonresident Bidder from a state which gives or requires a preference to Bidders from that state. The preference shall be equal to the preference given or required by the state of the nonresident Bidder.

19.2. Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.3. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

20. NOTARIAL FEE.

20.1. The Contract and Bond shall be signed in the City of New Orleans, before the Notary for the Sewerage and Water Board of New Orleans, by the Contractor in person or

by a duly authorized representative. The notarial fee for the execution of the contract shall be paid by the Contractor in accordance with the Notarial Fee Schedule below. The Fee Schedule is subject to change, and Contractor is responsible for any deviations from this Fee Schedule. Contractor shall also be responsible for payment of all recordation costs and photocopying at the rate of $0.50 per page. All affidavits of acceptance or substantial completion are $70.00 plus actual recordation costs.

NOTARIAL FEE SCHEDULE

Notarial work for all Sewerage and Water Board of New Orleans construction contracts, requiring to be notarized:

Contract Value	**Fee**
Under $1,000.00	$227.00
$1,000.00 to $49,999.99	$423.00
$50,000.00 to $499,999.99	$1,073.00
$500,000.00 to $999,999.99	$2,304.00
$1,000,000.00 or over	$4,608.00

21. CONTRACT SECURITY AND INSURANCE

21.1. Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to bonds and insurance. When Successful Bidder delivers executed Agreement to Owner, it shall be accompanied by such bonds.

22. SIGNING OF AGREEMENT

23.1 The proposal submitted by the staff-recommended bidder will be tentatively selected by the appropriate Sewerage and Water Board Committee meeting The final award of the contract will be made at the subsequent Board meeting. All prices bid must be held firm for 120 days or until final award of contract by the Board.

23.2 After submittal of required Insurance and Bonds, in form acceptable to the Sewerage and Water Board of New Orleans, the selected Bidder will be authorized by the Executive Director of the Board to appear before the Notary to sign the contract within ten (10) consecutive calendar days from the date of the notice.

23. SALES AND USE TAXES

24.1 Applicable state and local sales and use taxes for purchase of materials and supplies furnished under this contract shall be paid by the Contractor. Such taxes shall be included in the lump sum bid for the work of this contract. The board shall be relieved of any obligation to pay these taxes.

24. RETAINAGE

24.1. Provisions concerning retainage and Contractor's rights to deposit securities in lieu of retainage, if applicable, are set forth in the Agreement.

25. BID PROTESTS

25.1. Any formal protest which is to be made by an aggrieved Proposer must be submitted in writing to the Procurement Director, Cashanna K. Moses at cmoses@swbno.org according to Sewerage and Water Board of New Orleans Policy 83(R): Procedural Rules for Bid Appeals.

END OF SECTION

CONVICTED FELON AFFIDAVIT

STATE OF _____

PARISH/COUNTY OF _____

Before me, the undersigned authority, came and appeared_____,

who, being first duly sworn, deposed and said that:

1. He/She is the_____and authorized representative of

_____, hereafter called "Contractor."

2. The Contractor complies with City Code Section 2-8 (c) for the City of New Orleans.

3. No Contractor principal, member, or officer has, within the preceding five years, been convicted of, or pled guilty to, a felony under state or federal statutes for embezzlement, theft of public funds, bribery, or falsification or destruction of public records.

_____
Proposer Representative (Signature)

_____
(Print or type name) (Address)

Sworn to and subscribed before me, in (CITY/STATE) _____

This ____day of (MONTH) _____, 20 ____.

_____
Notary Public

_____
Notary Identification No./Bar Roll No.

NON-SOLICITATION AFFIDAVIT

STATE OF _____

PARISH/COUNTY OF _____

Before me, the undersigned authority, came and appeared_____,

who, being first duly sworn, deposed and said that:

1. He/She is the _____ and authorized representative of _____hereafter called "Contractor."
2. The Contractor has not employed or retained any company or person, other than a bona fide employee working solely for Contractor, to solicit or secure the subject contract. The Contractor has not paid or agreed to pay any person, other than a bona fide employee working for Contractor, any fee, commission, percentage, gift, or any other consideration contingent upon or resulting from the subject contract.

_____
Contractor Representative (Signature)

_____
(Print or type name) (Address)

_____

Sworn to and subscribed before me, in _____, Louisiana,

this ___day of _____, 20 _____.

_____
Notary Public

_____
Notary Identification No./Bar Roll No.

NON-COLLUSION AFFIDAVIT

STATE OF _____

PARISH/COUNTY OF _____

_____, being first duly sworn, deposes and says that:

(1) S/He is (Owner) (Partner) (Office) (Representative) or (Agent), of:

_____

the Proposer that has submitted the attached Proposal:

(2) Such Proposal is genuine and is not a collusive or sham Proposal:

(3) Neither the said Proposer nor any of its officers, partners, owners, agents, representatives, employees or parties of interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly, or indirectly with any other Proposer, firm or person to submit a collusive or sham proposal in connection with the Contract for which the attached Proposal has been submitted or to refrain from proposing in connection with such contract, or has in any manner, directly or indirectly sought by agreement or collusion or communication or conference with any other Proposer, or to fix any overhead, profit or cost element of the proposal price or the proposal price of any other proposer, or to secure through any advantage against the Sewerage and Water Board of New Orleans of any person interested in the proposed contract; and

(4) The price or prices quoted in the attached Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Proposer or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

_____ _____

Proposer Representative (Signature) Title

_____

(Print or type name)

SWORN TO AND SUBSCRIBED BEFORE ME

THIS _____ DAY OF _____ 20_____. Notary ID#/Bar Roll #_____

_____ _____

NOTARY PUBLIC (Signature) NOTARY PUBLIC (Print Name)

CONFLICT OF INTEREST DISCLOSURE AFFIDAVIT

STATE OF _____

PARISH/COUNTY OF _____

Before me, the undersigned authority, came and appeared _____ who, being first duly sworn, deposed and said that:

He/She is _____ and authorized representative of _____,
Hereafter called "Bidder."

The Respondent hereby confirms that a conflict(s) of interest **exists /does not exist/may exist (circle one)** in connection with this solicitation which might impair Respondent's ability to perform if awarded the contract, including any familial or business relationships that the Respondent, the proposed subcontractors, and their principals have with the Board officials or employees.

(If a conflict(s) of interest exists and/or may exist, describe in a letter the nature of the conflict, the parties involved and why there is a conflict. Attach said letter to this form).

_____
Respondent Representative (Signature)

_____
(Print or type name)

_____
(Address)

SWORN TO AND SUBSCRIBED BEFORE ME
THIS _____DAY OF _____ 20_____.

_____ _____
NOTARY PUBLIC (Signature) NOTARY PUBLIC (Print Name)

Notary ID#/Bar Roll# _____

BIDDERS'S ORGANIZATION

AN INDIVIDUAL

Individual's Name: _____

Doing business as: _____

Address: _____

Telephone No.: _____ Fax No.: _____ Email: _____

A PARTNERSHIP

Firm Name: _____

Address: _____

Name of person authorized to sign: _____

Title: _____

Telephone No.: _____ Fax No.: _____ Email: _____

A LIMITED LIABILITY COMPANY

Company Name: _____

Address: _____

Name of person authorized to sign: _____

Title: _____

Telephone No.: _____ Fax No.: _____ Email: _____

A CORPORATION

IF PROPOSAL IS BY A CORPORATION, THE CORPORATE RESOLUTION MUST BE SUBMITTED WITH PROPOSAL.

CORPORATE RESOLUTION

A meeting of the Board of Directors of _____a corporation organized under the laws of the State of_____ and domiciled in was held this_____day_____,20_____ and was attended by a quorum of the members of the Board of Directors.

The following resolution was offered, duly seconded and after discussion was unanimously adopted by said quorum:

BE IT RESOLVED, that _____ is hereby authorized to submit proposals and execute agreements on behalf of this corporation with the Sewerage and Water Board of New Orleans.

BE IT FURTHER RESOLVED, that said authorization and appointment shall remain in full force and effect, unless revoked by resolution of this Board of Directors and that said revocation will not take effect until the Procurement Director of the Board, shall have been furnished a copy of said resolution, duly certified.

I,_____, hereby certify that I am the Secretary of_____, a corporation created under the laws of the State of _domiciled in__;that the foregoing is a true and exact copy of a resolution adopted by a quorum of the Board of Directors of said corporation at a meeting legally called and held on the _____ day of____20_____, as said resolution appears of record in the Official Minutes of the Board of Directors in my possession.

This _____day of _____, 20_____

_____

SECRETARY

SECTION 00 40 00 – PROCUREMENT FORMS AND SUPPLEMENTS

PART 1 - GENERAL

1.1 FORMS

A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the Contract Documents.

B. Bid Forms:
   1. Section 00 41 13 Louisiana Uniform Public Work Bid Form
   2. Section 00 41 13 Louisiana Uniform Public Work Bid Form – Unit Price Form
   3. Section 00 41 13 Sections 1-2 through 1-7 – Additional Requirements

C. Procurement Form Supplements:
   1. Section 00 42 13: Voluntary Extensions of the Award.
   2. Section 00 43 13: Bid Bond Form.
   3. Section 00 45 54: Affidavit of Noncollusion.

D. Representations and Certifications:
   1. Section 00 47 17: Disadvantaged Business Enterprise Program.
   2. Section 00 47 17.10: Economically Disadvantaged Business Participation Summary Sheet.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 00 40 00

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LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: Sewerage and Water Board of New Orleans
Purchasing Department, Room 133
625 St. Joseph St
New Orleans, LA 70165

BID FOR: Contract 30266
New 16" Force Main on Lafitte St. (N. Dorgenois St. -N. Galvez St.) & New 48" Sewer Force Main on N. Galvez St. (Conti St.-Lafitte St.)

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: Stantec Consulting Services Inc. and dated: August 21, 2024

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following **ADDENDA:** (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging)

_____ .

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid" * but not alternates) the sum of:

_____Dollars ($ _____)

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

NOTE TO BIDDERS: (Insert Applicable Notes if Alternates are required)

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

_____

LOUISIANA CONTRACTOR'S LICENSE NUMBER: _____

NAME OF AUTHORIZED SIGNATORY OF BIDDER: _____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER: _____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER **: _____

DATE: _____

* The Unit Price Form shall be used if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** If someone other than a corporate officer signs for the Bidder/Contractor, a copy of a corporate resolution or other signature authorization shall be required for submission of bid. Failure to include a copy of the appropriate signature authorization, if required, may result in the rejection of the bid unless bidder has complied with La. R.S. 38:2212(A)(1)(c) or RS 38:2212(O) .

BID SECURITY in the form of a bid bond, certified check or cashier's check as prescribed by LA RS 38:2218.A is attached to and made a part of this bid

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Sewerage & Water Board of New Orl
625 St. Joseph St.
New Orleans, LA 70165

BID FOR: *New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.- N. Galvez St.) & New 48" Sewer Froce Main on Galvez St. (Conti St.-Lafitte St.)*
Contract: 30266

NAME OF BIDDER:

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REMOVAL AND DISPOSAL OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C202(52)(C)	84	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REMOVAL AND DISPOSAL OF EXISTING SIDEWALK, DRIVEWAY, FOOT LAP (CONCRETE, BRICK, ASPHALT, ETC.)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C202(52)D	175	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REMOVAL AND DISPOSAL OF EXISTING CURB (CONCRETE, ASPHALT, BRICK, ETC.)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C202(52)(E)	364	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REMOVAL AND DISPOSAL OF EXISTING ASPHALTIC CONCRETE PAVEMENT	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C202(52)(I)	903	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		ROADWAY EXCAVATION	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C203(51)	356	CY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		GEOTEXTILE FABRIC FOR STABILIZATION	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C203(59)	1986	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		GEOGRID	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C203(60)	903	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		BASE COURSE	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C302(51)	219	CY		

Wording for "DESCRIPTION" is to be provided by Owner.
All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Sewerage & Water Board of New Orl
625 St. Joseph St.
New Orleans, LA 70165

BID FOR: *New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.- N. Galvez St.) & New 48" Sewer Froce Main on Galvez St. (Conti St.-Lafitte St.)*
Contract: 30266

NAME OF BIDDER: _____

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		SUPERPAVE ASPHALTIC CONCRETE BINDER COURSE FOR COMPOSITE ROADWAYS	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C502(52)	84	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		SUPERPAVE ASPHALTIC CONCRETE WEARING COURSE (2" THICK)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C502(53)-1	3087	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		SUPERPAVE ASPHALTIC CONCRETE BINDER COURSE (5" THICK)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C502(53)-2	903	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		COLD PLANING ASPHALTIC PAVEMENT (2" AVERAGE THICK)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C509(51)A	2151	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		CONCRETE SIDEWALK (4" THICK)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C706(51)(A)	88	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		8" CONCRETE BARRIER CURB WITH DOWELS	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C707(56)	364	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		SODDING	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C714(51)	293	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		NEW 16" PLUG VALVE	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(52)(F)	1	EA		

Wording for "DESCRIPTION" is to be provided by Owner.
All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Sewerage & Water Board of New Orl
625 St. Joseph St.
New Orleans, LA 70165

BID FOR: *New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.- N. Galvez St.) & New 48" Sewer Froce Main on Galvez St. (Conti St.-Lafitte St.)*
Contract: 30266

NAME OF BIDDER:

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		NEW 36" PLUG VALVE WITH VALVE BOX AND ACCESS DOOR	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(52)(H)	1	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPLACE 5/8" TO 1" WATER HOUSE CONNECTION WITH 1" WATER HOUSE CONNECTION (FROM MAIN TO METER)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C741(55)(A)	5	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPLACE 1-1/2" WATER HOUSE CONNECTiON (FROM MAIN TO METER)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C741(55)(B)	5	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPLACE EXISTING 2" WATER HOUSE CONNECTION (FROM MAIN TO METER)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C741(55)(C)	5	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		PLUG EXISTING 48" SEWER MAIN AND FILL WITH FLOWABLE MATERIAL (SAND/CEMENT MIXTURE)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C741(78)	1750	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPLACE EXIST. SEWER H.C. FROM NEW MAIN TO BACK OF CURB	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(60)	3	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPLACE EXIST. SEWER H.C. BEYOND BACK OF CURB	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(63)	15	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPAIR WATER MAIN WITH FULL CIRCLE CLAMP (PIPE SIZE 4" - 8")	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
CSW-01	5	EA		

Wording for "DESCRIPTION" is to be provided by Owner.
All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Sewerage & Water Board of New Orl
625 St. Joseph St.
New Orleans, LA 70165

BID FOR: *New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.- N. Galvez St.) & New 48" Sewer Froce Main on Galvez St. (Conti St.-Lafitte St.)*
Contract: 30266

NAME OF BIDDER:

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPAIR WATER MAIN WITH FULL CIRCLE CLAMP (PIPE SIZE 12" - 16")	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
CSW-02	5	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPAIR WATER MAIN WITH BELL JOINT CLAMP (PIPE SIZE 4" - 12")	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
CSW-03	5	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REPAIR WATER MAIN WITH BELL JOINT CLAMP (PIPE SIZE 16" - 24")	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
CSW-04	5	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		SAW CUT CONCRETE CURB, PAVEMENT, SIDEWALK, DRIVEWAY, ETC. ACCORDING TO PLANS (8"DEPTH)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
CF-3	1045	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		REMOVAL OF HANDICAP RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS INCLUDING SAW CUTTING	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C706(54)R	102	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		HANDICAP RAMPS, CURB AND GUTTER, AND CONCRETE SIDEWALKS AT INTERSECTIONS	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C706(54)	102	SY		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		SIDEWALK TRANSITION ADJACENT TO HANDICAPPED RAMPS	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C706(54)SW	48	SY		

Wording for "DESCRIPTION" is to be provided by Owner.
All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Sewerage & Water Board of New Orl
625 St. Joseph St.
New Orleans, LA 70165

BID FOR: *New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.- N. Galvez St.) & New 48" Sewer Froce Main on Galvez St. (Conti St.-Lafitte St.)*
Contract: 30266

NAME OF BIDDER: _____

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		SEWER POINT REPAIR UP TO 12 FEET (8" AT 6.1' - 8.0')	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(57)C	1	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		SEWER POINT REPAIR BEYOND 12 FEET (8" AT 6.1' - 8.0')	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(58)C	10	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		INSTALL 16" HDPE SEWER FORCE MAIN	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(51)(16)(D)	89.1	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		INSTALL 16" HDPE SEWER FORCE MAIN VIA HDD	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(51)(16)(D)HDD	1477	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		INSTALL 36" DI SEWER FORCE MAIN	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(51)(I)(D)	109	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		INSTALL 48" HDPE SEWER FORCE MAIN	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(51)(J)(D)	309	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		INSTALL 48" DI SEWER FORCE MAIN	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(51)(J)(D2)	20	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		DRAINAGE CANAL REHABILITATION	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
DCR-1	1	LS		

Wording for "DESCRIPTION" is to be provided by Owner.
All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Sewerage & Water Board of New Orl
625 St. Joseph St.
New Orleans, LA 70165

BID FOR: *New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.- N. Galvez St.) & New 48" Sewer Froce Main on Galvez St. (Conti St.-Lafitte St.)*
Contract: 30266

NAME OF BIDDER:

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		DEMO EXISTING AIR RELEASE CONCRETE BOX	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
SP-1	1	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		INSTALL SEWER VALVE MANHOLE	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(55)(E)	14	VF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		MEDIAN MAINTENANCE DRIVE	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C706(51)(C)	2	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		AIR RELEASE VALVE	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
ARV-1	1	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		PLASTIC PAVEMENT STRIPING (4" SOLID WHITE)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C732(52)(A)W	319	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		PLASTIC PAVEMENT STRIPING (4" SOLID YELLOW)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C732(52)(A)Y	280	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		PLASTIC PAVEMENT STRIPING (4" DASHED WHITE)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C732(53)(A)W	151	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		PLASTIC PAVEMENT STRIPING (4" DASHED YELLOW)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C732(53)(A)Y	139	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		PLASTIC PAVEMENT STRIPING (12" WHITE STOP BAR)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C732(52)(D)W	122	LF		

Wording for "DESCRIPTION" is to be provided by Owner.
All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.

LOUISIANA UNIFORM PUBLIC WORK BID FORM
UNIT PRICE FORM

TO: Sewerage & Water Board of New Orl
625 St. Joseph St.
New Orleans, LA 70165

BID FOR: *New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.- N. Galvez St.) & New 48" Sewer Froce Main on Galvez St. (Conti St.-Lafitte St.)*
Contract: 30266

NAME OF BIDDER:

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		PLASTIC PAVEMENT STRIPING (24" SOLID WHITE PEDESTRIAN CROSSWALK)	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C732(52)(E)W	852	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		DOGHOUSE MANHOLE WITH HATCH LID	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(55)D	1	EA		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		20" TEMPORARY BYPASS LINE	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
C742(51)H	470	LF		

DESCRIPTION:	_x_Base Bid or ___Alt. # ____		NEW 48" LINESTOP	
REF. NO.	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times Unit Price)
CSS-01	2	EA		

Wording for "DESCRIPTION" is to be provided by Owner.
All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner.

1-2 ADDITIONAL REQUIREMENTS

All blank spaces in this Proposal section shall be filled. A bid price shall be indicated for each bid item. Bids received without all such items completed will be considered non-responsive. The bid shall contain an acknowledgement of receipt of all Addenda in space provided. The Louisiana Uniform Public Work Bid Form & Unit Price Form (if applicable) and the amount of Deposit or Bid Bond five percent (5%) of the total amount of the proposal is REQUIRED to be submitted in a sealed envelope on bid opening date. The two (2) lowest numerical bidders have three (3) days after the bid opening (exclusive of Saturdays, Sundays and Holidays) to submit any additional information such as (Voluntary Extension Sheet, Affidavit, Economically Disadvantage Business Summary Sheet if applicable) as well as requirements of Sections 1-3 through 1-6 below. Failure to do so will render the bid non-responsive.

1-3 BIDDER DECLARATION

____ do hereby declare that _____ the only person _____ interested in this proposal and that no other person than the one _____ herein named have any interest herein or in the contract proposed to be taken; that it is made without any connection with any other person or persons making proposal for the same work and that it is in all respects fair and without collusion or fraud; also that no member of the Sewerage and Water Board or of the City Council of the City of New Orleans or any officer or employee of the City of New Orleans or of the several boards thereof, who are by law excluded from participation herein, and directly or indirectly interested herein or in furnishing bond or in any portion of the profits hereof.

_____ do hereby also declare that _____ have LOUISIANA CONTRACTOR'S LICENSE in the field of _____ with NUMBER _____.

And _____ do further declare that _____ have carefully examined the annexed specifications and the drawings furnished, and personally inspected the ground and that _____ will contract to provide the necessary tools, machinery and apparatus and other means of construction, and to furnish all labor and material specified in this contract or called for by the plans, necessary to complete the work in the manner specified and within the time mentioned in the specifications and according to the requirements of the Engineer, as herein set forth.

1-4 In accordance with Louisiana Revised Statute 38:2227 the following affidavit shown on the next page must be submitted with the bid, or no later than 3 days after the bid opening (excluding Saturdays, Sundays, and Holidays). Failure to do so will render the bid non-responsive. **Please note, THE AFFIDAVIT MUST BE NOTARIZED.**

1-5 GUARANTEES

_____ guarantee that the whole of the work under this contract will be substantially completed within **__150_** calendar days after the date of the "Commencement of Contract Times."

In case of delay in the completion of the contract beyond the contract time of completion as determined by the Board hereby agree to pay, as liquidated damages, the sum of **Two Thousand Dollars ($2,000.00)** for each calendar day of such delay, which liquidated damages shall become due by the mere elapsing of the delay without the necessity of putting _____ in default.

1-6 EMERGENCY PROCEDURES

Contractor must furnish telephone numbers for routine or emergency telephone calls.

NAME TITLE

_____

TELEPHONE NO.:
NORMAL CALLS _____

EMERGENCY _____

1-7 ACKNOWLEDGEMENT OF CONSENT DECREE

I, _____, hereby certify that I have read and understand the Consent Decree with attachments or the pertinent parts thereof and am familiar with the terms and conditions therein and will pay any fines or penalties that will be assessed against the Sewerage and Water Board or City of New Orleans (or reimburse them therefor) which are imposed by the terms of said Decree with attachments resulting from the action or actions of _____ in its performance of or its failure to perform its duties under this Contract.

STATE OF LOUISIANA
PARISH OF ORLEANS

AFFIDAVIT

BEFORE ME, the undersigned authority, duly commissioned and qualified and sworn in and for the State and Parish aforesaid, personally came and appeared _____ who after being duly sworn, did depose and say as follows:

1) He/she is the _____ (title) of _____ (company);

2) He/she has not been convicted of, or has entered a plea of guilty or nolo contendere to any of the crimes, or equivalent federal crimes, listed in Louisiana Revised Statute 38:2227, specifically: public bribery, corrupt influencing, extortion, money laundering, theft, identity theft, theft of a business record, false accounting, issuing worthless checks, bank fraud, forgery, contractors misapplication of payments, malfeasance in office.

3) The contracting entity, person or corporation whose principal(s), member(s), and /or Officer(s) have, within the preceding 5 years, not been convicted or plead guilty to, a felony under state or federal statutes, for embezzlement, theft of public funds, bribery, falsification or destruction of public records; (City Code Section 2-8)

4) The following is a list of individual partners, incorporators, directors, managers, officers, organizers, or members who have a minimum ten percent interest ownership interest in the bidding entity:

_____(name) _____(name)

_____(name) _____(name)

_____(name) _____(name)

5) No other persons hold an ownership interest in the bidding entity via a counter letter.

6) None of the above named individual partners, incorporators, directors, managers, officers, organizers, or members, who has a minimum ten percent interest ownership in the bidding entity, been convicted of, or has entered a plea of guilty or nolo contendere to any of the crimes, or equivalent federal crimes, listed in Louisiana Revised Statute 38:2227, specifically: public bribery, corrupt influencing, extortion, money laundering, theft, identity theft, theft of a business record, false accounting, issuing worthless checks, bank fraud, forgery, contractors misapplication of payments, malfeasance in office.

7) He/she is not delinquent on any taxes owed the City of New Orleans or fees/charges to the Sewerage and Water Board. (City Code Section 2-8)

The following sections apply only to Public Works Contracts:

8) In accord with LA Revised Statute 38:2212.10 the entity represented herein is registered and participates in the "Status verification system" of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324(a), known as the "E-Verify" program to verify that all employees in the State of Louisiana are legal citizens of the United States or are legal aliens.

9) The entity represented herein shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.

10) The entity represented herein shall require all subcontractors to submit to the contractor a sworn affidavit verifying compliance with the Status verification system.

WITNESSES:

_____ _____
AFFIANT

_____

SWORN TO AND SUBSCRIBED BEFORE ME ON THIS

_____ DAY OF _____, 20_____.

_____ _____
NOTARY PUBLIC **Notary Id. No. or Bar Roll No.**

_____
PLEASE PRINT NAME OF NOTAR

VOLUNTARY EXTENSIONS OF THE AWARD

If this bid is determined to be the lowest responsive and responsible bid, Bidder agrees to bid extension of the award date by up to two (2) thirty (30) day periods in accordance with the provisions of Louisiana Revised Statue. Title 38, Section 2215 (A).

AGREED:

_____

NAME OF BIDDER (TYPE OR PRINT)

_____

SIGNATURE OF BIDDER

_____

COMPANY NAME

*** * * END OF SECTION * * ***

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BID BOND

Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

BID

Bid Due Date:
Project (Brief Description Including Location):

BOND

Bond Number:
Date (Not later than Bid due date):

Penal sum _____ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER	SURETY
_____(Seal)	_____(Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature and Title	Signature and Title (Attach Power of Attorney)
Attest: _____	Attest: _____
Signature and Title	Signature and Title

Note: Above addresses are to be used for giving required notice.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Surety's liability.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2. All Bids are rejected by Owner, or

3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10.This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11.The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

12.It is a requirement of the CWSRF Loan Program that surety companies providing bonding to contractors be included in the most current version of the U.S. Treasury Department's listing of approved sureties, Circular 570. The latest version of this circular can be found on the Internet at **https://www.fiscal.treasury.gov/fsreports/ref/suretyBnd/c570_a-z.htm**.

END OF SECTION

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DBE LANGUAGE FOR PUBLIC WORKS BIDS

The Sewerage and Water Board of New Orleans established the Economically Disadvantaged Business Program to offer Disadvantaged Business Enterprises (DBEs) the maximum allowable opportunity to compete for the award of and participation in Board contracts and subcontracts.

All solicitations for bids for contracts where DBE percentage goals have been established and recommended by the Contract Review Committee (CRC) and approved by the Board, shall inform all Bidders of the DBE requirements that must be submitted to the Board as part of the bid. The award of the contract will depend on the DBE requirements set below.

DBE Contract Percentage Goal ____30%____

See Attachment Section for DBE Forms
Each Bidder must submit the following forms in completion:

1. EDBP Participation Summary Sheet Form
    - Name, address and phone number of each DBE Firm
    - Scope of Work
    - Dollar Value for each DBE
    - Signature of Prime on Form

2. EDBP Acknowledgement of Negotiated Terms Form
    - Name, address and phone number of DBE Firm
    - Scope of Work
    - Dollar Value
    - Signatures of Prime and DBE subcontractor on Form

An Acknowledgement Form must be completed for each DBE Firm.

The Board expects Bidders to ensure every effort has been made to meet the DBE goals by utilizing the current listings of approved SLDBE and LaUCP vendors. The current listing of approved DBE vendors, DBE compliance, and instructions regarding submission of "good faith effort" are available at the Board's website at https://www.swbno.org/Business/DisadvantagedBusinesses.

Failure to complete and submit the DBE forms according to the above instructions will render your bid non-responsive.

ACKNOWLEDGEMENT

OF NEGOTIATED TERMS BETWEEN

PRIME CONTRACTOR AND DBE SUBCONTRACTOR

Solicitation: _____

This form acknowledges that the

Prime _____

and

DBE Subcontractor _____ Certification: ____ SLDBE or ____ LAUCP

have agreed to the following terms of service:

Scope of Work:

Please note: Scope of work should describe the agreed upon terms between the Prime and DBE.

DBE Percentage of Total Contract: _____

Dollar Amount of DBE Work: $_____

By signing this acknowledgement, the Prime Contractor and DBE Subcontractor affirm that it will perform the Scope of Work for the estimated total dollar value stated. Both parties hereby certify that the information contained herein is true and correct.

PRIME CONTRACTOR:

Printed Name: _____

Signature: _____

Date: _____

DBE SUBCONTRACTOR:

Printed Name: _____

Signature: _____

Date: _____

ECONOMICALLY DISADVANTAGED BUSINESS PARTICIPATION SUMMARY SHEET

Minimum Percentage Goal Participation for this Contract is 30 %

Contract Name and Number # 2025-SWB-51 Contract 30266 (Re-Bid)

Name and Address of Disadvantaged Business Enterprise Company	Name of Contact Person	Scope of Work to be Performed	Dollar Amount of work to be performed	Percentage of Dollar Amount to Total Bid Price

NOTE: Signature required even if judged **NOT APPLICABLE** by the **BIDDER**

Prime Representative Name: _____

Prime Company's Name: _____

Prime Address: _____

_____

Prime Signature: _____

Date: _____

E-mail: _____

Telephone Number: _____

Revised October 30, 2024

_____ **Telephone Number:** _____

For Construction Projects **Revised March 6, 2018**

SECTION 005000 – CONTRACTING FORMS AND SUPPLEMENTS

PART 1 - GENERAL

1.1 AGREEMENT AND CONDITIONS OF THE CONTRACT

A. See Section 005213 for the Agreement form to be executed.

B. See Section 007200 for the General Conditions.

C. See Section 007300 for the Supplementary Conditions.

1.2 FORMS

A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the Contract Documents.

B. Bond Forms:
   1. Section 006113.13: Performance Bond Form.

C. Payment Forms:
   1. AIA G702: Application for Payment
   2. AIA G703: Continuation Sheet

D. Project Forms:
   1. Contractor shall use AIA Contract Documents or an equal template for all other contract forms not included or specified herein.
      a. AIA G701: Change Order Form.
      b. AIA G704: Certificate of Substantial Completion Form.
      c. AIA G706A: Affidavit of Release of Liens Form.
      d. AIA G714: Construction Change Directive Form.
      e. AIA G716: Request for Information (RFI) Form.
      f. AIA G810: Submittal Transmittal Form.
      g. Work Change Directive Form.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 005000

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CONTRACT

THIS CONTRACT is by and between the Sewerage and Water Board of New Orleans ("Owner") and _____ , ("Contractor") in consideration of the mutual covenants set forth herein, agree as follows:

1. WORK.

1.1. Contractor shall complete the Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

1.1.1. **The installation of new 16" forcemain along Lafitte St. from SPS8 at N. Dorgenois St. to tie into the existing 48" sewer forcemain at N. Galvez St. and the replacement of existing 48" sewer forcemain along N. Galvez between Conti St. and Lafitte St.**

2. THE PROJECT.

2.1. The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

2.1.1. **Contract 30266 New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.-N. Galvez St.) & New 48" Sewer Force Main on N. Galvez St. (Conti St.-Lafitte St.)**

3. ENGINEER.

3.1. The Project has been designed by **Stantec Consulting** (Designer) who is to act as the Engineer-of-Record under the oversight and administration of the Owner's Representative.

4. CONTRACT TIMES.

4.1. Time of the Essence: Time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.2. Days to Achieve Substantial Completion and Final Payment:

4.2.1. The Work shall be substantially completed within 150 calendar days from the "Commencement of Contract Times" until "Substantial Completion" and within 180 calendar days from the "Commencement of Contract Times" until completed and ready for "Final Completion." Contract is subject to interim "Milestones" in accordance with Section 013513 "Special Project Procedures for Consent Decree."

4.3. Liquidated Damages: $2,000.

4.3.1. Should the Contractor fail to commence or start the work within the time allotted or fail to complete individual phases of the work within the times allotted for said individual phases, the Contractor shall pay to the Board the sum of $2,000 liquidated damages for each calendar day beyond the times specified. If unforeseen circumstances are encountered at the work site, the Contractor may request in writing an extension in days for the completion of work. If granted, the extension of time must be approved in writing by the Engineer and submitted with the invoice.

4.4. Night, Weekend, or Holiday Work:

4.4.1. Night, weekend or holiday work which requires the presence of an engineer or inspector will not be permitted except in cases of emergency or by permission of the Engineer. Except in cases of emergency, all requests for night, weekend or holiday work shall be submitted in writing at least seven calendar days prior to the work being performed. Any approved night, weekend or holiday work requires prior written authorization from the Engineer

5. CONTRACT PRICE.

5.1. Owner shall pay Contractor _____and No/100 ($_____) Dollars for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to the prices stated in Contractor's Bid attached hereto as an exhibit.

6. PAYMENT PROCEDURES.

6.1. Submittal and Processing of Payments: Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.2. Progress Payments and Retainage: Owner will make progress payments on account of the Contract Price on the basis of Contractor's Application for Payment on the date of each month as established in the preconstruction conference during performance of the Work as provided herein. All such payments will be measured by the Schedule of Values established as provided in Paragraph 2.07 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided in the General Requirements.

6.2.1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:

6.2.1.1. Ninety-five percent of Work completed for contracts in the amount of $500,000.00 or greater (with the balance being retainage).

Ninety percent of Work completed for contracts in an amount less than $500,000.00 (with the balance being retainage).

6.2.2 In accordance with Louisiana Revised Statute 38:2249, Contractor may withdraw up to the entire retained amount if they deposit an equal amount in a Certificate of Deposit issued by a commercial bank or savings and loan located in Louisiana.

6.2.3. In accordance with Louisiana Revised Statute 38:2248(A), retainage will be released within 45 days of Final Acceptance by the Sewerage and Water Board of New Orleans' Board of Directors.

6.2.4. Upon Substantial Completion, Owner will pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts as Engineer will determine in accordance with Paragraph 14.02.B.5 of the General Conditions and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.3. Final Payment:

6.3.1. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner will pay the remainder of the Contract Price as recommended by Engineer as provided in Paragraph 14.07.

7. CONTRACTOR'S REPRESENTATIONS.

7.1. Contractor makes the following representations:

7.1.1. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

7.1.2. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

7.1.3. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

7.1.4. Contractor has carefully studied: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) if any, which have been identified in Paragraph 4.02 of the Supplementary Conditions as containing reliable "technical data", and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site which have been identified in Paragraph 4.06 of the Supplementary Conditions as containing reliable "technical data."

7.1.5. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.

7.1.6. Based on the information and observations referred to above, Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

7.1.7. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

7.1.8. Contractor has given Engineer written notice of conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

7.1.9. The Contract Documents are generally sufficient to indicate and convey understanding of terms and conditions for performance and furnishing of the Work.

8. CONTRACT DOCUMENTS.

8.1. Contents:

8.1.1. The Contract Documents that are attached to this Contract (except as expressly noted otherwise) consist of the following:

8.1.1.1. This Contract

8.1.1.2. Payment and Performance Bond:

8.1.1.3. General Conditions:

8.1.1.4. Supplementary Conditions:

8.1.1.5. Specifications as listed in the table of contents:

8.1.1.6. Drawings consisting of **17** sheets with each sheet bearing the following general title: **"New 16" Sewer Force Main on Lafitte St. (N. Dorgenois St.-N. Galvez St.) & New 48" Sewer Force Main on N. Galvez St. (Conti St.-Lafitte St.)"**

8.1.1.7. Addenda: ____

8.1.2. Exhibits to this Contract (enumerated as follows):____

8.1.2.1. Contractor's Bid

8.1.2.2 Contractor's Insurance Certificates

8.1.2.3 Contractor's Corporate Resolution

8.1.3. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:

8.1.3.1. Notice to Proceed

8.1.3.2. Work Change Directives

8.1.3.3. Change Order(s)

8.2. There are no Contract Documents other than those listed above in this Article.

8.3. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

9. MISCELLANEOUS.

9.1. Terms used in this Contract will have the meanings stated in the General Conditions and the Supplementary Conditions.

9.2. Successors and Assigns: Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

9.3. Severability: Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9.4. Assignment of Contract:

9.4.1. No assignment by a party hereto of any rights under or interests in the Contract shall be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment shall release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.5. Contractor's Certifications:

9.5.1. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this paragraph:

9.5.1.1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in Contract execution;

9.5.1.2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract Price at artificial noncompetitive levels, or (c) to deprive Owner of the benefits of free and open competition;

9.5.1.3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, noncompetitive levels; and

9.5.1.4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10. Force Majeure:

Neither party shall be liable for any failure to make or accept one or more deliveries arising out of any embargo, war, fire, flood, earthquake, epidemic or other calamity, act of God or of the public enemy, governmental act (including, but not restricted to, any government priority, preference, requisition, allocation, interference, restraint or seizure, or the necessity of complying with any governmental order, directive, ruling or request) or by any strike or labor dispute involving the owner, or any manufacturer, supplier or carrier of the machinery, materials or supplies required hereunder, or any other similar circumstance beyond the control of the party.

11. Jurisdiction & Venue:

Moreover, Contractor, by act of signing this Contract, consents and yields to the

jurisdiction of the Civil District Court of the Parish of Orleans of the State of Louisiana and does formally waive any plea of lack of jurisdiction, on account of their residence elsewhere in the event of suit under this Contract. This Contract shall be governed by and shall be interpreted in accordance with the laws of the State of Louisiana. Contractor agrees that any suit arising out of this Contract shall be brought in the Civil District Court for the Parish of Orleans and Contractor hereby waives any objection to improper venue and agrees to submit to the jurisdiction of said court.

IN WITNESS WHEREOF, Owner and Contractor have signed this Contract in triplicate. One counterpart each has been delivered to Owner, Contractor, and Engineer. All portions of the Contract Documents have been signed or identified by Owner and Contractor or on their behalf.

This Contract will be effective on _____, 2024 (which is the Effective Date of the Contract).

SEWERAGE AND WATER BOARD OF NEW ORLEANS

BY:_____
GHASSAN KORBAN, EXECUTIVE DIRECTOR

WITNESSES:
_____

Print: _____

_____

Print: _____

_____
NOTARY PUBLIC

The foregoing contract is approved as to form.
New Orleans, Louisiana

_____ day of _____, 2024.

_____
YOLANDA GRINSTEAD, SPECIAL COUNSEL
SEWERAGE AND WATER BOARD OF NEW ORLEANS

IN WITNESS WHEREOF, Owner and Contractor have signed this Contract in triplicate. One counterpart each has been delivered to Owner, Contractor, and Engineer. All portions of the Contract Documents have been signed or identified by Owner and Contractor or on their behalf.

This Contract will be effective on _____, 2024 (which is the Effective Date of the Contract).

(COMPANY'S NAME)
LOUISIANA LICENSE NO. _____

BY:_____
TITLE:_____

WITNESSES:
_____

Print: _____

_____

_____

Print: _____

RECORDED IN THE PARISH OF ORLEANS
STATE OF LOUISIANA
ON_____
N.A. #_____
INSTR.#_____

[END OF SECTION]

PAYMENT AND PERFORMANCE BOND

Bond No.:

KNOW ALL PERSONS BY THESE PRESENTS, That we,_____, as principal, (hereinafter called the "Principal"), and _____, as surety, (hereinafter called the "Surety"), are held and firmly bound unto _____ , as Obligee, in the sum of_____Dollars ($) for the payment whereof said Principal and Surety bind themselves, jointly and severally, as provided herein.

WHEREAS, the Principal has entered into a Contract with Obligee dated _____, to perform construction work for _____("Contract").

NOW, THEREFORE, the condition of this obligation is such that if Principal shall promptly and faithfully perform the Construction Work to be performed under the Contract, and shall promptly make payment to Claimants, as hereinafter defined, for all labor and material actually used, consumed or incorporated in the performance of the Construction Work under the Contract, then this obligation shall be null and void; otherwise to remain in full force and effect.

Surety's obligations hereunder to Obligee shall not arise unless Principal is in default under the Contract for failing to perform the Construction Work and has been declared by Obligee to be in default under the Contract for failing to perform the Construction Work; and Obligee has performed its obligations under the Contract. In such event, Surety shall have a reasonable period of time to:

1. Upon entering into an acceptable written takeover agreement with Obligee, undertake to perform and complete the Construction Work to be done under the Contract; or

2. Obtain bids or negotiated proposals from qualified contractors for a contract for completion of the Construction Work to be done under the Contract, arrange for a contract to be prepared for execution by Obligee and contractor, to be secured with performance and payment bonds executed by a qualified surety; or

3. Waive its right to perform or complete the Construction Work pursuant to paragraphs 1 and 2 above, and with reasonable promptness under the circumstances: (a) After investigation, determine the amount for which it may be liable to the Obligee and, as soon as practicable after the amount is determined, tender payment therefor to the Obligee; or (b) Deny liability in whole or in part and notify the Obligee citing reasons therefor.

4. The Contract balance, as defined below, shall be credited against the reasonable construction cost of completing the Construction Work to be performed under the Contract. If completed by Obligee pursuant to paragraphs 2 or 3 above, and the reasonable construction cost of completing the Construction Work exceeds the Contract balance, Surety shall pay to Obligee such excess, but in no event shall the aggregate liability of Surety exceed the amount of this bond. If Surety completes the work pursuant to paragraph 1 above, that portion of the Contract balance as may be required to complete the Construction Work to be done under the Contract and to reimburse Surety for its outlays shall be paid to Surety at the times and in the manner as said sums would have been payable to Principal had there been no default under the Contract. To the extent that Surety's outlays exceed the Contract

balance paid to Surety by Obligee, Surety shall be entitled to a dollar for dollar reduction of its liability under this bond, and Surety's aggregate liability shall not exceed the penal sum of this bond. The term "Contract balance" as used herein shall mean the total amount payable by Obligee under the Contract and any amendments thereto, less the amounts properly paid by Obligee to Principal under the Contract. The term "Construction Work" as used herein shall mean the providing of all labor and/or material necessary to complete Principal's scope of work under the Contract. Notwithstanding any language in the Contract to the contrary, the Contract balance shall not be reduced or set off on account of any obligation, contractual or otherwise, except the reasonable construction cost incurred in completing the Construction Work.

5. Any suit by Obligee under this bond must be instituted before the earlier of: (a) the expiration of one year from the date of substantial completion of the Construction Work, or (b) one year after Principal ceased performing the Construction Work, excluding warranty work. If the public works bond statutes in the location where the Construction Work is being performed contains a statute of limitations for suits on the performance bond, then the limitation period set forth herein shall be read out of this bond and the statute of limitation set forth in the public works bond statutes shall be read into this bond. If the limitation set forth in this bond is void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable, and said period of limitation shall be deemed to have accrued and shall commence to run no later than (y) the date of substantial completion of the Construction Work, or (z) the date Principal ceased performing Construction Work, excluding warranty work, whichever occurs first.

6. A Claimant is defined as one other than Obligee having a contract with Principal or with a direct subcontractor of Principal to supply labor and/or materials and said labor and/or material is actually used, consumed or incorporated in the performance of the Construction Work under the Contract.

7. Principal and Surety hereby jointly and severally agree with Obligee that every Claimant as herein defined who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's work or labor was done or performed or materials were furnished by such Claimant, may bring suit on this bond, prosecute the suit to final judgment for the amount due under Claimant's contract for the labor and/or material supplied by Claimant which was actually used, consumed or incorporated in the performance of the Construction Work, and have execution thereon; provided, however, that a Claimant having a direct contractual relationship with a subcontractor of Principal shall have a right of action on this bond only if said Claimant notifies Surety in writing of its claim within ninety (90) days from the date on which said Claimant did or supplied the last labor and/or materials for which the claim is made. Obligee shall not be liable for the payment of any costs or expenses of any such suit.

8. No suit or action shall be commenced hereunder by any Claimant after the expiration of the earlier of: (a) one year after the day on which Claimant last supplied the labor and/or materials for which the claim is made; or (b) the limitation period set forth in the public works bond statutes, if any, in the location where the construction work is being performed. Any limitation contained in this bond which is prohibited by any law controlling in the state where the suit is filed shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by the law of that state, and said period of limitation shall be deemed to have accrued and shall commence to run on the day Claimant last supplied the labor and/or materials for which the claim is made.

9. No suit or action shall be commenced hereunder by Obligee or any Claimant other than in a state court of competent jurisdiction in the county or other political subdivision of the state in which the project,

or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

10. The amount of this bond shall be reduced by and to the extent of any payment or payments made by Surety in good faith hereunder whether made directly to Obligee or Claimant(s) or otherwise in discharge of Principal's obligations. Surety's liability hereunder to Obligee and all Claimants is limited, singly, or in the aggregate, to the penal sum of the bond set forth herein. Surety may, at its option, discharge all obligations under this bond by interpleading into the registry of any court of competent jurisdiction of the full unused penal sum of this bond, or such portion thereof that will satisfy the obligations owed to Obligee and/or Claimant(s). No right of action shall accrue on this bond to any person or entity other than Obligee and/or Claimant(s). The bond shall not afford coverage for any liability of Principal for tortious acts, whether or not said liability is direct or is imposed by the Contract and shall not serve as or be a substitute for or supplemental to any liability or other insurance required by the Contract.

11. This bond is provided to comply with all statutory (including but not limited to La. R.S. 38:2216 and La. R.S. 38:2219) or other legal requirement for performing construction contracts for public owners in the location where the construction work is being performed. Except as provided in paragraphs 5 and 8 above, all provisions in the bond which are in addition to or differ from those statutory or legal requirements shall be read out of this bond, and all pertinent statutes and other legal requirements shall be read into the bond. This bond is a statutory bond, not a common law bond.

Signed this _____ day of _____, 20___.

(Principal)

By: _____

(Surety)

By: _____
, Attorney-in-Fact

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GENERAL CONDITIONS

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GENERAL CONDITIONS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*—The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*—See Paragraph 11.01 for definition.

17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

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19. *Engineer*—The individual or entity named as such in the Agreement.

20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*—Sections of Division 1 of the Specifications.

22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.

23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*—Polychlorinated biphenyls.

31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.

37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

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41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.

46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.

47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

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D. *Defective:*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

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1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees,

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from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work*: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work*: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation , (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or

2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

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3.06 *Electronic Data*

A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and

2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

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1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

5. then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

a. reviewing and checking all such information and data;

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b. locating all Underground Facilities shown or indicated in the Contract Documents;

c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and

d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous

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Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of

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authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

   a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

   b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of

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whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

6. include completed operations coverage:

a. Such insurance shall remain in effect for two years after final payment.

b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the

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interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of

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Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water,

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sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and

3) it has a proven record of performance and availability of responsive service.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items*:

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

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c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,

b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services; and

4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

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6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

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B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members,

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partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

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F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures*:

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and

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procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

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5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

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ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.

C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

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8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but

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without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

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C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

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3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required*: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action*: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;

2. approve the Claim; or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include,

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without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

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h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances:*

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the

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estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

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f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

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2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise

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impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or

2. correct such defective Work; or

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all

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materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and

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c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. *Payment Becomes Due:*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off against the amount recommended; or

d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to

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Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify

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Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of

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Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

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D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become

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final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or

3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof. The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-1.01. Add the following language at the end of Paragraph 1.01.A.19:

> The General Superintendent for the Sewerage and Water Board of New Orleans or delegate and has the authority provided in this Contract to approve or disapprove all changes to the Contract documents.

SC-1.01. Add the following language at the end of Paragraph 1.01.A.44:

> Substantial Completion is defined as the completion of all Work with the exception of final clean-up.

SC-1.01. Add the following new paragraph immediately after Paragraph 1.01.A.51:

> 1.01.A.52. *Specialist*—The term Specialist refers to a person, partnership, firm, or corporation of established reputation (or if newly organized, whose personnel have previously established a reputation in the same field), which is regularly engaged in, and which maintains a regular force of workers skilled in either (as applicable) manufacturing or fabricating items required by the Contract Documents, or otherwise performing Work required by the Contract Documents. Where the Specifications require the installation by a Specialist, that term shall also be deemed to mean either the manufacturer of the item, a person, partnership, firm, or corporation licensed by the manufacturer, or a person, partnership, firm, or corporation who will perform the Work under the manufacturer's direct supervision.
>
> 1.01.A.53. *Construction Coordinator*—The term Construction Coordinator, where and when used, refers to an authorized representative of Owner or Engineer who may be assigned to the Site or any part thereof to monitor and oversee construction activities by Contractor. Synonymous with Resident Project Representative (RPR) and Owner's Representative.
>
> 1.01.A.54 *Owner's Representative*—The term Owner's Representative, where and when used, refers to an authorized representative of Owner who may be assigned to the Site or any part thereof to monitor and oversee construction activities by Contractor. Synonymous with Resident Project Representative (RPR) and Construction Coordinator.

SC-2.01. Delete the wording “and Owner” and “each” in line 2, change “other” to “owner” in line 3, delete “and owner respectively” and change “are” to “is” in line 7 in Paragraph 2.01.B

SC-2.02. Amend first sentence in Paragraph 2.02.A to read as follows:

2.02.A. Upon award of Contract, Owner will furnish Contractor with complete conformed project documents in electronic format.

SC-2.03. Delete the third sentence of Paragraph 2.03.A in its entirety.

SC-3.01. Add the following new paragraph immediately after Paragraph 3.01.C:

3.01.D. Sections of Division 01, General Requirements, govern the execution of the Work of all sections of the Specifications.

SC-4.02. Add the following new paragraph(s) immediately after Paragraph 4.02.B:

4.02.C. The following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:

SC-4.06. Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following in their place:

4.06.A. No reports or drawings related to Hazardous Environmental Conditions are known to Owner.

SC-5.01. Delete in Paragraph 5.01.A first sentence the wording “and payment”

SC-5.02. Add the following new paragraph immediately after Paragraph 5.02.A:

SC-5.02.B. As an alternative to the requirements in paragraph A above, bonds may also be provided by a Louisiana Domiciled Insurance company with at least an A.M. Best’s Financial Strength Rating of A minus (A-) rating, or the bond shall be written by an insurance company that is either domiciled in Louisiana or owned by Louisiana residents and is licensed to write surety bonds. In addition, any surety bond written for a public works project shall be written by a surety or insurance company that is currently licensed to do business in the State of Louisiana. Surety and insurance companies from which the bonds and insurance for this Project are purchased under the provisions of paragraph 5.02.A shall have an A.M. Best’s Financial Strength Rating of A minus (A-) or better with a Financial Size Category of no less than VII, in addition to other requirements specified herein.

SC-5.04. Add the following language after Paragraph 5.04.B.1:

Policies will endorse the following parties or entities as additional insured:

5.04.B.1.a. Sewerage and Water Board of New Orleans, 625 St. Joseph Street, New Orleans, Louisiana 70165

5.04.B.1.b. The City of New Orleans, 1300 Perdido Street, New Orleans, Louisiana 70112

SC-5.04. Add the following new paragraph immediately following Paragraph 5.04.B:

5.04.C. Insurance: General Requirements

The Contractor will maintain, at his own cost and expense, and in good standing, such insurance as will protect the Sewerage and Water Board of New Orleans (the Owner), the City of New Orleans (the City,) their officers, officials, employees, boards, commissions and volunteers, as well as the Contractor himself and any subcontractors from and against any and all claims for damages to public and private property and personal injury, including death, to employees or to the public, which may arise from any operations under this Contract or any of its subcontracts. The coverage will contain no special limitations on the scope of protection afforded to the Owner and the City. Both the Owner and the City will appear as "Additional Insured" on all Commercial General Liability and Business Automobile Liability. Any failure to comply with the reporting provisions of a policy will not affect coverage provided to the Owner and the City, their officers, officials, employees, boards and commissions and volunteers. The Contractor's insurance will apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

In general, insurance is to be placed with insurers with an A.M. Best's rating of A-:V, although this requirement may be reviewed and modified by the Risk Manager of the Sewerage and Water Board of New Orleans in the best interest of the Board. The Risk Manager may also consider performing such review upon written request from the Contractor. The Contractor shall furnish the Sewerage and Water of New Orleans with certificates of insurance affecting coverage required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates of insurance are to be received and approved by the Risk Manager of the Sewerage and Water Board of New Orleans, 625 St. Joseph St., Rm. 119, New Orleans, LA 70165, before work commences. The Sewerage and Water Board of New Orleans reserves the right to require complete, certified copies of all insurance policies at any time, as proof that the insurance placed meets the requirements of this Contract.

If the insurance is written subject to a deductible clause, Contractor assumes responsibility for the amount of the deductible. In addition, the Contractor shall be required to furnish to the Risk Manager of the Sewerage and Water Board of New Orleans all copies of investigative reports with regard to any and all claims with the Contractor and his insurance carriers, relative to the contract, with the exception of claims filed with his Workers' Compensation Insurance. Such reports shall include dates, location and description of loss as well as amounts of settlements or judgments in order that annual aggregate limits maybe monitored by the Sewerage and Water Board of New Orleans for the Contactor's compliance with these Specifications.

The furnishing of insurance as provided above shall not relieve the Contractor of his responsibility for losses not covered by insurance. All policies shall be with insurance companies authorized to do business in Louisiana and shall remain in full force and effect until the final completion of the work and acceptance thereof by the authority of the Owner.

5.04.C.1 Subrogation

The Contractor, Subcontractor(s), and their insurers shall agree to waive all the rights of subrogation against the Owner, the City, and their officers, officials, employees, boards and commissions, and volunteers for losses arising from work performed by the Contractor for the Owner and the City.

5.04.C.2. Insurance Cancellations and Stop-Work

Each insurance policy required by this contract shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, or reduced in coverage or in limits except after thirty (30) days prior written notice has been given to the Risk Manager, 625 St. Joseph St., Rm. 119, New Orleans, LA 70165, of the Sewerage & Water Board of New Orleans, via certified mail.

The Contractor and/or his insurer shall notify the Risk Manager of the Sewerage and Water Board of New Orleans at least thirty (30) days in advance of any insurance coverage to be canceled or of any insurance coverage that will expire. The Contractor shall simultaneously furnish the Owner evidence of new coverage to be effective the same day and hour of the expired or canceled coverage.

In the event the Contractor and/or his insurer fails to submit this evidence of new coverage five (5) days prior to the cancellation date or expiration date of any policy or policies, the Sewerage and Water Board will have the right to obtain the required coverage to become effective on the date of cancellation or expiration of said policies. The cost of such new policies shall be at the expense of the Contractor and any expenditure incurred by the Owner for this coverage will be deducted from any balance due to the Contractor.

Should the Owner be unable to secure new coverage to take the place of the expired or cancelled policy or policies, a “stop work” order will issued and all work on the contract shall cease on the same date and hour as the coverage ceases. Should the Contractor fail or refuse to secure coverage within five (5) days after the date of the “stop work” order, the Contractor shall be declared to be in default, and the contract between the parties shall be considered cancelled and of no force or effect between the parties reserving all the rights of the Owner against the Contractor and his surety.

5.04.C.3. Insurance Policies, Endorsements, and Limits Required

The following are the types of insurance policies and the minimum limits of insurance coverage which shall be maintained by the Contractor during the entire term of the Contract:

5.04.C.3.a. WORKERS' COMPENSATION AND EMPLOYERS LIABILITY INSURANCE

WORKERS' COMPENSATION AND EMPLOYERS LIABILITY INSURANCE, as will protect Contractor from claims under Louisiana Workers' Compensation Laws. The Workers' Compensation section of the policy shall afford Statutory Limits and be in accordance with all Louisiana Workers' Compensation Statutes. The Employers Liability limit shall not be less than $1,000,000 each accident for bodily injury by accident and $1,000,000 each employee/policy limit for bodily injury by disease. Whenever any Federal Longshoreman's and Harbor Workers' Act, and shall also include protection for injuries and/or death to Master and Members of the crews of vessels with statutory limits in accordance with the Jones Act.

5.04.C.3.b. COMMERCIAL GENERAL LIABILITY INSURANCE

COMMERCIAL GENERAL LIABILITY INSURANCE, with a limit of not less than $1,000,000 each occurrence and not less than $2,000,000 general annual aggregate, including Explosion, Collapse, and Underground Property Damage Hazards. The Products-Completed Operations aggregate limit shall not be less than $1,000,000 each occurrence. The general aggregate limit shall apply separately to this project.

5.04.C.3.c. BUSINESS AUTOMOBILE LIABILITY INSURANCE

BUSINESS AUTOMOBILE LIABILITY INSURANCE, which shall cover liability arising out of accidents involving any auto (including Owned, Hired, and Non-Owned autos). The limit of liability shall not be less than $1,000,000 each accident for all injuries, property damage, and/or death resulting from any one occurrence.

5.04.C.3.d. OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY INSURANCE

OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY INSURANCE, as will protect the Contractor, the Sewerage and Water Board of New Orleans, and the City of New Orleans from and against any and all claims and lawsuits involving vicarious liability. The limits

of liability shall be the same as specified in Paragraph (b) above, and shall include Explosion, Collapse and Underground Hazards.

5.04.C.3.e. PROFESSIONAL LIABILITY INSURANCE

PROFESSIONAL LIABILITY INSURANCE, as may be applicable to the particular profession or service to be provided, with a limit of not less than $1,000,000 each Claim, with at least a $2,000,000 annual aggregate, **without any restrictive "negligent act, negligent error, or negligent omission"** clause, and sufficient to protect the Contractor, the Owner, and the City, for a five (5) year period from completion of this contract, against any and all claims which may arise from the Contractor's negligent performance of work described herein.

5.04.C.3.f. PROPERTY INSURANCE

PROPERTY INSURANCE, required on all work except sewer and water drainage pipelines, reinforced concrete canals, work completely underground, and similar work (however Contractor is not relieved of responsibility therefore) as follows:

5.04.C.3.f(1).

ALL RISKS BUILDERS RISK INSURANCE (covering Fire, Extended Coverage, Vandalism and Malicious Mischief) will be carried on a completed value or reporting form, for not less than 100 percent of the value of the work, including foundations.

Coverage will include all machinery and equipment to be installed, whether furnished by the Sewerage & Water Board or by Contractor, for not less than 100 percent of the installed value of the machinery and equipment. This insurance shall be written in the same Insurance Company carrying the Builder's Risk Insurance, shall include testing and startup, shall for partial utilization of the Work by Owner, and shall terminate only when installation has been accepted by the Sewerage and Water Board.

The All Risks Builder's Risk Policy shall include the names of the Sewerage & Water Board of New Orleans, and City of New Orleans, and will cover the interests of all sub-contractors without specifically naming them.

5.04.C.3.g. WORKERS' COMPENSATION AND UNEMPLOYMENT COVERAGE, ADDITIONAL CONDITIONS

5.04.C.3.g(1)

WORKERS' COMPENSATION: The Contractor expressly agrees and acknowledges that it is an "independent contractor" as defined in LSA-R.S.23:1021(6), and that its employees shall not be considered employees of the Sewerage and Water Board for workers' compensation benefits or coverage.

5.04.C.3.g(2)

EXCLUSIVE OF UNEMPLOYMENT COMPENSATION COVERAGE: Contractor herein expressly agrees and acknowledges that it is an "independent contractor" as defined in LSA-R.S.23:1472(E0, that neither the contractor nor any one employed by the Contractor shall be considered an employee of the Sewerage and Water Board for the purpose of employment of compensation coverage.

SC-5.06. Delete Paragraph 5.06.A in its entirety.

SC-5.06. Delete Paragraph 5.06.B in its entirety.

SC-5.06. Delete Paragraph 5.06 E in its entirety.

SC-5.07. Delete third sentence of Paragraph 5.07.A in its entirety and insert the following in its place:

Contractor and Contractor's insurers waive all rights against Owner and their respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused.

SC-5.07. Delete the last sentence of Paragraph 5.07.A in its entirety and insert the following in its place:

None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Contractor as trustee or otherwise payable under any policy so issued.

SC-5.07. Delete Paragraph 5.07.B in its entirety.

SC-5.07. Delete Paragraph 5.07.C in its entirety.

SC-5.08. Delete Paragraph 5.08.A in its entirety.

SC-5.08. Delete Paragraph 5.08.B in its entirety.

SC-6.02. Add the following new paragraph immediately after Paragraph 6.02.B:

6.02.C. Contractor shall reimburse Owner for Engineer's additional extraordinary costs for onsite personnel overtime work resulting from Contractor's overtime operations. Reimbursement shall be on the cost basis defined in Paragraph 14.02.D.4 of these Supplementary Conditions.

6.03. Add the following new paragraph immediately after Paragraph 6.03.C:

6.03.D. Domestic Manufacture:

6.03.D.1. All equipment to be furnished and components of all items specified herein, except bearings, shall be of domestic produce, manufacture and assembly, i.e., manufactured and assembled within the limits of the United States. Parts must be available from suppliers that manufacture components in the USA. The Owner reserves the right to waive this requirement if, in the opinion of the Engineer, it appears to be in the best interests of the Owner.

6.03.D.2. Owner's staff will determine the ability of the lowest bidder to design and build the equipment and machinery specified hereon. Along with other factors to be considered by Owner's staff will be the manufacturer's facilities, listings of similar equipment and installations, equipment reliability and longevity. Should the lowest bidder be found "non-responsive", then an informal hearing will be held to provide the lowest bidder the opportunity to refute the reasons for disqualification.

SC-6.05. Add the following language at the end of Paragraph 6.05.E:

Reimbursement rates for Engineer or their officers, directors, members, partners, employees, agents, and other consultants and subcontractors for evaluation of proposed substitutes shall be on the basis established in Paragraph 14.02.D.4 of these Supplementary Conditions.

SC-6.06. Add the following new paragraph immediately after Paragraph 6.06.G:

6.06.H. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor or Supplier**.**

SC-6.08. Add the following paragraphs after 6.08A:

B. Before commencing work, the Contractor shall obtain, at his own expense, any required permits from the City of New Orleans. The Contractor shall also secure, at his own expense, any necessary inspection certificates required after the work is completed.

C. Evidence of compliance shall be furnished to the Owner prior to starting work, in the case of permits, or within 10 calendar days after completion of that work requiring inspection certificates.

SC-6.11. Add the following language to the end of Paragraph 6.11.A.1:

Contractor shall not enter upon nor use property not under Owner control until appropriate easements have been executed and a copy is on file at the Site**.**

SC-6.11. Add the following language to the end of Paragraph 6.11.D:

6.11.D. Water and Other Utilities. It is the responsibility of the Contractor to make all necessary arrangements for the provision of water, electricity, drainage, sanitary sewage disposal, gas, compressed air, and any other utility service required to prosecute the work of this contract. Water used by the Contractor at the job site will be furnished by the Board at no cost to the Contract, if conditions permit. Costs of all other services shall be borne by the Contractor.

6.11.E. Hydrant Connections. Connections to fire hydrants shall only be made with meters obtained from the Sewerage and Water Board Customer Service Department, 504-585-2097, which shall record water usage for record purposes and which shall be returned to the Board as a condition of acceptance of the Contract. Application for the meter requires a $1,500.00 deposit that is refundable upon return of the meter in undamaged and operable condition. The hydrant meter application and instructions are available on the Sewerage and Water Board website: https://www.swbno.org/custserv_information_docs.asp.

SC-6.13. Add the following new paragraphs immediately after 6.13.C:

6.13.C.1. The Owner's Safety Orientation Notice is applicable to the Work and is appended to these Supplementary Conditions.

6.13.C.2. The Owner's Drug-Free Workplace Policy is applicable to the Work and is appended to these Supplementary Conditions.

6.13.C.3. Owner's Electrical Safety Clearance Procedure is applicable to the work and is appended to these supplementary conditions.

SC-6.17. Add the following new paragraphs immediately after Paragraph 6.17.E.1:

6.17.E.2. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than the number of submittals specified in Paragraph 14.02.D.4 of these Supplementary Conditions. Engineer will record time for reviewing subsequent submittals of Shop Drawings, Samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time in accordance with Paragraph 14.02.D.4 of these Supplementary Conditions.

6.17.E.3. In the event Contractor requests a substitution for a previously approved item, Contractor shall reimburse Owner for Engineer's charges for such time, unless the need for such substitution is beyond the control of Contractor.

SC-7.02. Delete Paragraphs 7.02.A and 7.02.B in their entirety and insert the following in their place:

7.02.A. Owner intends to contract with others for the performance of other work on the Project at the Site. The authority and responsibility of the Construction Coordinator for the various prime contractors, utility owners, and Owner (if present at the Site) shall be as follows:

7.02.A.1 Owner's Representative: Shall have authority and responsibility for coordination of the various contractors at the Site. Owner's Representative shall be named by the Owner if necessary.

7.02.A.2. Specific matters to be covered by such authority and responsibility: Prioritization of work activity should conflicts occur in work areas between contractors or between contractor and Owner's operations; approval of requests to curtail, interrupt, or otherwise disrupt Owner operation to allow Contractor work to be scheduled and/or occur; cancellation of scheduled Contractor activity in the event Owner requirements supersede prior plans; other issues that require approval or prioritization relative to interference with Owner operations or conflicts with other.

7.02.A.3. Extent of such authority and responsibility: Owner's Representative decision and direction to Contractor shall be final. Planning and discussions to coordinate options relative to operational disruptions requested by Contractor will be scheduled by Owner's Representative. Owner's Representative will review and respond to requests by the Contractor for outage, interconnection, operational disruption, contract activity prioritization, or the like, within 10 business days.

7.02.A.4. Limitations of such authority and responsibility: Owner's Representative may not modify the Contract or its terms and conditions.

7.02.B. Unless expressly assigned to the Construction Coordinator, all other authority and responsibility will remain vested with each prime contractor, utility owner, or Owner (if present at the Site).

SC-7.04. Add the following new paragraph immediately after Paragraph 7.03:

SC-7.04. *Claims Between Contractors*

7.04.A. Should Contractor cause damage to the work or property of any other contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any other contractor against Contractor, Owner, Engineer, or the Construction Coordinator, if applicable, Contractor shall (without involving Owner, Engineer, or Construction Coordinator) either i) remedy the damage; ii) agree to compensate the other contractor for remedy of the damages; or iii) remedy the damages and attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law.

7.04.B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Engineer, the Construction Coordinator (if applicable) and the officers, directors, members, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all Claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, Engineer, their officers, directors, members, partners, employees, agents, and other consultants and subcontractors, or the Construction Coordinator (if applicable) to the extent said Claim is based on or arises out of Contractor's performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should the performance of work by any other contractor at the Site give rise to any other Claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or the Construction Coordinator (if applicable) or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or the Construction Coordinator (if applicable) on account of any such damage or Claim.

7.04.C. If Contractor is delayed at any time in performing or furnishing the Work by any act or neglect of another contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and Construction Coordinator (if applicable) for any delay, disruption, interference, or hindrance caused by any other contractor. This paragraph does not prevent recovery from Owner, Engineer, or Construction Coordinator (if applicable) for activities that are their respective responsibilities.

SC-8.02. Delete Paragraph 8.02.A in its entirety and replace with the following:

8.02.A. In case of termination of the employment of Engineer, Owner shall appoint an Engineer whose status in the Contract Documents shall be that of the former Engineer.

SC-8.06. Delete Paragraph 8.06.A in its entirety.

SC-8.11. Delete Paragraph 8.11.A in its entirety.

SC-9.03. Add the following new paragraphs immediately after Paragraph 9.03.A:

9.03.B. Resident Project Representative (RPR) will be furnished by Owner. The responsibilities, authority, and limitations of the RPR are limited to those of Engineer in accordance with Paragraph 9.09 and as set forth elsewhere in the Contract Documents and are further limited and described below.

9.03.C. Responsibilities and Authority:

9.03.C.1. Schedules: Review and monitor Progress Schedule, Schedule of Submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

9.03.C.2. Conferences and Meetings: Conduct or attend meetings with Contractor, such as preconstruction conferences, progress meetings, Work conferences and other Project related meetings.

9.03.C.3. Liaison: (i) Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, and assist in understanding the intent of the Contract Documents; (ii) assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's onsite operations; (iii) assist in obtaining from Owner additional details or information when required for proper execution of the Work.

9.03.C.4. Interpretation of Contract Documents: Inform Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

9.03.C.5. Submittals: Receive submittals that are furnished at the Site by Contractor, and notify Engineer of availability for examination. Advise Engineer and Contractor of the commencement of any Work or arrival of materials and equipment at Site, when recognized, requiring a Shop Drawing or Sample if the submittal has not been approved by Engineer.

9.03.C.6. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and provide recommendations to Engineer; transmit to Contractor, in writing decisions as issued by Engineer.

9.03.C.7. Review of Work and Rejection of Defective Work: (i) Conduct onsite observations of the Work in progress to assist Engineer in determining if the Work is, in general, proceeding in accordance with the Contract Documents; (ii) inform Engineer and Contractor whenever RPR believes that any Work is defective; (iii) advise Engineer whenever RPR believes that any Work will not produce a completed Project that conforms generally to the Contract

Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged or does not meet the requirements of any inspection test, or approval required to be made; and advise Engineer of that part of the Work in progress that RPR believes should be corrected or rejected or uncovered for observation, or requires special testing, inspection, or approval.

9.03.C.8. Inspections, Tests, and System Startups: (i) Verify tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that Contractor maintains adequate records thereof; (ii) observe, record, and report to Engineer appropriate details relative to the test procedures and system startups; and (iii) accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to Engineer.

9.03.C.9. Records: (i) Maintain records for use in preparing Project documentation; (ii) keep a diary or log book recording pertinent Site conditions, activities, decisions and events; (iii) record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of Contractors, Subcontractors, and major Suppliers of materials and equipment.

9.03.C.10. Payment Requests: Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

9.03.C.12. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify materials and equipment certificates and operation and maintenance manuals and other data required by Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents been delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

9.03.C.13. Completion: (i) Participate in a Substantial Completion inspection; assist in determination of Substantial Completion and the preparation of lists of items to be completed or corrected; (ii) Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied; and (iii) observe whether items on final list have been completed or corrected, and make recommendations to Engineer concerning acceptance.

9.03.D. Limitations of Authority: Resident Project Representative will not:

9.03.D.1. have authority to authorize a deviation from Contract Documents or substitution of materials or equipment, unless authorized by Engineer; or

9.03.D.2, exceed the limitations of Engineer's authority as set forth in Contract Documents; or

9.03.D.3. undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's authorized representative; or

9.03.D.4. advise on, issue directions relative to, or assume control over an aspect of the means, methods, techniques, sequences, or procedures of Contractor's work unless such advice or directions are specifically required by the Contract Documents; or

9.03.D.5 advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor; or

9.03.D.6. participate in specialized field or laboratory tests or inspections conducted offsite by others, except as specifically authorized by Engineer; or

9.03.D.7. accept Shop Drawings or Samples from anyone other than Contractor; or

9.03.D.8. authorize Owner to occupy the Project in whole or in part.

SC-9.09. Add the following new paragraph immediately after Paragraph 9.09.E:

9.09.F. Contractors, Subcontractors, Suppliers, and others on the Project, or their sureties, shall maintain no direct action against Engineer, its officers, employees, affiliated corporations, and subcontractors, for any Claim arising out of, in connection with, or resulting from the engineering services performed. Only the Owner will be the beneficiary of any undertaking by Engineer.

SC-10.05. Delete Paragraphs 10.05.C through 10.05.E in their entirety and insert the following in their place:

10.05.C. Engineer's Action and Executive Negotiation:

10.05.C.1. Engineer's Action:

10.05.C.1.a. Engineer will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. Engineer's written decision on such Claim, dispute or other matter will be final and binding upon Owner and Contractor, unless within 10 days after issuance of Engineer's written decision, either party appeals the decision by giving the other party and Engineer written notice of request for executive negotiation.

10.05.C.1.b. In the event Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

10.05.C.2. Executive Negotiation:

10.05.C.2.a. Within 10 days of the delivery of notice of appeal to Engineer's written decision regarding Claim, dispute or other matter, senior representatives of at least Owner and Contractor, having authority to settle the dispute, and Engineer shall meet at a mutually acceptable time and place, and thereafter as often as they reasonably deem necessary, to exchange relevant information and to attempt to resolve the dispute.

10.05.C.2.b. In the event a mutually acceptable decision cannot be reached through executive negotiation within 20 days of the appealing party's notice, or mutually agreeable longer period, or if the party receiving such notice will not meet within 10 days, Owner or Contractor may make a written declaration, delivered to the other party and Engineer, that the executive negotiation is deemed unsuccessful and may initiate further dispute resolution measures in accordance with Article 16.

10.05.C.2.c. If no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to further appeal Engineer's written decision shall be delivered by Owner or Contractor to the other and to Engineer within 30 days after the date upon which the executive negotiation has been declared unsuccessful, or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by Owner and Contractor), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

SC-11.01. Delete Paragraph 11.01.A.5.c in its entirety and insert the following in its place:

11.01.A.5.c. Construction Equipment and Machinery:

11.01.A.5.c(1) Rentals of construction equipment and machinery, and the parts thereof in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. Such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

11.01.A.5.c(2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Rental Rate Blue Book published by Equipment Watch. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than $1,000 will be considered small tools.

SC-11.01. Add the following language to the end of Paragraph 11.01.A.5.h:

Express and courier services must be approved prior to use.

SC-11.01. Delete Paragraph 11.01.C in its entirety.

SC-11.02. Delete Paragraph 11.02 in its entirety.

SC-12.01. Add the following language to the end of Paragraph 12.01.C.2.c:

except, the maximum total allowable cost to Owner shall be the Cost of the Work plus a maximum collective aggregate fee for Contractor and tiered Subcontractors of 20 percent;

SC-12.01. Add the following new paragraph immediately after Paragraph 12.01.C:

12.01.D. *Right to Audit:* In the event Contractor submits request for additional compensation as a result of a change or differing Site conditions, or as a result of delays, acceleration, or loss of productivity, **Owner reserves right, upon written request, to audit and inspect Contractor's books and records relating to the Project**. Upon written request for an audit, Contractor shall make its books and records available within 14 days of request. Owner shall specifically designate identity of auditor. As part of audit, Contractor shall make available its books and records relating to the Project, including but not limited to Bidding Documents, cost reports, payroll records, material invoices, subcontracts, purchase orders, daily timesheets, and daily diaries. Audit shall be limited to those cost items which are sought by Contractor in a change order or claim submission to Owner.

SC-13.03. Delete Paragraph 13.03.B in its entirety and insert the following in its place:

13.03.B. Contractor shall employ an independent testing laboratory or testing agency and shall be responsible for arranging and shall pay for specified tests, inspections, and

approvals required for Owner's and Engineer's acceptance of the Work at the Site except:

13.03.B.1. costs incurred in connection with tests or inspections pursuant to Paragraph 13.04 shall be paid for as provided in said paragraph; and

13.03.B.2. as otherwise specifically provided in the Contract Documents.

SC-13.03. Add the following language at the end of Paragraph 13.03.D:

Tests required by Contract Documents to be performed by Contractor that require test certificates be submitted to Owner or Engineer for acceptance shall be made by an independent testing laboratory or agency licensed or certified in accordance with Laws and Regulations and applicable state and local statutes. In the event state license or certification is not required, testing laboratories or agencies shall meet the following applicable requirements:

13.03.D.1. Basic requirements of ASTM E329, "Standard Specification for Agencies Engaged in Construction Inspection, Special Inspection, or Testing Materials used in Construction" as applicable.

13.03.D.2. Calibrate testing equipment at reasonable intervals by devices of accuracy, traceable to the National Institute of Standards and Technology or accepted values of natural physical constants.

SC-14.02. Delete Paragraph 14.02.C.1 in its entirety and insert the following in its place:

14.02.C.1. Forty-Five days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due and when due will be paid by Owner to Contractor.

SC-14.02. Add the following new paragraph(s) immediately after Paragraph 14.02.D.3:

14.02.D.4. Items entitling Owner to retain set-offs from the amount recommended, including but not limited to:

14.02.D.4.a. Owner compensation to Engineer at an estimated average rate of $150 per each extra personnel hour for labor plus expenses, if applicable, because of the following Contractor-caused events:

14.02.D.4.a.(2). return visits to manufacturing facilities to witness factory testing or retesting;

14.02.D.4.a.(3). Submittal review in excess of two reviews by Engineer for substantially the same submittal, in accordance with Paragraphs 6.17.E.2 and 6.17.E.3 of these Supplementary Conditions;

14.02.D.4.a.(4). evaluation of proposed substitutes and making changes to Contract Documents occasioned thereby, in accordance with Paragraph 6.05.E of these Supplementary Conditions;

14.02.D.4.a.(5). Overtime worked by Contractor necessitating Engineer, and their officers, directors, members, partners, employees, agents, and other consultants and subcontractors of each, Resident Project Representative or Resident Project Representative's Site staff, if any, to work extraordinary overtime in accordance with Paragraph 6.02.C. of these Supplementary Conditions.

14.02.D.4.b. Liability for liquidated damages incurred by Contractor as set forth in the Agreement.

SC-14.06. Add the following new paragraph immediately after Paragraph 14.06.A:

14.06.B. In accordance with Louisiana Statute 38:2248, punch lists will include cost estimate for each item of work identified by Engineer based on mobilization, labor, materials, and equipment costs of correcting each punch list item. Completed punch list items will be paid upon expiration of 45-day lien period.

SC-14.07. Delete Paragraph 14.07.C.1 in its entirety and insert the following in its place:

14.07.C.1. Forty-five days after presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and, will be paid by Owner to Contractor.

The percentage of the value of the work done, as stated in Paragraph 14.02.A.3 of the General Conditions, will be withheld by the Owner for a period of not less than forty-five (45) consecutive calendar days after the contract has been accepted by the Owner, and such acceptance has been recorded in the Office of the Recorder of Mortgages for the Parish of Orleans. At the end of the forty-five (45) day period, the percentage withheld by the Owner, will be paid to the Contractor, less any sums that may be legally deducted under any provisions of this contract, upon the Contract or furnishing the Owner with a certificate from the Recorder of Mortgages for the Parish of Orleans, certifying that the contract is clear of all liens and privileges.

SC-14.10. Add the following new paragraph immediately Paragraph 14.09.2:

SC-14.10 *Maintenance Period*. The maintenance period under this contract, except as otherwise specifically provided for herein, shall be for a period of forty-five (45) consecutive calendar days beginning from the day after the contract has been accepted by the Owner, and such acceptance has been recorded in the Office of the Recorder of Mortgages for the Parish of Orleans. During the maintenance period the Contractor will

repair, at his own expense, all defects in the work that may arise, to the satisfaction of the Engineer. The Contractor shall restore all surfaces for which he is responsible under the specifications, whether unimproved, partially improved, or paved surfaces (See Section B of the General Specifications), and maintain them in good condition to the satisfaction of the Engineer. If the Contractor should fail or refuse to repair, at his own expense, any defects in structures or surfaces developing before the expiration of the aforesaid forty-five (45) days or to adjust satisfactorily any claims for damages to public or private property, the Owner shall have the right to continue to hold the retainer and to make the necessary repairs and to satisfy the claims for damages, by such means as the Owner shall elect, and to reimburse itself for the cost of these repairs and satisfied claims, out of the said retainer. Any surplus of this retainer will then be paid the Contractor, under the conditions above stated, any deficiency shall be made good by the surety.

SC-15.03.A. Delete the first sentence of Paragraph 15.03.A in its entirety and insert the following in its place:

Upon 7 days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract or any portion of the Contract.

SC-15.04. Delete Paragraph 15.04 in its entirety.

SC-16.01. Delete Paragraph 16.01 in its entirety and insert the following in its place:

SC-16.01 *Meet to Confer and Negotiate*

16.01.A. Engineer's action under Paragraph 10.05.C shall become final and binding 30 days after receipt of written notice of Engineer's action or decision unless, within that time period, Owner or Contractor gives to the other party written notice of intent to submit the Claim to a process of bilateral negotiations as set forth below.

16.01.B. Within 30 days of the delivery of such notice, Owner and Contractor shall meet and confer regarding the Claim. A good-faith effort to negotiate resolution shall be made by both parties.

16.01.C. If the negotiations contemplated by Paragraph SC-16.01.B are unsuccessful, management representatives of Owner and Contractor at least one tier above the individuals who met under SC-16.01.B shall meet, confer, and negotiate within 30 days of the closure of the unsuccessful negotiations.

16.01.D. If the Claim is not resolved by negotiation, Engineer's action under Paragraph 10.05.C shall become final and binding 30 days after termination of the negotiations unless, within that time period, Owner or Contractor:

16.01.D.1. gives to the other party written notice of intent to submit the Claim to a court of competent jurisdiction; or

16.01.D.2. agrees with the other party to submit the Claim to another dispute resolution process.

16.01.E. Notwithstanding any applicable statute of limitations, a party giving notice under Paragraph SC-16.01.D.1 shall commence an action on the Claim within 1 year of giving such notice. Failure to do so shall result in the Claim being time-barred and Engineer's action or denial shall become final and binding.

END OF SECTION

ATTACHMENT TO GENERAL SPECIFICATIONS

STATEMENT OF POLICY

It is the policy of the Sewerage and Water Board of New Orleans that all work places associated with its operation, maintenance, improvements, and expansion be kept drug free. In order to insure this, the Sewerage and Water Board has approved the following drug testing policy to be implemented on this contract.

NOTICE

The contractor shall notify all personnel to be employed on this contract that they must submit to drug testing upon the occurrence of any accident, injury, or unsafe and hazardous incident which involves them. Agreement to submit to such drug testing shall be required for the employment of all personnel under this contract.

PENALTIES

Any employee who refuses to agree to testing under this policy or who refuses to be drug tested after the occurrence of any accident, injury or unsafe and hazardous incident which involves them, or who fails to report any such accident, injury or incident within twenty-four (24) hours of its occurrence, shall be deemed incompetent under Paragraph 47 of the General Specifications. Any employee found to have a positive test result after his conformational testing shall be deemed incompetent under Paragraph 47 of the General Specifications. Any employee deemed incompetent under these provisions shall be removed by the contractor from work under this contract and any other current Board contract.

TESTING PROCEDURE

The contractor shall while performing this contract, require any of its employees who are involved in an accident, injury or unsafe and hazardous incident while in the course and scope of their employment, whether vehicular or non-vehicular in nature, to be tested for blood alcohol or drug levels through a laboratory approved by the National Institute for Drug Abuse. Said employee shall provide a testing sample as soon as possible after such accident, injury or incident, but no longer than twenty-four (24) hours from the time of the occurrence. The contractor shall provide copies of the results of the initial testing on the samples involved to the Risk Manager of the Sewerage and Water Board of New Orleans as soon as such results are known. If the initial testing reveals a positive result, the contractor shall forward the remainder of the original testing sample to a second, conformational testing. The Sewerage and Water Board of New Orleans shall consider any result to be positive if it indicates any level which exceeds the levels set forth as follows:

CUT-OFF LEVELS INDICATING POSITIVE TEST RESULTS

The following initial cut-off levels shall be used when screening specimens to determine whether negative or positive:

	Initial Test Level (ng/ml)
Marijuana metabolites	50
Cocaine metabolites	300
Opiate metabolites	300
Phencyclidine (PCP, etc.)	25
Amphetamines	1000
Alcohol	.05% by weight based on grams of alcohol per 100cc of blood
LSD	150
Barbiturates	300
Benzodiazepines	300

Quantitative GC/MS confirmation procedures at the following cut-off values shall be used for the following drugs:

	Confirmatory Test Level (ng/ml)
Marijuana metabolites*	10
Cocaine metabolites**	150
Opiates (Morphine, Codeine)	150
Phencyclidine (PCP, etc.)	25
Amphetamines (amphetamine, Methamphetamine)	300
LSD	150
Barbiturates	300
Benzodiazepines	300

* Delta-9-Tetrahydrocannabinol - 9-Carboxylic Acid
** Benzoylecgonine

The contractor shall choose the laboratory to be used for drug testing, and shall identify such laboratory to the Risk Manager of the Sewerage and Water Board prior to receiving approval to start work. All laboratories shall be approved by the National Institute for Drug Abuse.

The contractor shall notify the Board's Risk Manager immediately of the results of any conformational testing.

The Contractor's Senior Project Superintendent working in consultation and conjunction with the Board's Risk Manager and the Board's Engineer, shall determine whether an accident, injury or unsafe or hazardous incident occurred. The Safety Department of the Sewerage and Water Board reserves the right to investigate any such matter and make a complete report to the Executive Director of the Sewerage and Water Board whose decision shall be final.

The Sewerage and Water Board shall not be liable for any cause of action of any employee of the contractor brought against the contractor as a result of this policy. The Sewerage and Water Board shall not be liable for the contractor's failure to stipulate adherence to the terms and conditions of this drug testing policy as a condition of employment of any employee on this contract. The Board shall not release the contractor from his responsibilities under the policy unless failure to adhere to the conditions of this policy shall be a direct result of any action taken by the Board.

These requirements shall be acknowledged by signature of the contractor's authorized representative in the space provided in the "Form of Proposal".

Attachment 2 - Safety Orientation Notice

Welcome

We welcome you to the S&WB and request your assistance in maintaining our Safety Standards. For the safety of yourself and everyone working at the S&WB, you are asked to observe the following safety precautions. When this notice has been read thoroughly, a senior representative of your company is required to distribute this information to all employees who will be affected. You may call the Board's Risk Management Department at (504) 585-2382 if you have any questions.

Basic

1. Smoking will be allowed in designated areas only.

2. Horseplay, practical joking and fighting are positively prohibited.

3. The use or possession of illegal drugs or intoxicating beverages is strictly prohibited on all S&WB property.

4. Housekeeping is a must. We will keep our area safe and free from litter and expect you do to the same.

5. Handrails must always be used when going up and down ladders or stairs.

6. When working in confined spaces, the contractor must be in full compliance with Occupational Safety and Health Administration (OSHA) Standard # 29CFR 1910.146 at all times. Atmospheric conditions such as adequate ventilation, the presence of oxygen and the absence of explosive gases must be assured before working in voids, tanks, or other enclosed spaces.

7. Radios must be turned off.

Emergency

8. The S&WB Emergency Response Plan is a document, which provides specific notification instructions to be followed in case of hazardous material spills. The Board's Environmental Affairs Office phone number is 942-3855 during normal business hours 7:30 a.m. to 4:00 p.m.

9. The Board's 24-hour emergency lines are (504) 529-2837 and 865-0575 (Central Control Dispatcher, Carrollton Plant.)

10. Since Board contracts are performed under various circumstances at various locations, prior to beginning any work, the contractor should consult with the Board employee who is responsible for monitoring the contract in order to establish the most effective procedures for handling emergencies.

Transportation

Warning signals and lights shall be used as follows:

11. Rotating beacons shall be used if your vehicle is so equipped.

12. Tail lights / emergency flashers shall be used.

13. Orange reflector type safety cones shall be placed to give other motorists warning.

14. If vehicle is moving, backing, or parking, proper traffic control shall be exercised.

Protective Clothing and Equipment

15. All personnel who are exposed to eye hazards will wear safety glasses. Hard hats will be worn at all times while an employee is in the immediate vicinity of overhead hazards or while operating heavy equipment without a Rollover Protection Device.

16. Protective clothing and equipment such as rubber aprons and gloves, eye and face protection, approved respirators or dust masks will be worn when handling all harmful chemicals.

Reporting

17. Defective equipment, machinery, hazardous conditions, or unsafe work practices or conditions shall be reported immediately to your Supervisor / Foreman who will then contact proper S&WB personnel for corrections.

18. All injuries will be reported to the Risk Manager, (504) 585-2422, or to the Safety Unit, (504) 585-2522, regardless of how minor an injury may seem.

19. S&WB employees may hold safety meetings to discuss and promote safe working conditions and accident prevention. You may be asked to attend.

Work Smart

20. Stay alert at all times, know what is going on around you. Know the safe operating procedures concerned with your assigned duties. When your duties may influence the safety of Board employees, notify the employees and their supervisors first.

21. Vendor / Contractors shall at all times demonstrate strict compliance with all Federal, State and Local regulations regarding safety, including but not limited to, all relevant Department of Environmental Quality (DEQ), Department of Transportation (DOT), Environmental Protection Agency (EPA), and Occupational Safety and Health Act (OSHA) regulations.

22. The Vendor / Contractor will at the request of the Risk Manager and/ or Safety Manager remove any of his employees found to be creating or contributing to unsafe conditions.

23. The following items are not allowed on any S&WB Facility or jobsite:

- Firearms and Ammunition
- Alcohol and illegal drugs

ATTACHMENT 3

Sewerage and Water Board of New Orleans
Electrical Safety Clearance Procedure

Definitions:

Operator: The Board employee who is on-site and in responsible charge of the operation of the plant, station, or other facility.

Out of Service: The electrical/mechanical disconnection of equipment which is to remain inoperable.

Power Dispatcher: The shift employee on duty at Central Control at the time safety clearance occurs.

Signee: The person who actually tags-out equipment for safety clearance.

Supervisor/Foreman: The Board employee who is the supervisor/foreman in responsible charge of the repair/maintenance of one or more work locations which requires safety clearance. This person may not necessarily be "on-site" at any particular location.

Tag-out: The physical tagging of equipment by an operator for the purpose of disabling equipment.

Lock-out: The physical locking of equipment by an operator for the purpose of disabling equipment.

General Provisions

1) All equipment repair/maintenance work which is scheduled and requires safety clearance should be presented to Central Control at the beginning of each work day by the supervisor/foreman/electrical engineer in charge of the repair/maintenance. Twenty four (24) hour advance notice of scheduled work for major outages is desirable; however, it is understood that due to the nature of the services provided by the Board this preferred notice may not be possible for every safety clearance.

2) In cases where two (2) or more crafts are working on, or require safety clearance on the same equipment, the supervisor/foreman/electrical engineer for each craft must follow the appropriate safety clearance procedure and the equipment must be tagged out for each craft's signee. No equipment can be tested and/or restored to service until all tags have been removed in accordance with the tag removal procedure.

3) When an operator requests service for equipment at an unmanned facility, i.e. an unmanned sewer station or unmanned underpass station, from either Electrical Maintenance or Mechanical Maintenance, the appropriate maintenance department shall request the responsible operator to tag-out the equipment. When the appropriate maintenance department, in the course of servicing this equipment, requires restoration of power, the appropriate maintenance department shall contact the responsible operator directly (if operator is present) or by radio or telephone (if operator is absent) and request that the responsible operator grant his permission. If the power is to be restored for only a short duration, the appropriate maintenance department shall thereafter contact the operator for permission to either remove power or restore power, as often as needed. The operator shall log each request. If the request to restore power is for a short duration only, and the operator does not received contact from the appropriate maintenance personnel to remove power again, the operator shall make every attempt to contact the appropriate maintenance personnel in order to ensure that no accident has occurred.

4) If equipment must remain "Out of Service" upon completion of the on-site work, the signee must request their tag be replaced with an "Out of Service" tag in the name of their department: e.g. "Out of Service - Electrical Maintenance", in addition it must be physically locked-out by that department. However the "Out of Service" tag does not relinquish the responsibility of following the safety clearance procedure each day that piece of equipment is worked on.

5) Any equipment restored to service after being tagged "Out of Service" must be tested through operational test procedures. The signee must remain, when possible, on-site until testing is complete.

6) Any individual involved in these procedures may halt the procedure at any time if it is felt the safety of the personnel and/or equipment warrants said stoppage, or if conditions within the system change that may require postponement of the work.

7) In the event the responsible person, signee, leaves the job site without releasing the cleared equipment and is unreachable to release their tag-out the following procedure must be enacted before the signees name, tag-out, can be removed from the cleared equipment.

    1) Cause must be established by the senior power dispatcher giving reason to remove the tag-out.

2) Senior power dispatcher must receive orders from the Chief of Operations or higher, in his absence, to remove said tag-out.

3) Concurrence given by a senior representative of the following:

a) Department or company to witch the signee works for.

b) Senior representative of the plant, station, facility in which the tag-out occurs.

c) If job site is in the field then, inspection by Electrical Engineering assuring work has halted for the day.

Once all areas have been satisfied then the senior power dispatcher may have the signees tag-out removed.

NOTE: The above and following procedures may be deviated from above at the discretion of the power dispatcher in cases of emergency.

Safety Clearance Procedure
25 Hertz System
"Non-Sewerage and Water Board Personnel"

1) The Company or responsible person representing that company shall first contact Electrical Engineering in regards to their outage request. Electrical Engineering will dispatch personnel to the job site and identify all equipment within close proximity to the work which should be cleared for safety.

NOTE: After normal working hours clearance request will be routed through Central Control who will notify the proper personnel in Electrical Engineering. It will be the responsibility of Electrical Engineering to identify said feeders.

2) Eletrical Engineering will then contact the power dispatcher informing them of; the company, the person supervising the work, the work to be performed, and supplies the power dispatcher with a clearance list.

3) Electrical Engineering will then direct the company's signee to personally appear at any Board facility involved in the clearance prior to the request. Upon arrival at a Board facility the signee will contact the power dispatcher making their clearance request.

4) The power dispatcher reviews their one line schematics for any additional equipment they feel is required for safety.

5) If the request involved equipment within a station or facility the power dispatcher then notifies the operator of the work to be performed and supplies the operator with a list of the clearance request.

6) The operator makes a visual inspection of the work site and adds to the clearance list any additional equipment which they note as being involved in or in close proximity to the work site. A finalized clearance list is then agreed upon by all parties involved.

7) The power dispatcher, with assistance from other operating personnel as required and through normal operating procedures, will disconnect from all power sources all equipment on the finalized list.

8) After the completion of step seven (7), with the company's signee at a Board facility, the company's signee will be notified of the disconnection of the equipment by the power dispatcher. The company's signee will request the operator at each location to place a tag-out with the company name/signee's name on each piece of equipment on the clearance list.

9) After receiving a tag-out report from the operators, the power dispatcher will then verify the tag-out reports against their finalized clearance list. If satisfactory, the power dispatcher will verify with the company's signee what was tagged-out. The company's signee will then be allowed to begin work.

10) At this point prior to the beginning of any actual work it is the responsibility of the person or persons performing the work to check the equipment with a voltage tester. If all voltage testing is satisfactory, "no voltage", work may begin.

NOTE: Due to the nature of some work it may be necessary that voltage be present.

11) Upon completion of the on-site work, the company's signee must report to a Board facility, involved in the clearance. At this point the company's signee will request the operator at each location to remove their tag-out with the company name/signee name off each piece of equipment. The operator and power dispatcher may restore the equipment to its connected position and test same following standard operating procedures.

12) If the equipment is to remain out of service, the company's signee must request their tag be removed and an appropriate "Out of Service" tag in the name of their company be placed on the equipment. The equipment will also be physically locked-out by the operator at each location, which would prevent the reconnection and testing process.

13) When "Out of Service" equipment is to be returned back into service, only an employee of the company which originally placed the "Out of Service" tag may request it be removed, returning said equipment into service.

Safety Clearance Procedure
60 Hertz System
"Non Sewerage and Water Board Personnel"

1) The company or responsible person representing that company shall first contact Electrical Engineering in regards to their outage request. Electrical Engineering will dispatch personnel to the job site and identify all equipment within close proximity to the work which should be cleared for safety.

2) Electrical Engineering will then contact the power dispatcher, if the work to be performed is outside of a station. The operator, if the work to be performed is inside the station. They will inform them of; the company, the person supervising the work, the work to be performed, and supplies the power dispatcher or operator with a clearance list.

3) The Electrical Engineering will then direct the company's signee to personally appear at any Board facility involved in the clearance prior to the request. Upon arrival at a Board facility the signee will conduct their business with the operator or power dispatcher based on the procedures listed below.

4) The power dispatcher reviews their one line schematics or the operator make a visual inspection of the work site and adds to the clearance list any additional equipment which they note as being involved in or in close proximity to the work site. A finalized clearance list is then agreed upon by all parties involved.

5) **If handled through the power dispatcher:**
The power dispatcher, with assistance from other operating personnel as required and through normal operating procedures, will disconnect from all power sources all equipment on the finalized clearance list.

If handled through the operator:

The operator will contact the power dispatcher informing them of the work to be performed along with a clearance list request. The power dispatcher reviews their one line schematics for any additional equipment they feel is required for safety. A finalized clearance list is then agreed upon by all parties involved. The operator will then through normal operating procedures disconnect from all power sources all equipment on the finalized clearance list.

6) After the completion of step five (5), with the company's signee at a Board facility, the company's signee will be notified of the disconnection of equipment by the operator or power dispatcher. The company's signee will then request the operator at each location to place a tag-out with the company's name/signee name on each piece of equipment on the clearance list.

7) **If handled through the operator:**

The operator will then contact the power dispatcher providing then with a tag-out report for logging purposes.

8) At this point prior to the beginning of any actual work it is the responsibility of the person or persons performing the work to check the equipment with a voltage tester. If all voltage testing is satisfactory, "no voltage", work may begin.

NOTE: Due to the nature of some work it may be necessary that voltage be present.

9) Upon completion of the on-site work, the company's signee must report to a Board facility involved in the clearance. At this point the company's signee will request the operator at each location to remove their tag-out with the company's name/signee name off each piece of equipment. The operator and/or power dispatcher may restore the equipment to its connected position and test same following standard operating procedures.

10) If the equipment is to remain out of service the company's signee must request their tag be removed and an appropriate "Out of Service" tag in the name of their company be placed on the equipment. The equipment will also be physically locked-out by the operator at each location, which would prevent the reconnecting and testing process.

11) When "Out of Service" equipment is to be returned back into service, only an employee of the company which originally placed the "Out of Service" tag may request it be removed, returning said equipment into service.

ATTACHMENT 4 - SEWERAGE and WATER BOARD of NEW ORLEANS

Storm Water Pollution Prevention Plan (SWPPP)
And
Storm Water Best Management Practices (BMP) Requirements

GENERAL

1. The contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. A suggested SWPPP Templates and Sample Inspection Report, as well as other valuable information can be found at EPA's website http://cfpub.epa.gov/npdes/stormwater/swppp .cfm.

2. Contractor shall implement, maintain, inspect and remove all erosion and sediment controls identified in the SWPPP. The program shall address both common construction activities and extraordinary events.

3. Contractor shall include Water Pollution Control Drawings (WPCD) in the SWPPP to illustrate the locations, applications and deployment of Best Management Practices (BMPs) identified in the SWPPP. The WPCDs shall be included as an attachment to the SWPCP.

4. Best Management Practices (BMPs): A Best Management Practice is a technique, process, activity, or structure used to reduce the pollutant content of a storm water or non-storm water discharge. BMPs may include simple, non-structural methods such as good housekeeping, staff training, and preventive maintenance. Additionally, BMPs may include structural modifications such as the installation of berms, canopies or treatment control

5. The Contractor shall comply with laws, rules, and regulations of the State of Louisiana and agencies of the United States Government prohibiting the pollution of lakes, wetlands, streams, or river waters from the dumping of contaminates, refuse, rubbish or debris.

6. The contractor shall submit six (6) copies of the SWPPP, a minimum of 10 working days prior to beginning construction, to the Engineer. **Construction shall not begin until the SWPPP is approved.** Contractor shall update the SWPPP as necessary during the work to prevent contamination of the storm water collection system.

7. Before start of work, Contractor shall train all employees and subcontractors on the approved SWPPP and related WPCD and provide the Sewerage and Water Board with written documentation of said training.

8. Suggested BMPs can be obtained from Ella Barbe, LA DEQ Small Business Assistance Program, 201 Evans Rd. Bldg. 4, Suite 420 Harahan LA. Phone 504-736-7739, e-mail: ella.barbe@la.gov

CONSTRUCTION

The contractor shall keep a copy of the SWPPP on the job site. The contractor shall provide continuously at the jobsite all the tools, equipment, and materials necessary to implement the SWPPP at all times from project initiation through completion, including any punchlist or warranty work on the project. At a minimum the following requirements shall be met as applicable, to the maximum extent practicable, at construction sites:

1. **Storm Drain System Protection:** At the first order of work, the Contractor shall protect the existing storm drain system from entrance of construction debris and pollutants. Such protection shall include implementing the BMPs as outlined in the SWPPP. Protection shall prohibit the discharge of untreated runoff from temporary or permanent street maintenance/landscape maintenance material and waste storage areas from entering the storm drain system. Sediment that is generated on the project site shall be retained using structural drainage controls. In addition, the protection system shall have a minimum of three features: 1) a particulate filter of geosynthetic material securely fastened in place such that it cannot be bypassed without significant physical damage; 2) a prefilter for the particulate filter; and 3) on-hand materials to close off the inlet or opening in the case of a significant pollution spill. Contractor shall monitor and maintain all storm drain inlet protection devices during rain events to prevent flooding.

2. **Material Management & Storage:** No construction-related materials, wastes, spills or residues shall be discharged from the project site to streets, drainage facilities or adjacent properties by wind or runoff. All materials and/or equipment storage areas where liquid construction materials are placed shall be protected by a physical barrier capable of containing the entire volume of stored liquid materials. During active construction activities, portions of the barrier may be removed for access. However, the barrier materials must be readily accessible for replacement by onsite construction personnel. The barrier must be in place at all times during the absence of Contractor personnel at the storage site. Building materials shall be placed on pallets and covered in event of rain. Do not store materials in the street or gutter area.

3. **Equipment & Vehicle Maintenance:** Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site and shall not be allowed to discharge from the project site to streets, drainage facilities or adjacent properties by wind or runoff. The Contractor shall inspect vehicles and equipment on each day of use. Leaks shall be repaired off-site if possible. If necessary to repair on site, the runoff must be contained or the problem vehicle or equipment shall be removed from the project site until repaired. If necessary, drip pans shall be placed under the vehicles or equipment while not in use to catch and/or contain drips and leaks.

4. **BMP Inspection:** The contractor shall inspect all pollution control BMPs regularly. The Contractor shall also repair/replace any damaged or clogged element on a daily basis. During periods of precipitation where any runoff occurs, the system shall be checked twice a day, seven days a week, whether or not any work has been performed. The daily checks shall be between 6 a.m. and 9 a.m., and 4 p.m. to 8 p.m. The contractor shall keep a monitoring inspection log of each inspection.

5. **Spill Prevention & Cleanup Plan:** Contractor shall have a spill prevention plan and spill cleanup materials readily available and addressed in the SWPPP. Spills shall be cleaned

up immediately using dry methods if possible. Spill cleanup material shall be properly disposed off site. Contractor shall keep a record of any spills in the inspection log. In addition, at the end of the project, the Contractor must certify that all contaminated materials have been properly disposed in accordance with the SWPPP.

6. **Asphalt & Concrete Activities:** Asphalt and concrete activities shall be scheduled for dry weather. Contractor shall prohibit saw cutting during a storm event of 0.25 inches or greater. Store bags of cement away from gutters and storm drains, sealed and covered, protected from rainfall runoff and wind. Place tarp under cement mixer before operating to catch spills. Never dispose of cement washout or concrete dust onto driveways, streets, gutters or storm drains.

7. **Sidewalk Washing:** The following methods should be utilized to prevent discharge of sidewalk cleaning wastewater into the storm drain system:

    a. Sweep and pick up all areas to be cleaned before using water.
    b. Manually scrape gum from sidewalks and other surfaces.
    c. Must use high pressure and low volume of water with no additives and at an average usage of 0.006 gallons per square foot of surface area to be rinsed.
    d. Use a wet/dry vacuum to collect wash water for disposal. Large volumes of wash water may require the use of a small sump pump to remove wash water from the job site.
    e. One or more of the following methods are recommended to prevent pollutants from entering the storm drain system:
        - Sandbags can be used to create a barrier around storm drains. *
        - Rubber mats or plugs can be used to seal drain openings. *
        - Temporary berms or containment pads help keep water on site. *
        - Use berms of sandbags to direct wash water to landscaping. *
        - Use large squeegees to accumulate sheet flow for collection.

        * Remember to remove plugs, berms, and sandbags or you may be liable for possible flooding.

    f. Wash water that may contain hazardous waste such as oil-saturated absorbents, water with lead or other heavy metals from oxidized paint, and solvent cleaners requires special treatment and must be disposed of through a hazardous waste facility.

8. **Employee BMP Training:** Contractor shall train employees and subcontractors on BMP implementation, general good housekeeping, and proper spill containment and cleanup. Before start of work, Contractor shall provide the Board with written documentation of training and keep all documentation in the SWPCP.

9. **Inspection:** Contractor shall inspect and repair or replace, as needed, all job site BMPs a minimum of:
    - Biweekly
    - Before, during and after a major rain event.

    Contractor shall document the inspections in the SWPPP.

10. **Dewatering:** Avoid dewatering discharges where possible by using the water for dust control, infiltration, etc..

ATTACHMENT 5
GENERAL WAGE RATES

The contractor shall abide by the Davis-Bacon Act Wage Decision. This title page is followed by the General Wage Decision applicable to SWB Construction.

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"General Decision Number: LA20250005 07/04/2025

Superseded General Decision Number: LA20240005

State: Louisiana

Construction Type: Heavy

Counties: Jefferson, Orleans, Plaquemines, St Bernard, St Charles, St James, St John the Baptist and St Tammany Counties in Louisiana.

HEAVY CONSTRUCTION PROJECTS (Includes flood control, water & sewer lines, and water wells. Also includes elevated storage tanks in all listed parishes except Plaquemines and St. James. Excludes industrial construction-chemical processing, power plants, and refineries.)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at

http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2025
1	04/04/2025
2	06/20/2025
3	07/04/2025

* CARP0729-001 01/01/2025

	Rates	Fringes
MILLWRIGHT	$ 40.34	14.16

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* CARP1846-006 07/01/2024

	Rates	Fringes
CARPENTER (formbuilding/formsetting and Piledrivers)	$ 32.59	10.52

ELEC0130-005 12/02/2024

JEFFERSON, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JAMES, AND ST. JOHN THE BAPTIST PARISHES

	Rates	Fringes
ELECTRICIAN (including low voltage wiring)	$ 35.00	16.03

ELEC1077-002 05/26/2025

ST. TAMMANY PARISH

	Rates	Fringes
ELECTRICIAN (including low voltage wiring)	$ 30.35	3%+11.55

ENGI0406-018 07/01/2009

	Rates	Fringes
OPERATOR: Power Equipment		
Bulldozer	$ 21.26	6.70
Mechanic	$ 23.31	6.70

PLAS0567-003 08/01/2022

JEFFERSON, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JOHN THE BAPTIST, and ST. TAMMANY PARISHES

	Rates	Fringes
Cement Mason/Concrete Finisher	$ 30.47	7.97

PLAS0812-003 01/01/2022

ST. JAMES PARISH

	Rates	Fringes
Cement Mason/Concrete Finisher	$ 31.83	5.90

PLUM0060-002 06/05/2023

JEFFERSON, ORLEANS, PLAQUEMINES, ST. BERNARD, ST. CHARLES, ST. JAMES (Southeastern Portion), ST. JOHN THE BAPTIST, and ST. TAMMANY PARISHES

	Rates	Fringes
Plumbers (excluding pipe laying)	$ 31.70	13.85

PLUM0198-005 12/08/2022

ST. JAMES PARISH (Northwestern Portion)

	Rates	Fringes
PLUMBER (excluding pipe laying)	$ 32.42	16.50

* SULA2004-007 05/13/2004

	Rates	Fringes
CARPENTER (all other work)	$ 13.75 **	2.60
Laborers:		
Common/Landscape	$ 9.88 **	0.00
Fence	$ 11.24 **	0.00
Flagger	$ 8.58 **	0.00
Mason Tender	$ 7.25 **	0.00
Pipelayer	$ 9.84 **	0.00
PIPEFITTER (excluding pipelaying)	$ 17.52 **	4.51
Power equipment operators:		
Backhoe/Excavator	$ 14.42 **	0.00
Crane	$ 16.34 **	3.30
Dragline	$ 16.50 **	0.00
Front End Loader	$ 13.89 **	0.00
Oiler	$ 10.03 **	0.00
Truck drivers:		
Dump	$ 11.01 **	0.00
Pickup	$ 12.25 **	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.75) or 13658 ($13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including

their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio.

The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

==

END OF GENERAL DECISION"

ATTACHMENT 6

Map Indicating the Location of the Archaeological Sites and a State of Louisiana Archaeological Site Form

SSERT DOCUMENT CONTROL
CCN# 30490
FILE# 12.6.1.6
DATE RECEIVED 4/17/03
ASSIGNED TO LS
ACTION REQUIRED 1
cc: MO, SM, SM, LO, LO

KATHLEEN BABINEAUX BLANCO
LIEUTENANT GOVERNOR

State of Louisiana

OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF ARCHAEOLOGY

SECRETARY

LAUREL WYCKOFF
ASSISTANT SECRETARY

April 8, 2003

Mr. Louis Jackson
Montgomery Watson Harza
1341 Poydras Street
Suite 1420
New Orleans, LA 70112

Re: Sewer System Evaluation and Rehabilitation
Mid-City and Lower Ninth Ward Basins
New Orleans, Orleans Parish, Louisiana

Dear Mr. Jackson:

We are in receipt of your letter dated February 12, 2003, concerning the above-proposed project. There are a number of archaeological sites (25) in the project areas and, also, a number of National Register historic districts (7) in the project areas.

We have enclosed a map indicating the location of the archaeological sites and a State of Louisiana Archaeological Site Form for each, as well as maps indicating the locations of the NRHP districts with the project areas. These should provide you with the information requested. Prior to project implementation, we will need to review the final project design plans in order to determine the project's effect on historic properties.

If you have any questions, please contact Jason Emery in the Division of Archaeology, at (225) 342-8170 or Mike Varando in the Division of Historic Preservation, at (225) 342-8160.

Sincerely,

Laurel Wyckoff
State Historic Preservation Officer

LW:je:mv

STATE OF LOUISIANA
SITE RECORD FORM

Site Name: U. S. Branch Mint
State Survey No: 16ORS2
Other Site Designation:
Parish: Orleans
Instructions for Reaching Site:
Located in square bounded by Esplanade, N. Peters, Barracks and Decatur Streets
USGS Quad (Name, date, series): New Orleans East (1966) 7.5'
Quad No: 33-PB quarter of the quarter of Section Township Range:
UTM Coordinates: Zone: 15 Easting: Northing:
Geographical Coordinates: Latitude: Longitude:

PHYSICAL SETTING

Land Form: Natural levee
Slope:
Geologic Processes:
Elev. ft AMSL:
Site Position:
Near Water: Mississippi River
Flooding:
Soil Characteristics: Commerce
Floral Communities:
Faunal Communities:
Other Potential Resources:
Nearest Known Site:

SITE DESCRIPTION

Site Size:
Plan:
Orientation:
Stratigraphy:
Artifact Density:
Artifact Distribution:
Cultural Features:
Mint building erected in mid 1800's, placed on ground on which was once located wall & bastion of Fort of St. Charles
Cultural Affiliation:
Historic- mid 1800's/Fort (historic exploration)
Presumed Function: U. S. Government building/ military

COLLECTIONS

Survey Meth: Test units
Assessment of Collecting Conditions:
Description of Material:

CONDITIONS

Present Use:
Erosion or Disturbance: Urban development
Probable Future Destruction:

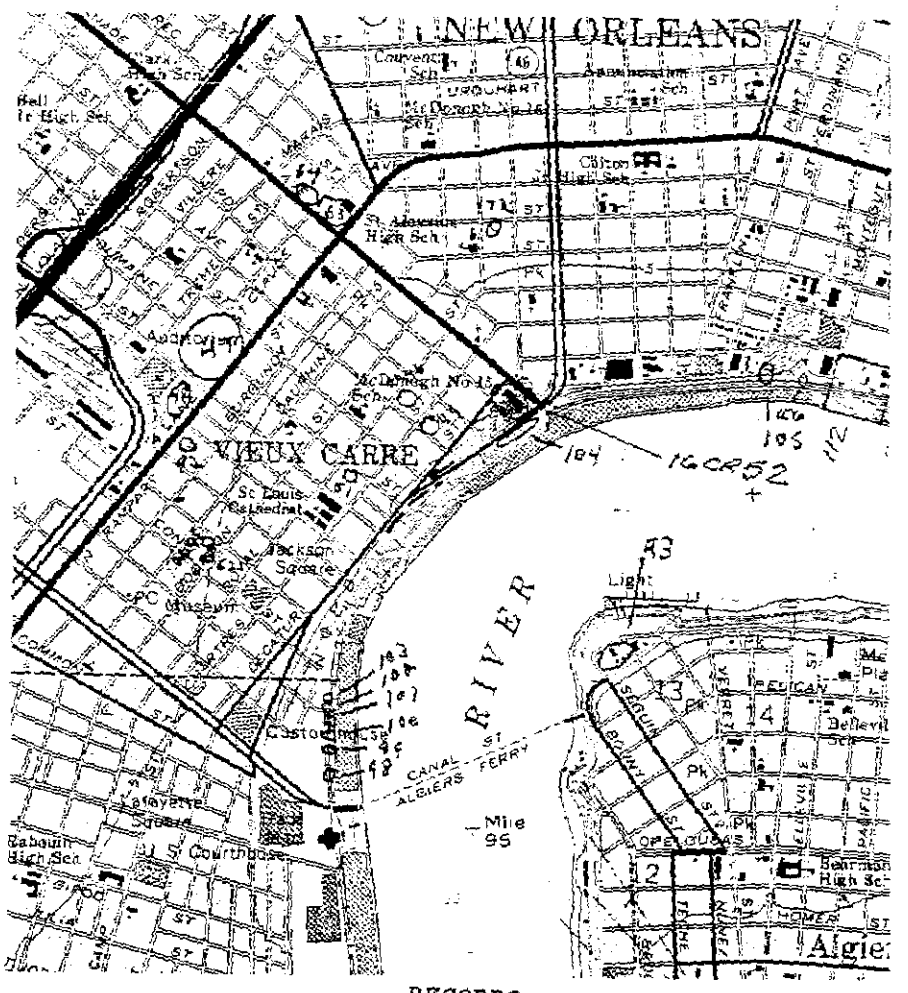
SITE EVALUATION

Site Number: 16OR52

Research Potential:

State/National Register Eligibility: Listed-see site form references; National Landmark
Recommendations:

QUAD MAP OF SITE AREA



RECORDS

Owner and Address:

Tenant and Address:

Informants:
Prev. Invest:
Previous Collections and Availability:
DAHP #17501-17683
References: Castille, George (1978); Gibbens Dorothy (1978)
Photos and Maps: DAHP C78/670-697, 699-1185, B78/1232-1289, 1687 (cont)
Remarks:
Fort St. Charles was the last of the fire periphery forts build to protect the Vieux Carre and was torn down about 1820
Recorder: Castille/Gibbens

Date: 1978

STATE OF LOUISIANA

CONTINUATION FORM

Site Name: U. S. Branch Mint Site No: 16OR52

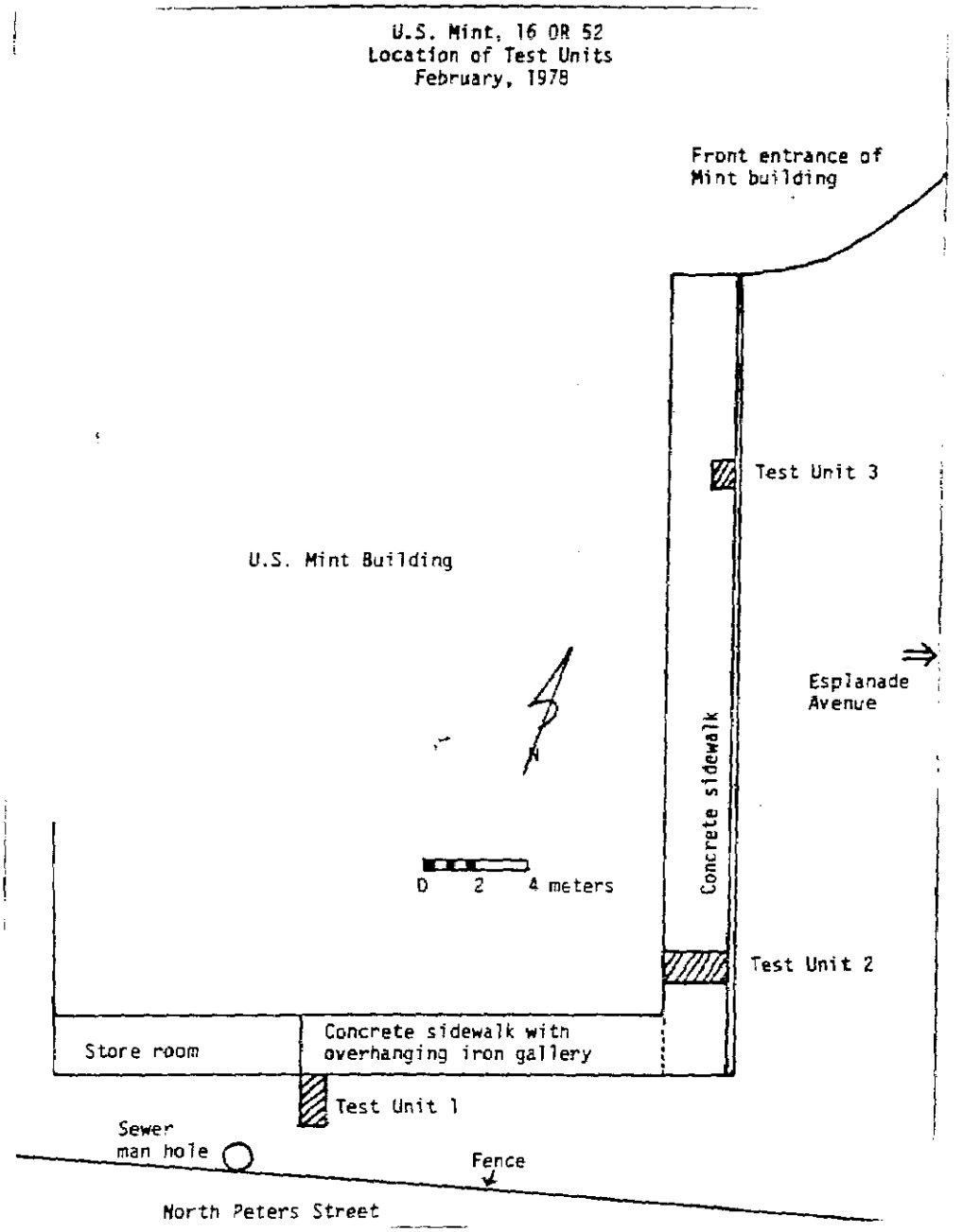
Photographs and Maps

C78/1688 - 1764, B78/1765 - 1913

STATE OF LOUISIANA

SITE SKETCH MAP FORM

Site Name: U. S. Mint Site No: 16OR52



Scale:
Drawn By: George Castille
Date: 1978

STATE OF LOUISIANA

REFERENCE FORM

Site Name: U. S. Branch Mint Site No: 16OR52

22-1305 Gibbens, Dorothy H.

1978 Archaeological Monitoring at the Old U.S. Mint, 16 OR 52, New Orleans, Louisiana. Submitted to the Office of Museums, Department of Culture, Recreation and Tourism. Report on file at the Divsion of Archaeology.

22-1290 Castille, George

1978 Preliminary Report of Test Excavations at the U.S. Mint 16 OR 52 New Orleans, Louisiana. Prepared for the Office of State Museums, Department of Culture, Recreation and Tourism. Report on file at the Division of Archaeology.

STATE OF LOUISIANA
SITE RECORD FORM

Site Name: N. O. Post Office #1 State Survey No: 16OR63
Other Site Designation: Parish: Orleans
Instructions for Reaching Site:
At the corner of Rampart Street and Esplanade Ave., also bounded by Esplanade, St. Claude and Kerlerec Streets
USGS Quad (Name, date, series): New Orleans East (1966) 7.5
Quad No: 33-PB quarter of the quarter of Section Township 12S Range: 11E
UTM Coordinates: Zone: 15 Easting: Northing:
Geographical Coordinates: Latitude: Longitude:

PHYSICAL SETTING

Land Form: Natural levee Slope:
Geologic Processes: Elev. ft AMSL:
Site Position:
Near Water: Mississippi River Flooding:
Soil Characteristics: Commerce
Floral Communities:
Faunal Communities:
Other Potential Resources:
Nearest Known Site:

SITE DESCRIPTION

Site Size: 10 - 100 cm deep Plan:
Orientation: Stratigraphy: Intact (cont)
Artifact Density: Abundant Artifact Distribution:
Cultural Features:
House foundations, walkway or patio and a cistern base
Cultural Affiliation:
Historic: 18th - 20th century
Presumed Function: Governmental office (post office); artifactual materials re- (cont)

COLLECTIONS

Survey Meth: Test units
Assessment of Collecting Conditions:
Description of Material:
Building materials, cistern

CONDITIONS

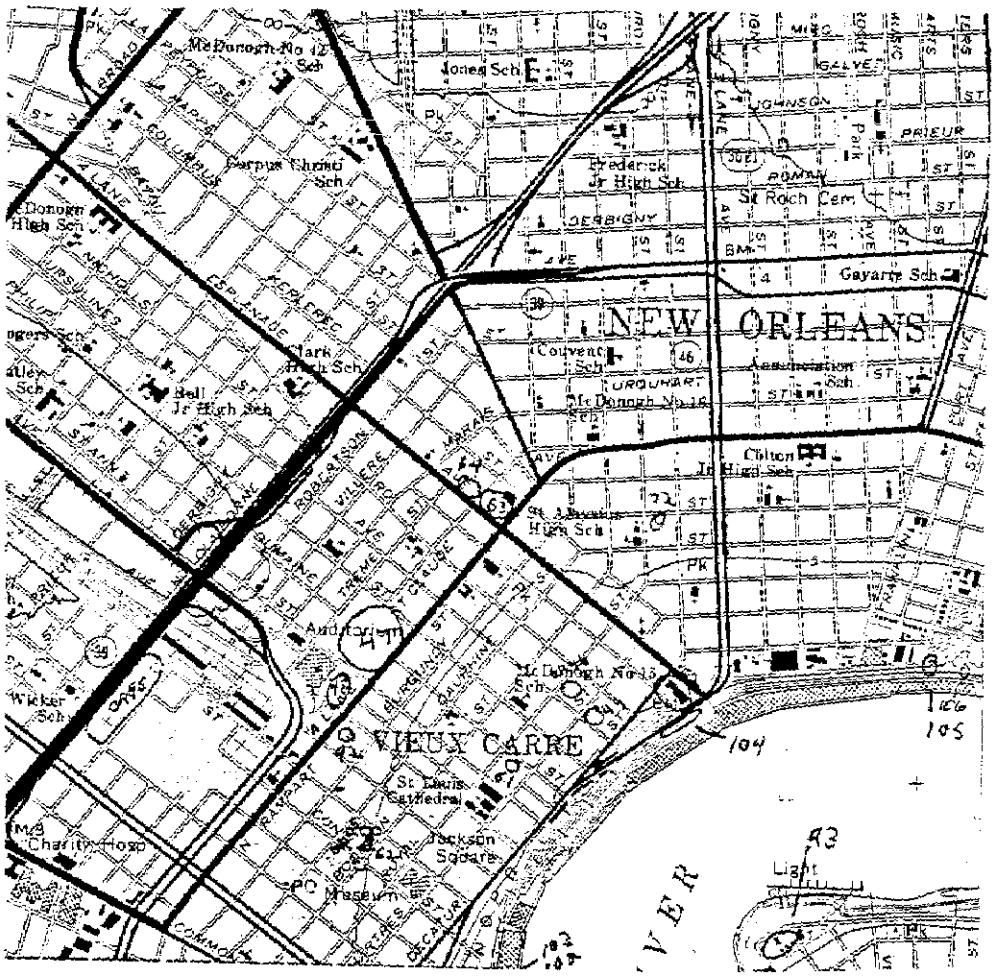
Present Use: Empty lot in urban area
Erosion or Disturbance: Natural
Probable Future Destruction:

SITE EVALUATION Site Number: 16OR63

Research Potential:

State/National Register Eligibility: Unknown
Recommendations:

QUAD MAP OF SITE AREA



RECORDS

Owner and Address:
U. S. Post Office, Loyola Avenue, New Orleans, LA
Tenant and Address:
Roy Mistretta Auto Sales, Rampart and Esplanade
Informants: Roy Mistretta
Prev. Invest:
Previous Collections and Availability:
CEI
References: Christovich and Evans (1977); Gagliano et al (1979); CEI, Inc. (1979)
Photos and Maps: CEI
Remarks:
Ownership may change soon
Recorder: Christovich and Evans Date: 1977

STATE OF LOUISIANA

CONTINUATION FORM

Site Name: New Orleans Post Office Site - Unit 1 Site No: 16OR63

317838

Stratigraphy

cultural materials, many in situ foundations and middens

Presumed Function

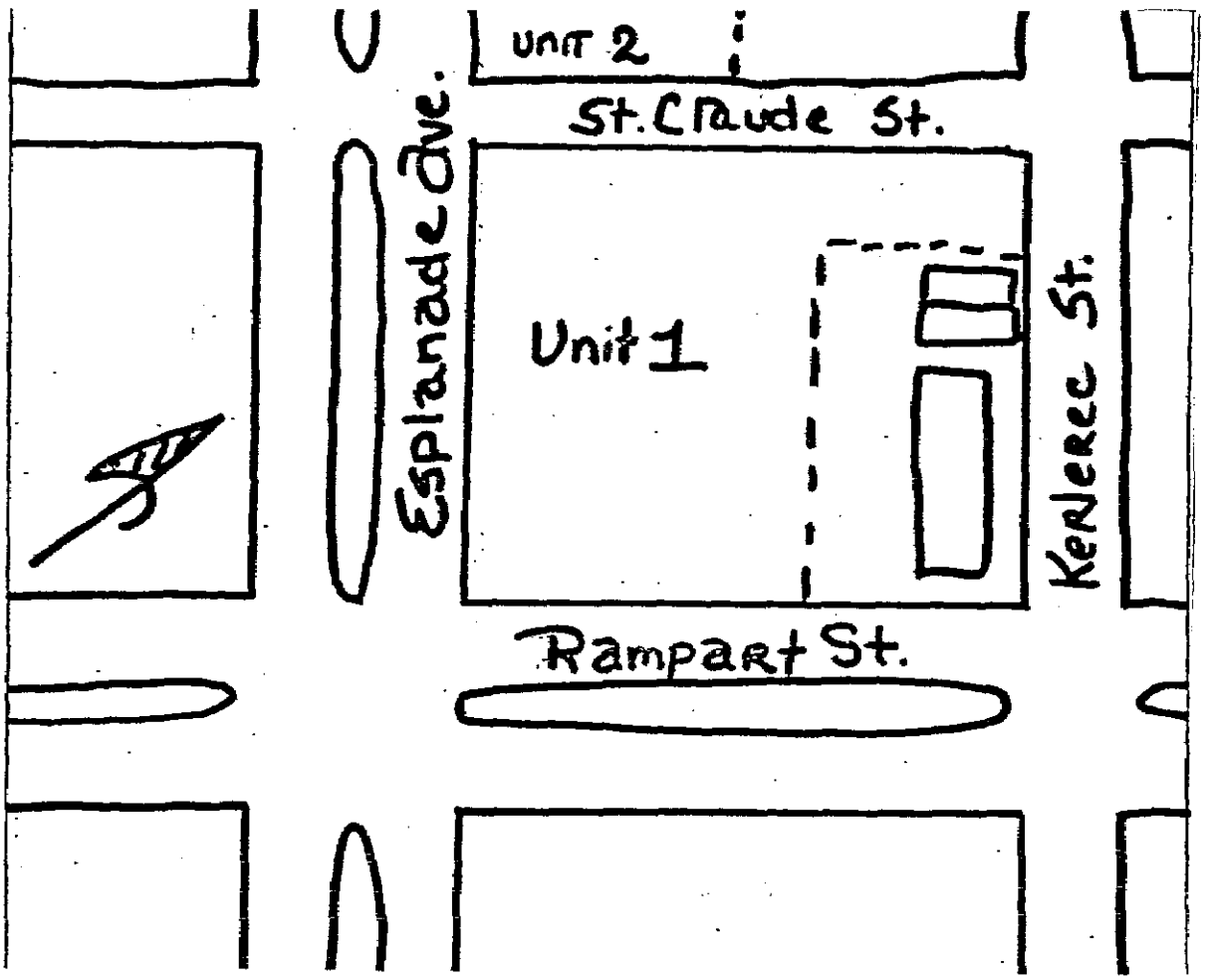
-covered correlate with historical references which imply that the unit had been permanently occupied since 18th cemtury

STATE OF LOUISIANA

SITE SKETCH MAP FORM

Site Name: New Orleans Post Office
Unit 1

Site No: 16OR63



Scale: None
Drawn By: CEI
Date: 3/79

STATE OF LOUISIANA

REFERENCE FORM

Site Name: New Orleans Post Office Unit I

Site No: 16OR63

22-538 Gagliano, S. M., G. J. Castille, C. E. Pearson, and K. G. McCloskey (Coastal Environments, Inc.)

1979 Cultural Resources Survey and Testing at Esplanade Avenue and Rampart Street, New Orleans, Louisiana. An unpublished report on file at the Division of Archaeology.

STATE OF LOUISIANA
SITE RECORD FORM

Site Name: New Orleans Post Off. #2 State Survey No: 16OR64
Other Site Designation: Parish: Orleans
Instructions for Reaching Site:
At the corner of Esplanade Avenue and St. Claude St, New Orleans, LA
USGS Quad (Name, date, series): New Orleans East (1966) 7.5'
Quad No: 33-PB quarter of the quarter of Section Township Range:
UTM Coordinates: Zone: 15 Easting: 784500 Northing: 3318700
Geographical Coordinates: Latitude: Longitude:

PHYSICAL SETTING

Land Form: Natural levee Slope:
Geologic Processes: Elev. ft AMSL:
Site Position:
Near Water: Mississippi River Flooding:
Soil Characteristics: Commerce
Floral Communities:
Faunal Communities:
Other Potential Resources:
Nearest Known Site:

SITE DESCRIPTION

Site Size: 15 - 60+ cm deep Plan:
Orientation: Stratigraphy: Subsur- (cont)
Artifact Density: Artifact Distribution: Subsurface (cont)
Cultural Features:
Historic scatter
Cultural Affiliation:
Historic 18 -20th centuries
Presumed Function: Historic (unknown); urban

COLLECTIONS

Survey Meth: Testing and use of proton magnetometer, auger boring
Assessment of Collecting Conditions:
Description of Material:
Piles of brick rubble remain from the demolition of the Wright - Slocomb House in the 1960's

CONDITIONS

Present Use: Grassy lot in urban area
Erosion or Disturbance: Urban surrounding
Probable Future Destruction:

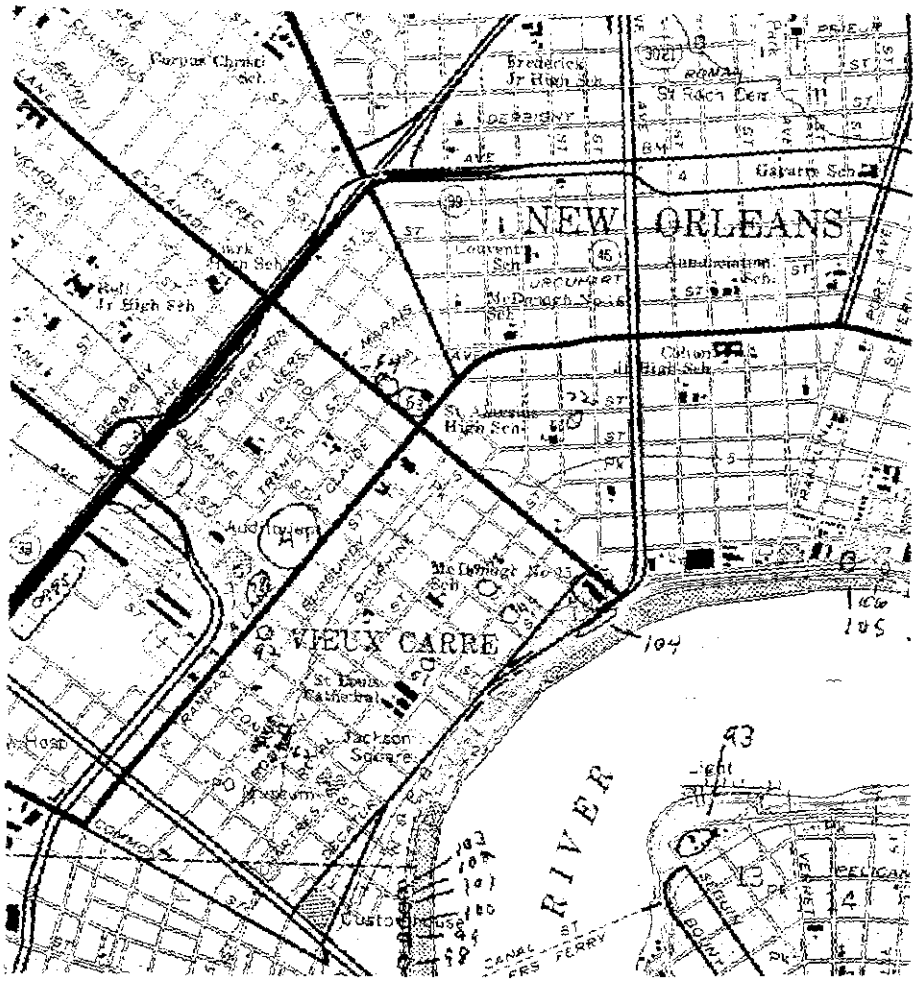
SITE EVALUATION

Site Number: 16OR64

Research Potential:

State/National Register Eligibility: Not eligible
Recommendations:

QUAD MAP OF SITE AREA



RECORDS

Owner and Address:
U. S. Post Office, Loyola Avenue, New Orleans, LA
Tenant and Address:

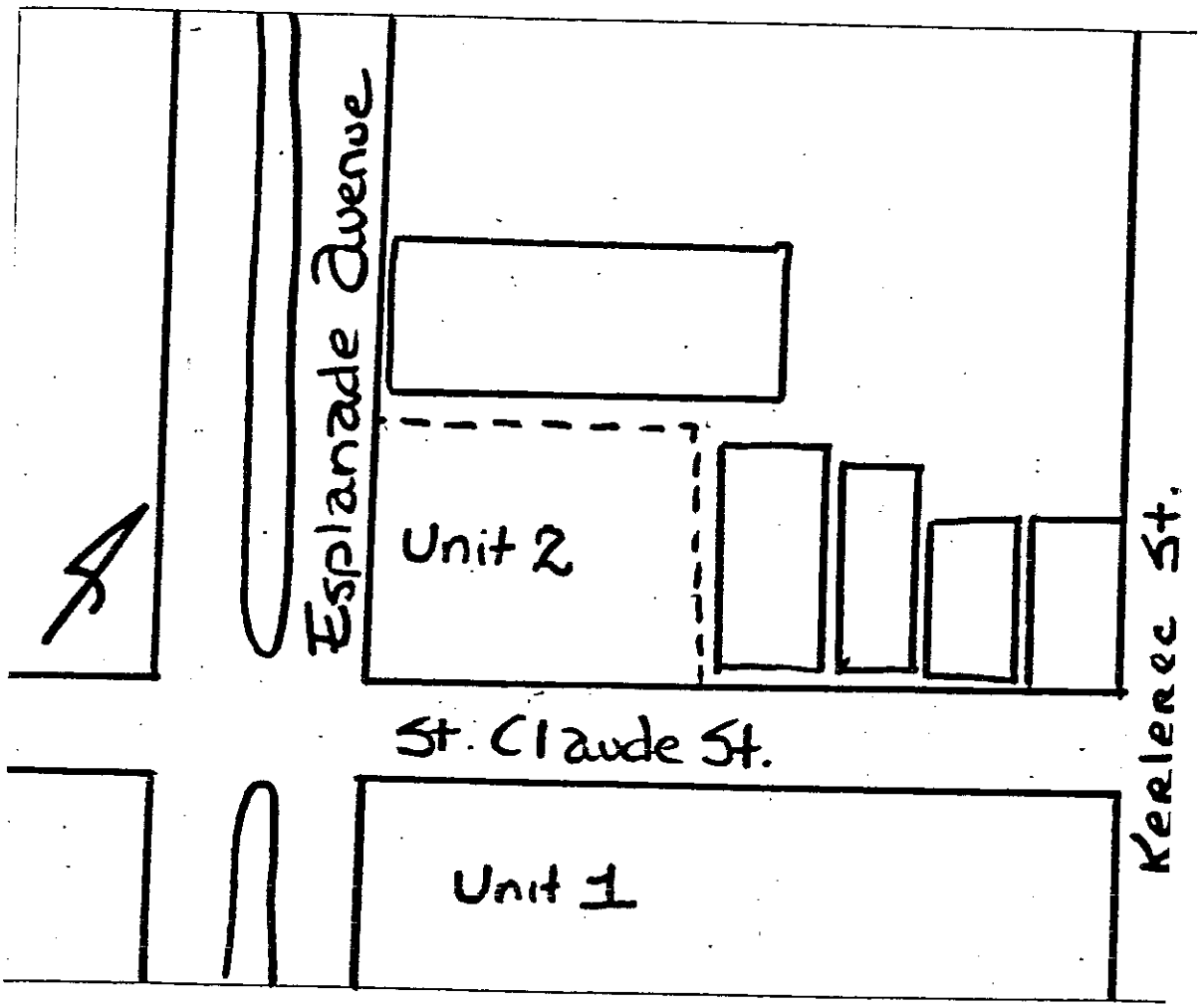
Informants:
Prev. Invest:
Previous Collections and Availability:
CEI
References: Christovich, Evans and Toledano (1977); CEI (1979)
Photos and Maps: CEI
Remarks:
Ownership may change soon
Recorder: Christovich, Evan, Toledano Date: 1977

STATE OF LOUISIANA

SITE SKETCH MAP FORM

Site Name: New Orleans Post Office
Unit 2

Site No: 16OR64



Scale: None
Drawn By: CEI
Date: 3/79

STATE OF LOUISIANA

REFERENCE FORM

Site Name: New Orleans Post Office Unit II Site No: 16OR64

22-538 Gagliano, S. M., G. J. Castille, C. E. Pearson, and K. G. McCloskey (Coastal Environments, Inc.)

1979 Cultural Resources Survey and Testing at Esplanade Avenue and Rampart Street, New Orleans, Louisiana. An unpublished report on file at the Division of Archaeology.

STATE OF LOUISIANA
SITE RECORD FORM

Site Name: Cizek
State Survey No: 16OR72
Other Site Designation: 2018 Thru 2026 Burgundy Sts.
Parish: Orleans
Instructions for Reaching Site:
Walk or drive to front door. "Dig" is in rear courtyards
USGS Quad (Name, date, series): New Orleans East (1966) 7.5'
Quad No: 33-PB quarter of the quarter of Section Township 12S Range: 11E
UTM Coordinates: Zone: 15 Easting: 783864 Northing: 3318456
Geographical Coordinates: Latitude: Longitude:

337 838 MH

PHYSICAL SETTING

Land Form: Natural levee
Slope: S to N
Geologic Processes: Deltaic Subsidence
Elev. ft AMSL:
Site Position:
Near Water: Mississippi River
Flooding: Flood controlled
Soil Characteristics: Heavy clay
Floral Communities: Mixed exotic, tropical
Faunal Communities: Standard insects
Other Potential Resources:
Nearest Known Site: U. S. Mint (16OR52)

SITE DESCRIPTION

Site Size: 48 x 48 m
Plan: Irregular cross
Orientation: Parallel w/St.
Stratigraphy: Yes
Artifact Density: Heavy
Artifact Distribution: General with concentratio
in feature
Cultural Features:
Foundation, privies, caves
Cultural Affiliation:
Historic
Presumed Function: Residence

COLLECTIONS

Survey Meth: Test units
Assessment of Collecting Conditions: Excellent
Description of Material:
Historic: ceramics, glass, building materials, animal bone, dolls, guns, shells, shoes

CONDITIONS

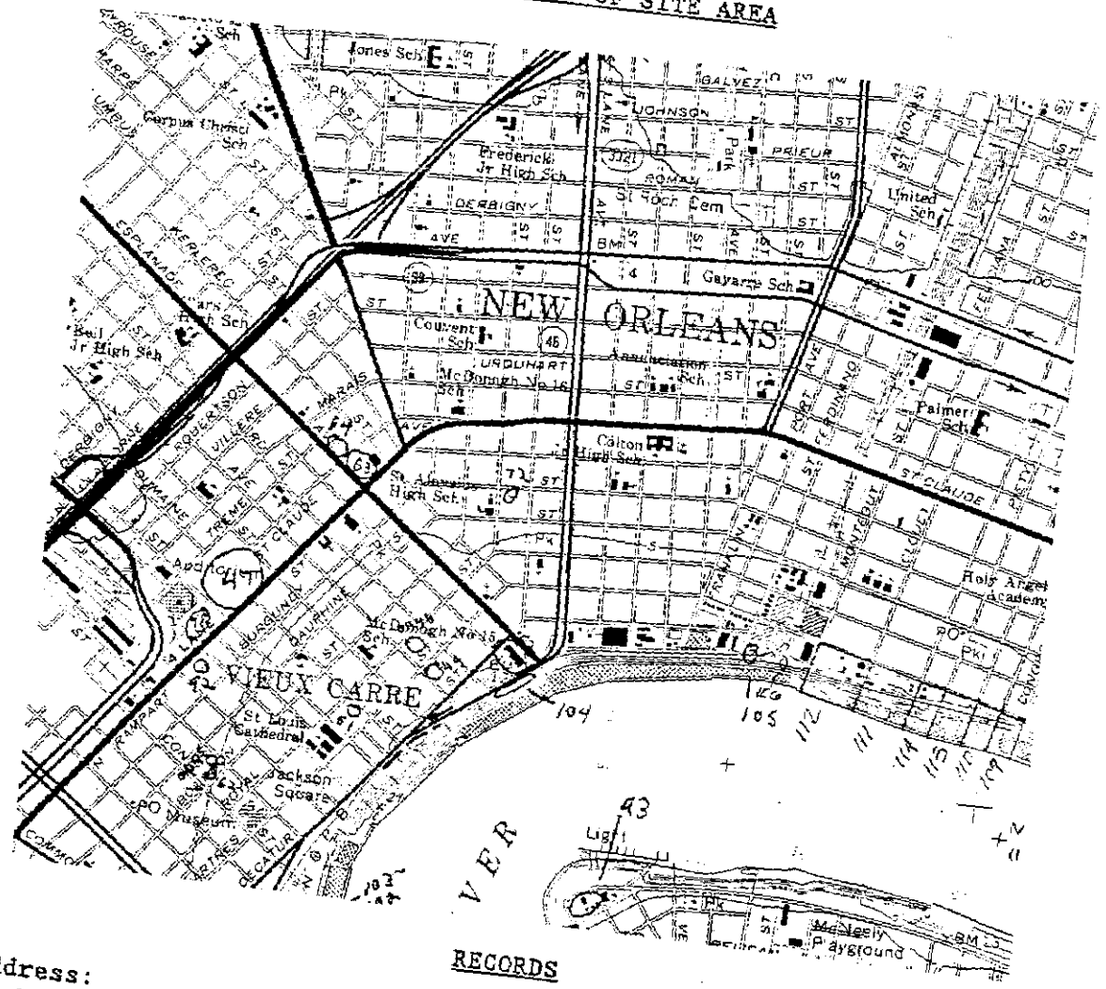
Present Use: Residential
Erosion or Disturbance: Slight
Probable Future Destruction: None

SITE EVALUATION

Site Number: 16OR72

Research Potential:
Excellent
State/National Register Eligibility: Listed
Recommendations: Continue research

QUAD MAP OF SITE AREA



RECORDS

Owner and Address:
Eugene Cizek, 2022 Burgundy St., N. O., LA
Tenant and Address:
Same
Informants: None
Prev. Invest: None
Previous Collections and Availability:
None
References: Eugene Cizek, 2022 Burgundy St.,New Orleans, LA
Photos and Maps: Eugene Cizek
Remarks:

Recorder: Emily H. Vincent

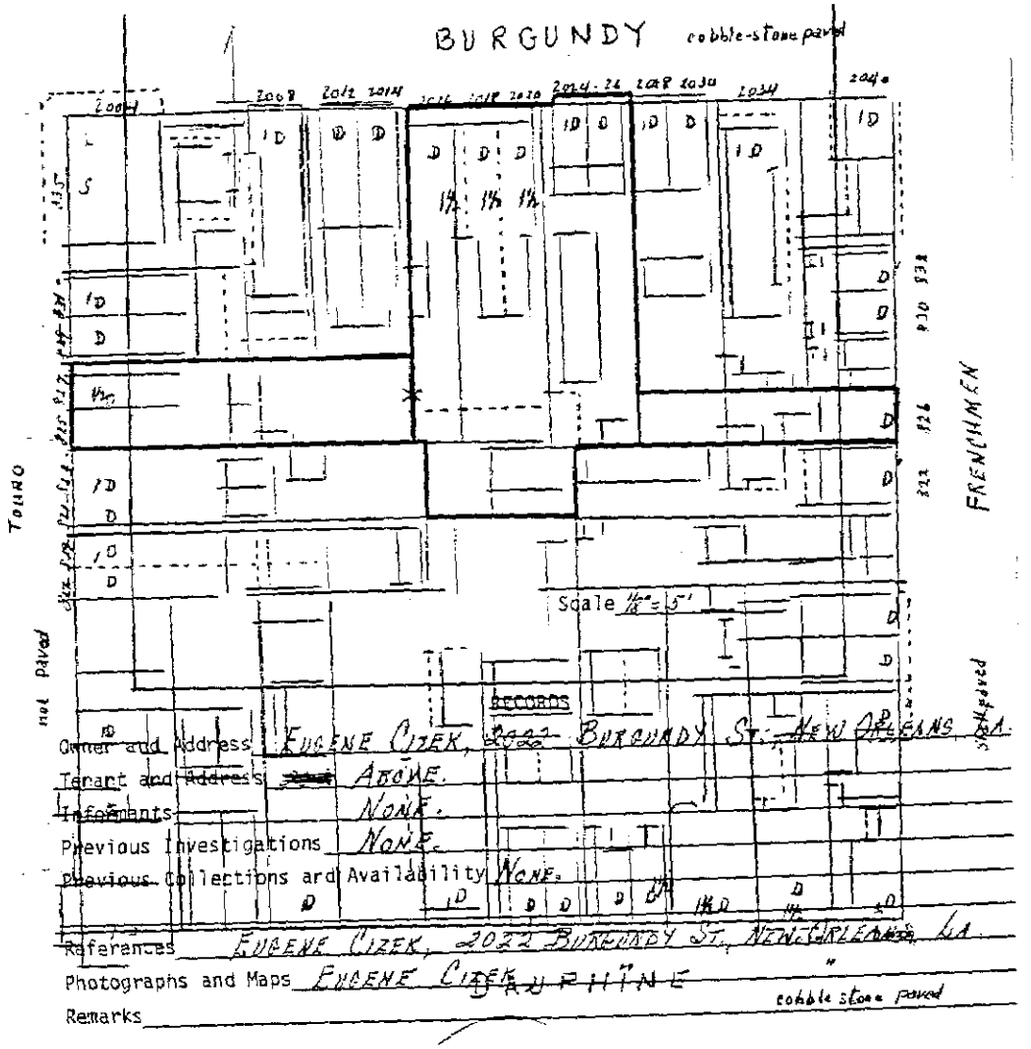
Date: 6/29/82

STATE OF LOUISIANA

SITE SKETCH MAP FORM

Site Name: Cizek

Site No: 16OR72



Scale:
Drawn By: Vincent
Date: 6/29/82

STATE OF LOUISIANA
SITE RECORD FORM

Site Name: Sands Site
State Survey No: 16OR73
Other Site Designation:
Parish: Orleans
Instructions for Reaching Site:
At corner of Dumaine and City Park Avenue and N Alexander, 904-6 City Park Ave, Square 570, 2nd District
USGS Quad (Name, date, series): New Orleans East (1966) 7.5'
Quad No: 33-PB S quarter of the quarter of Section 21 Township 12S Range: 11E
UTM Coordinates: Zone: 15 Easting: Northing:
Geographical Coordinates: Latitude: Longitude:

PHYSICAL SETTING

Land Form: Natural levee
Slope:
Geologic Processes:
Elev. ft AMSL:
Site Position: Level
Near Water: Bayou St. John
Flooding: On Metairie ridg
Soil Characteristics: Mostly clay
Floral Communities:
Faunal Communities:
Other Potential Resources:
Nearest Known Site:

SITE DESCRIPTION

Site Size: 34.5x173x204x140
Plan: Quadrangle
Orientation:
Stratigraphy: Clay (cont)
Artifact Density: Very sparse
Artifact Distribution:
Cultural Features:
Well or cistern
Cultural Affiliation:
Historic
Presumed Function: Restaurant

COLLECTIONS

Survey Meth: Grab surface collection
Assessment of Collecting Conditions: Good, but no finds
Description of Material:
3 sherds,4 square nails

CONDITIONS

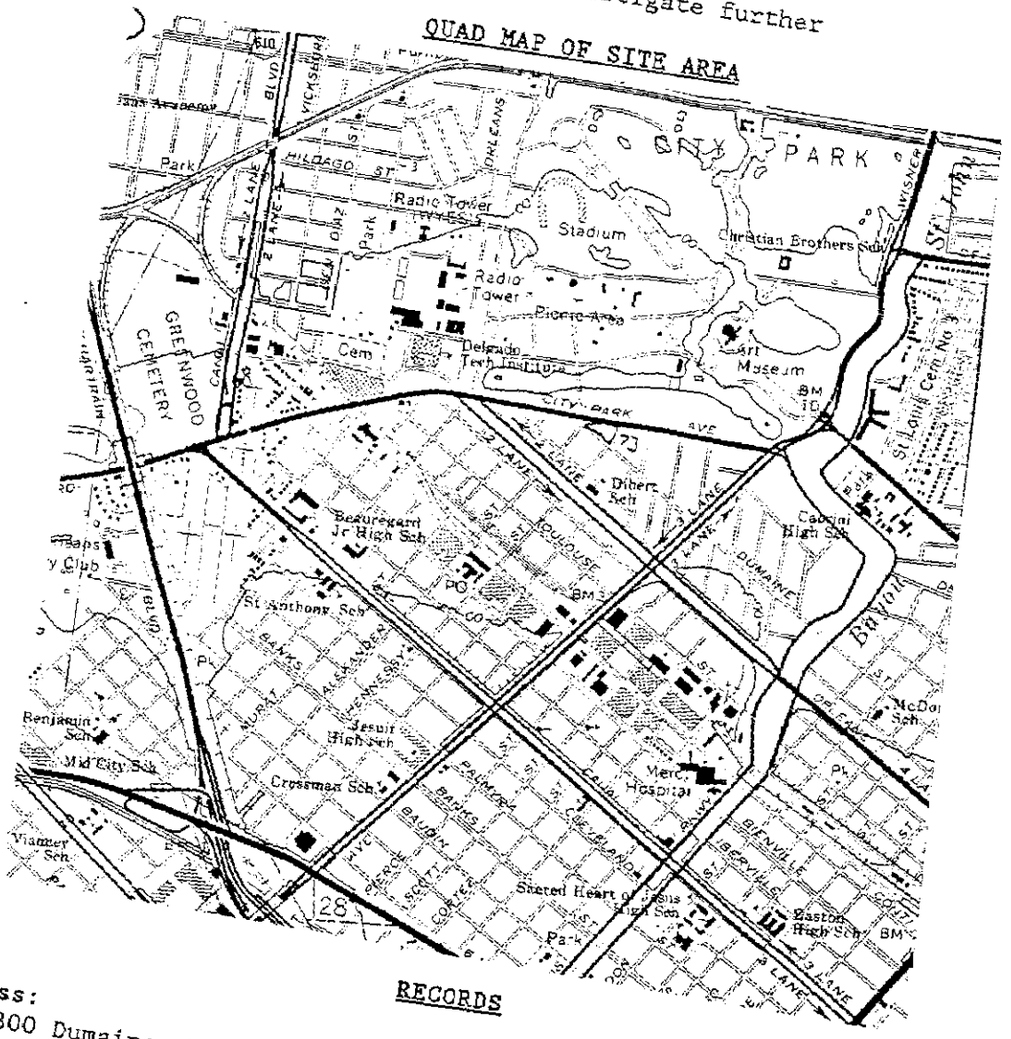
Present Use: Bar; tennis shop
Erosion or Disturbance: Urban development
Probable Future Destruction: Site to be restored for restaurant

Research Potential:
When owner breaks up drive, privy may be located. Planned for 1983
State/National Register Eligibility: Listed 11/82
Recommendations: Wait for restoration to investigate further

SITE EVALUATION

Site Number: 16OR73

QUAD MAP OF SITE AREA



RECORDS

Owner and Address:
Jack Sands, 4300 Dumaine, N. O., LA
Tenant and Address:

Informants: Dr. Richard Shenkel
Prev. Invest:
Previous Collections and Availability:
None
References: None
Photos and Maps:
Remarks:

Recorder: Marjorie Friedman

Date: 11/17/82

STATE OF LOUISIANA

CONTINUATION FORM

Site Name: Sands Site Site No: 16OR73

Stratigraphy

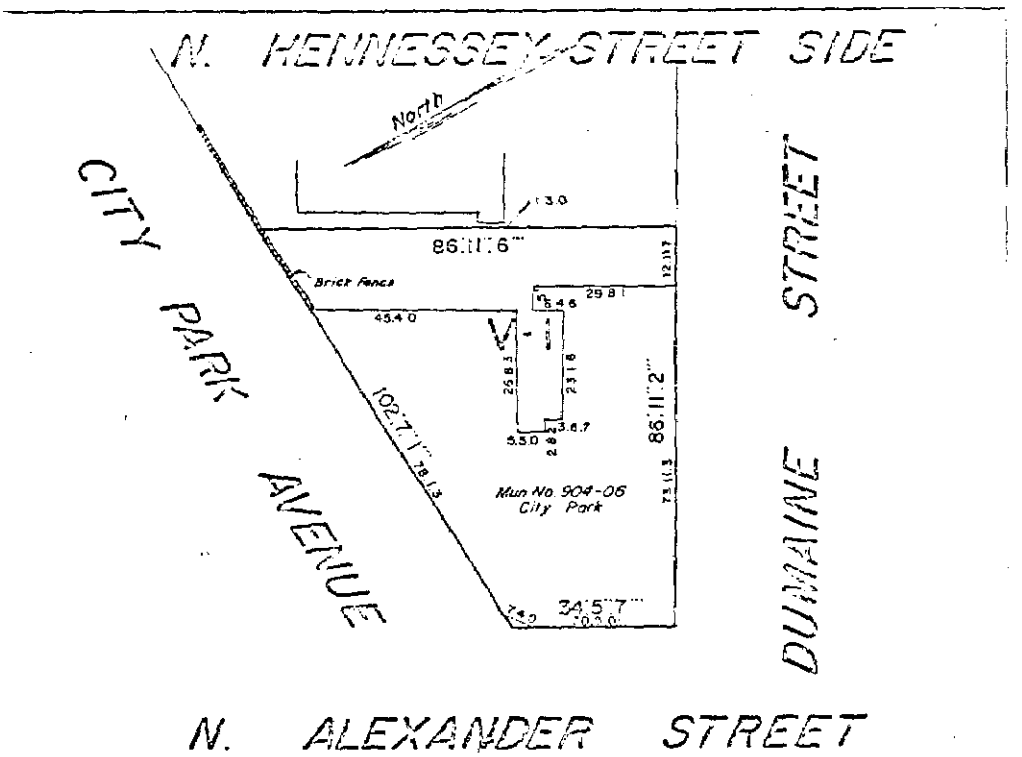
levels followed by 10 cm of sand then all clay

STATE OF LOUISIANA

SITE SKETCH MAP FORM

Site Name: Sands Site

Site No: 16OR73



SURVEY OF
LOT V-1
SQUARE 570
SECOND DISTRICT
ORLEANS PARISH, LA.

Scale: 1" = 30'
Drawn By:
Date: 11/17/71

STATE OF LOUISIANA
SITE RECORD FORM

Site Name: Square 441 State Survey No: 16OR86
Other Site Designation: Parish: Orleans
Instructions for Reaching Site:
A triangular piece of land bounded by Perdido (N), S. Claiborne (E), Poydras (S), Roman Street (W)
USGS Quad (Name, date, series): New Orleans East (1966) 7.5'
Quad No: 33-PB quarter of the quarter of Section Township 12S Range: 11E
UTM Coordinates: Zone: 15 Easting: 781200 Northing: 3317280
Geographical Coordinates: Latitude: Longitude:

PHYSICAL SETTING

Land Form: Natural levee Slope: Gradual
Geologic Processes: Elev. ft AMSL:
Site Position: Urbanized
Near Water: Mississippi River Flooding: Possible
Soil Characteristics: Clay and silty clay
Floral Communities: Urbanized
Faunal Communities: Urbanized
Other Potential Resources:
Nearest Known Site: Square 381 (16OR88)

SITE DESCRIPTION

Site Size: 200' x 300' Plan: Triangular
Orientation: N NE Stratigraphy: Varied
Artifact Density: Varied Artifact Distribution: Over entire site
Cultural Features:
Standing structures, privy pits, foundations
Cultural Affiliation:
19th century residential and commercial
Presumed Function: Homes and businesses

COLLECTIONS

Survey Meth: Historical research, backhoe trenches, hand excavation units
Assessment of Collecting Conditions: Fair - cement slabs, standing structures
Description of Material:
Ceramics, glass, metal, fauna

CONDITIONS

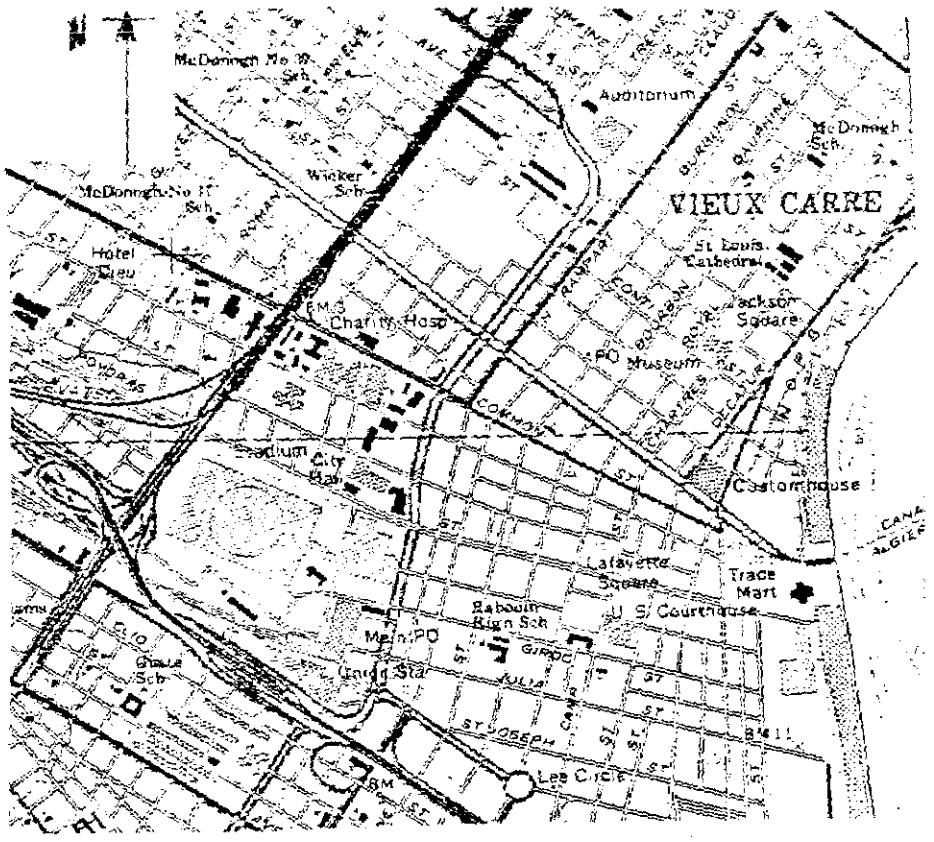
Present Use: Residential/bridge
Erosion or Disturbance: Construction disturbance
Probable Future Destruction: Within right of way for Greater N. O. Bridge #2

SITE EVALUATION

Site Number: 16OR85

Research Potential:
19th century homes and businesses
State/National Register Eligibility: Unknown
Recommendations:

QUAD MAP OF SITE AREA



RECORDS

Owner and Address:

Tenant and Address:

Informants:
Prev. Invest: CEI, Inc. (1983-84)
Previous Collections and Availability:
CEI, Inc.
References: George Castille, CEI, Inc. (1986)
Photos and Maps: CEI, Inc., LA Dept. of Transportation and Development
Remarks:

Recorder: CEI, Inc.

Date: 1983

STATE OF LOUISIANA

REFERENCE FORM

Site Name: Square 441 Site No: 16OR86

22-1254 Castille, George, et al (Coastal Environments, Inc)

1986 Urban Archaeology in Old New Orleans: Historical and Archaeological Investigations with the Greater New Orleans Bridge No. 2 Right-of-Way. Submitted to the LA Department of Transportation and Development. Report on file at the Division of Archaeology and Historic Preservation, Baton Rouge, LA.

ATTACHMENT 7

Site Certificate

SITE CERTIFICATE

This is to certify the **City of New Orleans for the use and benefit of the Sewerage & Water Board of New Orleans, Louisiana** has acquired all property (sites, easements, rights-of-way, or specific use permits) necessary for construction, operation, and maintenance of wastewater facilities described as:

SWB Contract 30261– Carrollton Basin Sewer Rehabilitation No. 20

Any deeds or documents required to be recorded to protect the title(s) or rights held by the **City of New Orleans for the use and benefit of the Sewerage & Water Board of New Orleans, Louisiana** have been recorded or filed for record wherever necessary.

In the event of conflicts with existing underground utilities or to preserve unknown cultural or historic resources, the **City of New Orleans for the use and benefit of the Sewerage & Water Board of New Orleans, Louisiana**has the right to eminent domain and will take condemnation action, if necessary, to acquire any sites, easements, or rights-of-way which may be required to change the location of any of the facilities described above; and upon acquisition of the rights-of-way and recording of documents, will submit another site certificate to that effect.

EXECUTED this _____ day of _____ 20 _____.

_____
(Signature)

_____
(Title)

NOTE: This certificate **must be executed by an attorney** qualified to evaluate the Applicant's interest in the site and make such a determination.

ATTACHMENT 8

Department of Environmental Quality
Categorical Exclusion

Categorical Exclusion and Extraordinary Circumstances Review Form
United States Environmental Protection Agency
Washington, DC 20460

I. General Information

Project Name	WIFIA Id Number
Sewer and Water Line Rehabilitation	19137LA

Borrower Name

Sewerage and Water Board of New Orleans

Project Description

The requested WIFIA loan would be used to fund projects which fall into four categories:

- Federal Emergency Management Agency (FEMA) funded Water Line Replacement via the Joint Infrastructure (JIRR) Program
- SWBNO and FEMA funded Sewer Line Replacement via the Joint Infrastructure Recovery Roads (JIRR) Program
- Sewer System Evaluation and Rehabilitation Program (SSERP) mandated by EPA Consent Decree
- SWBNO funded Sewer Force Main Replacement and Improvement work

A total of 164 individual projects are included in the WIFIA loan.

Project Location Description *(street address/city/state/ZIP code; site characteristics)*

The project location is defined as portions of Orleans Parish, Louisiana served by SWBNO system, which represents the majority of the parish. It is expected that the vast majority of work will be conducted within existing right of ways or where the existing pipelines are currently located.

II. EPA Contact for Environmental Review on this Project (If different from Responsible Official)

Name	Title	Phone Number
Arielle Gerstein	Program Manager	(202) 566-1868

III.A. Categorical Exclusion Eligibility *(Check YES or NO)* Complete the following questions in their entirety to determine if the project is eligible for a Categorical Exclusion (CATEX) pursuant to 40 CFR § 6.204(a)(1)(ii). Additionally, supporting statements and documentation can be included in Attachment 1.

If yes to any, CATEX applies — Does the project involve actions relating to existing infrastructure systems (e.g., sewer systems; drinking water supply systems; and stormwater systems, including combined sewer overflow systems) and involve:

YES	NO	
☐	☒	Minor upgrading
☒	☐	Minor expansion of system capacity or rehabilitation (including functional replacement) of the existing system and its components (such as the sewer collection network and treatment system; the system to collect, treat, store and distribute drinking water; and stormwater systems, including combined sewer overflow systems)
☐	☒	Construction of new minor ancillary facilities next to or on the same property as existing facilities

If yes to any, CATEX does not apply — Will the project include actions that:

YES	NO	
☐	☒	Involve new or relocated discharges to surface or ground water
☐	☒	Will likely result in the substantial increase in the volume or the loading of pollutant to the receiving water
☐	☒	Will provide capacity to serve a population 30% greater than the existing population
☐	☒	Are not supported by the state, or other regional growth plan or strategy
☐	☒	Directly or indirectly involve or relate to upgrading or extending infrastructure systems primarily for the purpose of future development

Project Name	WIFIA Id Number
Sewer and Water Line Rehabilitation	19137LA

III.B. Extraordinary Circumstances *(Check YES or NO)* Complete the following questions in their entirety to determine if the project involves any of the following extraordinary circumstances which would make it ineligible for a CATEX pursuant to 40 CFR § 6.204(b)(1) through (b)(10). Additionally, supporting statements and documentation can be included in Attachment 1.

YES	NO	
☐	☒	1) Is the action known or expected to have potentially significant environmental impacts on the quality of the human environment either individually or cumulatively over time?
☐	☒	2) Is the action known or expected to have disproportionately high and adverse human health or environmental effects on any community, including minority communities, low-income communities, or federally-recognized Indian tribal communities?
☐	☒	3) Is the action known or expected to significantly affect federally listed threatened or endangered species or their critical habitat?
☐	☒	4) Is the action known or expected to significantly affect national natural landmarks or any property with naturally significant historic, architectural, prehistoric, archaeological, or cultural value, including but not limited to, property listed on or eligible for the National Register of Historic Places?
☐	☒	5) Is the action known or expected to significantly affect environmentally important natural resource areas such as wetlands, floodplains, significant agricultural lands, aquifer recharge zones, coastal zones, barrier islands, wild and scenic rivers, and significant fish or wildlife habitat?
☐	☒	6) Is the action known or expected to cause significant adverse air quality effects?
☐	☒	7) Is the action known or expected to have a significant effect on the pattern and type of land use (industrial, commercial, agricultural, recreational, residential) or growth and distribution of population, including altering the character of existing residential areas or may not be consistent with state or local government, or federally-recognized Indian tribe approved land use plans or federal land management plans?
☐	☒	8) Is the action known or expected to significantly cause significant public controversy about potential environmental impacts of the proposed action?
☐	☒	9) Is the action known or expected to be associated with providing financial assistance to a federal agency through an interagency agreement for a project that is known or expected to have potentially significant environmental impacts?
☐	☒	10) Is the action known or expected to conflict with federal, state, or local government, or federally-recognized Indian tribe environmental resource-protection, or land-use laws or regulations?

Title of Project	WIFIA Id Number
Sewer and Water Line Rehabilitation	19137LA

III.C. Extraordinary Circumstances Statement *(Check ONLY ONE box)* If the responses to Section III.A indicate the project is CATEX eligible, and if a **NO** response was recorded for each of the questions in Section III.B, then no Extraordinary Circumstances are present pursuant to 40 CFR § 6.204(b) and one of the following statements should be selected.

☐ 1) **No extraordinary circumstances apply** to the proposed action pursuant to 40 CFR §§ 6.204(a)(1) and 6.204(b). This statement is based on either past experience with similar actions **at the proposed action site** resulting in a CATEX and/or information gathered as part of previous NEPA or environmental due diligence review conducted **at the proposed action site**. Provide any supporting documentation or references in Attachment I.

☒ 2) A statement and supporting documentation is attached explaining why no extraordinary circumstances exist or apply to the proposed action pursuant to 40 CFR §§ 6.204(a)(1) and 6.204(b).

IV. NEPA Review Determination and Responsible Official Signature

Sections I through III must be completed to satisfy EPA's documentation requirements for CATEX eligibility. If completion of this form indicates that a CATEX *does apply*, the Responsible Official must sign below.

Categorical Exclusion Determination The EPA finds that the proposed action is eligible for exclusion from detailed environmental review under 40 CFR § 6.204(a)(1)(ii), and will not involve any of the extraordinary circumstances delineated under 40 CFR § 6.204(b)(1) through (b)(10). Consequently, the EPA will not prepare an environmental impact statement or an environmental assessment for the proposed project. The EPA may revoke this categorical exclusion if changes in the proposed action render it ineligible for exclusion or if new evidence emerges which indicates that serious local or environmental issues exist or federal, state, or local laws would be violated.

As the Responsible Official, I have determined that **this action is eligible for a Categorical Exclusion** per the substantive environmental review requirements under EPA regulations at 40 CFR § 6.204. Section III.C of this form has been completed providing the required Extraordinary Circumstances Statement.

ANDREW SAWYERS Digitally signed by ANDREW SAWYERS
Date: 2021.03.09 18:51:55 -05'00'

Andrew D. Sawyers, Director
Office of Wastewater Management

Date

Title of Project	WIFIA Id Number
Sewer and Water Line Rehabilitation	19137LA

Attachment 1. CATEX Eligibility and/or Extraordinary Circumstances Statement(s)

The space below may be used for a statement and supporting documentation explaining CATEX eligibility why no extraordinary circumstances exist or apply to the proposed action pursuant to 40 CFR §§ 6.204(a)(1) and 6.204(b). Attach additional pages as needed.

Minor, short-term impacts on communities during construction may occur such as noise, vibration, increased construction traffic, temporary roadway detours, and erosion and runoff, which would be reduced by implementation of drainage, erosion and sediment control measures prior to initiating any work. These measures shall be in accordance with the most current federal, state, and local regulations. Ultimately, the project would improve the environmental health conditions of the area and protect public health and safety long-term. The proposed project would not have disproportionately high and adverse human health or environmental effects on minority, low-income, or federally-recognized Indian tribal communities.

On September 29, 2020, the species list was obtained from the United Stated Fish and Wildlife Service (USFWS) Louisiana Ecological Services Field Office, using the Information, Planning, and Consultation System. Three listed species were identified, including one mammal species (West Indian Manatee) and two fish species (Atlantic Sturgeon and Pallid Sturgeon). No critical habitats under the jurisdiction of the USFWS are known to occur within the project areas. No in-water work is proposed as part of the project. The proposed project will not impact streams, rivers, or any other freshwater habitat that would be suitable habitat for listed species, and therefore will have no effect on listed species.

The proposed Project includes 164 projects that will rehabilitate and repair the sewer system to minimize sanitary system overflows. A majority of these projects fall under the scope of the JIRR administered by FEMA. As part of the JIRR, the City of New Orleans and the Applicant have proposed a phased approach to damage repair, replacement, or improvements that can be systematically reviewed by FEMA in accordance with this document as plans and specifications for individual repair projects are developed. 139 of these projects fall under the JIRR Abbreviated Consultation Process (ACP) agreement and 26 have been reviewed by the Louisiana State Historic Preservation Officer (SHPO) as part of the Southshore Basin Sanitary Sewer Rehabilitation (SSERP) projects.

Only one project, the SWB Gen DeGaulle Sewer Force Main Replacement Project, required separate Section 106 consultation by EPA. EPA only submitted this project to the Louisiana SHPO because the remaining projects fall under the JIRR or SSERP agreements already in place so they have already been determined to have no effect by SHPO or will be submitted by the FEMA through the JIRR agreement. EPA has reviewed the supporting documentation for the SWB Gen DeGaulle Sewer Force Main Replacement Project, and initiated consultation with the Louisiana SHPO on November 17, 2020, and a response from the SHPO's archaeologist was received, dated December 8, 2020. The SHPO response stated that "No historic properties will be affected for this undertaking" for the SWB Gen DeGaulle Sewer Force Main Replacement included under the WIFIA loan.

The Louisiana coastal zone includes all of Orleans Parish. On October 8, 2020, EPA determined that the projects are consistent with the Louisiana Coastal Zone Management (CZM), and requested the Louisiana CZM concurrence on this determination. On October 8, 2020, the Louisiana CZM concurred with EPA's determination as the Office of Coastal Management (OCM) provided general consistency concurrence as it has found that financial assistance of a proposed project would be not be inconsistent with the state CZM program. The CZM Determination provided is a blanket letter covering all infrastructure projects in the state. The state grants this determination to any agency providing funding for infrastructure projects within the state of Louisiana.

ATTACHMENT 9

Equal Employment Opportunity Requirements

EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

The Contractor shall comply with Executive Order 11246, entitled 'Equal Employment Opportunity,' as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60).

Contractor's compliance with Executive order 11246 shall be based on implementation of the Equal Opportunity Clause, and specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

2. The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

3. The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee’s essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor’s legal duty to furnish information.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers’ representative of the contractor’s commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5. The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

6. The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7. In the event of the contractor’s noncompliance with the nondiscrimination clauses of this contract or

with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

8. The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States. [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966–1970 Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230, EO 13665 of April 8, 2014, 79 FR 20749, EO 13672 of July 21, 2014, 79 FR 42971]

PART 1 - Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246) located at 41 CFR 60-4.3:

1. As used in these specifications:

    a) “Covered area” means the geographical area described in the solicitation from which this contract resulted;
    b) “Director” means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;
    c) “Employer identification number” means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.
    d) “Minority” includes:

        i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);
        ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);
        iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
        iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must

be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

    a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
    b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
    c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file

with the reason therefor, along with whatever additional actions the Contractor may have taken.

d) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.

f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n) Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and

female contractor associations and other business associations.

p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in

the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

PART 2 - Segregated Facilities, 41 CRF 60-1.8

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensuring that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. This obligation extends to all contracts containing the equal opportunity clause regardless of the amount of the contract. The term "facilities," as used in this section, means waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, wash rooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees; Provided, That separate or single-user restrooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

PART 3 - Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246) located at 41 CFR § 60-4.2:

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Time-tables	**Goals for minority participation for each trade**	**Goals for female participation in each trade**
	Insert goals for each year[1]	6.9%[2]

   a. These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.
   b. The Contractor's compliance with the Executive Order and the regulations in 41 CFR part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a),

[1] Goals can be found at: https://www.dol.gov/ofccp/TAguides/TAC_FedContractors_JRF_QA_508c.pdf
[2] Nationwide goal for all covered areas

and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any).

5. Participation by Disadvantaged Business Enterprises in Procurement under EPA Financial Assistance Agreements, 73 FR 15904

    a. Contractor agrees to comply with the requirements of USEPA's Program for Utilization of Small, Minority and Women's Business Enterprises. The DBE rule can be accessed at www.epa.gov/osbp. Contractor shall comply with 40 CFR Section 33.301, and retain all records documenting compliance with the six good faith efforts. The Contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 40 CFR part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the Contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies

American Iron and Steel and Federal Labor Standards

1. <u>American Iron and Steel Requirement</u>

The Contractor acknowledges to and for the benefit of _____ ("Purchaser") and the United States Environmental Protection Agency ("EPA") that it understands the goods and services under this Agreement are being funded with monies made available by the Water Infrastructure Finance and Innovation Act program of the EPA that has statutory requirements commonly known as "American Iron and Steel" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents, warrants and covenants to and for the benefit of the Purchaser and the EPA that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver

of the American Iron and Steel Requirement, as may be requested by the Purchaser or the EPA. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or the EPA to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or the EPA resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EPA or any damages owed to the EPA by the Purchaser). While the Contractor has no direct contractual privity with the EPA, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the EPA is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the EPA.

2. Compliance with Davis Bacon and related acts

(a) In any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, provided that such modifications are first approved by the Department of Labor):

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)

(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to theAdministrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The (write in name of Federal Agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor

withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborersand mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working onthe site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to thelaborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) {no text here}

(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the (write in name of appropriate federal agency) if theagency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency). The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the (write in name

of appropriate federal agency) if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the (write in name of agency), the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee)employed on the contract during the payroll period has been paid the full weekly wagesearned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the (write the name of the agency) or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, theFederal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees –

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his

or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wagedetermination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilizeapprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of thetrainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless theAdministrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determinationwhich provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standardsprovisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7.. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) Contract Work Hours and Safety Standards Act. The following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section shall be inserted in full in any contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by § 5.5(a) or § 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the conract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employedon such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of

forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth inparagraph (b)(1) of this section, in the sum of $25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The (write in the name of theFederal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in § 5.1, the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contractfor all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Agency Head shall cause or require thecontracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

ATTACHMENT 10

Lobbying Restrictions

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participation are not eligible for funding under the EPA financial assistance agreement, the recipient may choose to report the percentage of MBE and WBE participation based on the total eligible and non-eligible costs of the project.

(c) *Joint ventures.* For joint ventures, MBE and WBE participation consists of the portion of the dollar amount of the joint venture attributable to the MBE or WBE. If an MBE's or WBE's risk of loss, control or management responsibilities is not commensurate with its share of the profit, the Agency may direct an adjustment in the percentage of MBE or WBE participation.

(d) *Central Purchasing or Procurement Centers.* A recipient must report MBE and WBE participation from its central purchasing or procurement centers.

(e) *Brokers.* A recipient may not count expenditures to a MBE or WBE that acts merely as a broker or passive conduit of funds, without performing, managing, or supervising the work of its contract or subcontract in a manner consistent with normal business practices.

(1) *Presumption.* If 50% or more of the total dollar amount of a MBE or WBE's prime contract is subcontracted to a non-DBE, the MBE or WBE prime contractor will be presumed to be a broker, and no MBE or WBE participation may be reported.

(2) *Rebuttal.* The MBE or WBE prime contractor may rebut this presumption by demonstrating that its actions are consistent with normal practices for prime contractors in its business and that it will actively perform, manage and supervise the work under the contract.

(f) *MBE or WBE Truckers/Haulers.* A recipient may count expenditures to an MBE or WBE trucker/hauler only if the MBE or WBE trucker/hauler is performing a commercially useful function. The following factors should be used in determining whether an MBE or WBE trucker/hauler is performing a commercially useful function:

(1) The MBE or WBE must be responsible for the management and supervision of the entire trucking/hauling operation for which it is responsible on a particular contract, and there cannot be a contrived arrangement for the purpose of meeting MBE or WBE objectives.

(2) The MBE or WBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.

APPENDIX A TO PART 33—TERM AND CONDITION

Each procurement contract signed by an EPA financial assistance agreement recipient, including those for an identified loan under an EPA financial assistance agreement capitalizing a revolving loan fund, must include the following term and condition:

The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

PART 34—NEW RESTRICTIONS ON LOBBYING

Subpart A—General

Sec.

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APPENDIX A TO PART 34—CERTIFICATION REGARDING LOBBYING
APPENDIX B TO PART 34—DISCLOSURE FORM TO REPORT LOBBYING

AUTHORITY: Section 319; Pub. L. 101–121 (31 U.S.C. 1352); 33 U.S.C. 1251 *et seq.*; 42 U.S.C. 7401 *et seq.*; 42 U.S.C. 6901 *et seq.*; 42 U.S.C. 300f *et seq.*; 7 U.S.C. 136 *et seq.*; 15 U.S.C. 2601 *et seq.*; 42 U.S.C. 9601 *et seq.*; 20 U.S.C. 4011 *et seq.*; 33 U.S.C. 1401 *et seq.*

SOURCE: 55 FR 6737, 6753, Feb. 26, 1990, unless otherwise noted.

CROSS-REFERENCE: See also Office of Management and Budget notice published at 54 FR 52306, December 20, 1989.

Subpart A—General

§ 34.100 Conditions on use of funds.

(a) No appropriated funds may be expended by the recipient of a Federal contract, grant, loan, or cooperative agreement to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(b) Each person who requests or receives from an agency a Federal contract, grant, loan, or cooperative agreement shall file with that agency a certification, set forth in appendix A, that the person has not made, and will not make, any payment prohibited by paragraph (a) of this section.

(c) Each person who requests or receives from an agency a Federal contract, grant, loan, or a cooperative agreement shall file with that agency a disclosure form, set forth in appendix B, if such person has made or has agreed to make any payment using nonappropriated funds (to include profits from any covered Federal action), which would be prohibited under paragraph (a) of this section if paid for with appropriated funds.

(d) Each person who requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan shall file with that agency a statement, set forth in appendix A, whether that person has made or has agreed to make any payment to influence or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with that loan insurance or guarantee.

(e) Each person who requests or receives from an agency a commitment providing for the United States to insure or guarantee a loan shall file with that agency a disclosure form, set forth in appendix B, if that person has made or has agreed to make any payment to influence or attempt to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with that loan insurance or guarantee.

§ 34.105 Definitions.

For purposes of this part:

(a) *Agency*, as defined in 5 U.S.C. 552(f), includes Federal executive departments and agencies as well as independent regulatory commissions and Government corporations, as defined in 31 U.S.C. 9101(1).

(b) *Covered Federal action* means any of the following Federal actions:

(1) The awarding of any Federal contract;

(2) The making of any Federal grant;

(3) The making of any Federal loan;

(4) The entering into of any cooperative agreement; and,

(5) The extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

Covered Federal action does not include receiving from an agency a commitment providing for the United States to insure or guarantee a loan. Loan guarantees and loan insurance are addressed independently within this part.

(c) *Federal contract* means an acquisition contract awarded by an agency, including those subject to the Federal Acquisition Regulation (FAR), and any other acquisition contract for real or

personal property or services not subject to the FAR.

(d) *Federal cooperative agreement* means a cooperative agreement entered into by an agency.

(e) *Federal grant* means an award of financial assistance in the form of money, or property in lieu of money, by the Federal Government or a direct appropriation made by law to any person. The term does not include technical assistance which provides services instead of money, or other assistance in the form of revenue sharing, loans, loan guarantees, loan insurance, interest subsidies, insurance, or direct United States cash assistance to an individual.

(f) *Federal loan* means a loan made by an agency. The term does not include loan guarantee or loan insurance.

(g) *Indian tribe* and *tribal organization* have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B). Alaskan Natives are included under the definitions of Indian tribes in that Act.

(h) *Influencing or attempting to influence* means making, with the intent to influence, any communication to or appearance before an officer or employee or any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

(i) *Loan guarantee* and *loan insurance* means an agency's guarantee or insurance of a loan made by a person.

(j) *Local government* means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, including a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

(k) *Officer or employee of an agency* includes the following individuals who are employed by an agency:

(1) An individual who is appointed to a position in the Government under title 5, U.S. Code, including a position under a temporary appointment;

(2) A member of the uniformed services as defined in section 101(3), title 37, U.S. Code;

(3) A special Government employee as defined in section 202, title 18, U.S. Code; and,

(4) An individual who is a member of a Federal advisory committee, as defined by the Federal Advisory Committee Act, title 5, U.S. Code appendix 2.

(l) *Person* means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

(m) *Reasonable compensation* means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

(n) *Reasonable payment* means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

(o) *Recipient* includes all contractors, subcontractors at any tier, and subgrantees at any tier of the recipient of funds received in connection with a Federal contract, grant, loan, or cooperative agreement. The term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

(p) *Regularly employed* means, with respect to an officer or employee of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement or a commitment providing for the United States to insure or guarantee a loan, an officer or employee who is employed by such person for at least 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person for

receipt of such contract, grant, loan, cooperative agreement, loan insurance commitment, or loan guarantee commitment. An officer or employee who is employed by such person for less than 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

(q) *State* means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and a multi-State, regional, or interstate entity having governmental duties and powers.

§ 34.110 Certification and disclosure.

(a) Each person shall file a certification, and a disclosure form, if required, with each submission that initiates agency consideration of such person for:

(1) Award of a Federal contract, grant, or cooperative agreement exceeding $100,000; or

(2) An award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

(b) Each person shall file a certification, and a disclosure form, if required, upon receipt by such person of:

(1) A Federal contract, grant, or cooperative agreement exceeding $100,000; or

(2) A Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000,

Unless such person previously filed a certification, and a disclosure form, if required, under paragraph (a) of this section.

(c) Each person shall file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by such person under paragraphs (a) or (b) of this section. An event that materially affects the accuracy of the information reported includes:

(1) A cumulative increase of $25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or

(2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or,

(3) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.

(d) Any person who requests or receives from a person referred to in paragraphs (a) or (b) of this section:

(1) A subcontract exceeding $100,000 at any tier under a Federal contract;

(2) A subgrant, contract, or subcontract exceeding $100,000 at any tier under a Federal grant;

(3) A contract or subcontract exceeding $100,000 at any tier under a Federal loan exceeding $150,000; or,

(4) A contract or subcontract exceeding $100,000 at any tier under a Federal cooperative agreement,

Shall file a certification, and a disclosure form, if required, to the next tier above.

(e) All disclosure forms, but not certifications, shall be forwarded from tier to tier until received by the person referred to in paragraphs (a) or (b) of this section. That person shall forward all disclosure forms to the agency.

(f) Any certification or disclosure form filed under paragraph (e) of this section shall be treated as a material representation of fact upon which all receiving tiers shall rely. All liability arising from an erroneous representation shall be borne solely by the tier filing that representation and shall not be shared by any tier to which the erroneous representation is forwarded. Submitting an erroneous certification or disclosure constitutes a failure to file the required certification or disclosure, respectively. If a person fails to file a required certification or disclosure, the United States may pursue all available remedies, including those authorized by section 1352, title 31, U.S. Code.

(g) For awards and commitments in process prior to December 23, 1989, but not made before that date, certifications shall be required at award or

commitment, covering activities occurring between December 23, 1989, and the date of award or commitment. However, for awards and commitments in process prior to the December 23, 1989 effective date of these provisions, but not made before December 23, 1989, disclosure forms shall not be required at time of award or commitment but shall be filed within 30 days.

(h) No reporting is required for an activity paid for with appropriated funds if that activity is allowable under either subpart B or C.

Subpart B—Activities by Own Employees

§ 34.200 Agency and legislative liaison.

(a) The prohibition on the use of appropriated funds, in § 34.100 (a), does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement if the payment is for agency and legislative liaison activities not directly related to a covered Federal action.

(b) For purposes of paragraph (a) of this section, providing any information specifically requested by an agency or Congress is allowable at any time.

(c) For purposes of paragraph (a) of this section, the following agency and legislative liaison activities are allowable at any time only where they are not related to a specific solicitation for any covered Federal action:

(1) Discussing with an agency (including individual demonstrations) the qualities and characteristics of the person's products or services, conditions or terms of sale, and service capabilities; and,

(2) Technical discussions and other activities regarding the application or adaptation of the person's products or services for an agency's use.

(d) For purposes of paragraph (a) of this section, the following agencies and legislative liaison activities are allowable only where they are prior to formal solicitation of any covered Federal action:

(1) Providing any information not specifically requested but necessary for an agency to make an informed decision about initiation of a covered Federal action;

(2) Technical discussions regarding the preparation of an unsolicited proposal prior to its official submission; and,

(3) Capability presentations by persons seeking awards from an agency pursuant to the provisions of the Small Business Act, as amended by Public Law 95–507 and other subsequent amendments.

(e) Only those activities expressly authorized by this section are allowable under this section.

§ 34.205 Professional and technical services.

(a) The prohibition on the use of appropriated funds, in § 34.100 (a), does not apply in the case of a payment of reasonable compensation made to an officer or employee of a person requesting or receiving a Federal contract, grant, loan, or cooperative agreement or an extension, continuation, renewal, amendment, or modification of a Federal contract, grant, loan, or cooperative agreement if payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal contract, grant, loan, or cooperative agreement or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal contract, grant, loan, or cooperative agreement.

(b) For purposes of paragraph (a) of this section, ''professional and technical services'' shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting of a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or

technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(c) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation, or reasonably expected to be required by law or regulation, and any other requirements in the actual award documents.

(d) Only those services expressly authorized by this section are allowable under this section.

§ 34.210 Reporting.

No reporting is required with respect to payments of reasonable compensation made to regularly employed officers or employees of a person.

Subpart C—Activities by Other Than Own Employees

§ 34.300 Professional and technical services.

(a) The prohibition on the use of appropriated funds, in § 34.100 (a), does not apply in the case of any reasonable payment to a person, other than an officer or employee of a person requesting or receiving a covered Federal action, if the payment is for professional or technical services rendered directly in the preparation, submission, or negotiation of any bid, proposal, or application for that Federal contract, grant, loan, or cooperative agreement or for meeting requirements imposed by or pursuant to law as a condition for receiving that Federal contract, grant, loan, or cooperative agreement.

(b) The reporting requirements in § 34.110 (a) and (b) regarding filing a disclosure form by each person, if required, shall not apply with respect to professional or technical services rendered directly in the preparation, submission, or negotiation of any commitment providing for the United States to insure or guarantee a loan.

(c) For purposes of paragraph (a) of this section, ''professional and technical services'' shall be limited to advice and analysis directly applying any professional or technical discipline. For example, drafting or a legal document accompanying a bid or proposal by a lawyer is allowable. Similarly, technical advice provided by an engineer on the performance or operational capability of a piece of equipment rendered directly in the negotiation of a contract is allowable. However, communications with the intent to influence made by a professional (such as a licensed lawyer) or a technical person (such as a licensed accountant) are not allowable under this section unless they provide advice and analysis directly applying their professional or technical expertise and unless the advice or analysis is rendered directly and solely in the preparation, submission or negotiation of a covered Federal action. Thus, for example, communications with the intent to influence made by a lawyer that do not provide legal advice or analysis directly and solely related to the legal aspects of his or her client's proposal, but generally advocate one proposal over another are not allowable under this section because the lawyer is not providing professional legal services. Similarly, communications with the intent to influence made by an engineer providing an engineering analysis prior to the preparation or submission of a bid or proposal are not allowable under this section since the engineer is providing technical services but not directly in the preparation, submission or negotiation of a covered Federal action.

(d) Requirements imposed by or pursuant to law as a condition for receiving a covered Federal award include those required by law or regulation, or reasonably expected to be required by law or regulation, and any other requirements in the actual award documents.

(e) Persons other than officers or employees of a person requesting or receiving a covered Federal action include consultants and trade associations.

(f) Only those services expressly authorized by this section are allowable under this section.

Subpart D—Penalties and Enforcement

§ 34.400 Penalties.

(a) Any person who makes an expenditure prohibited herein shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure.

(b) Any person who fails to file or amend the disclosure form (see appendix B) to be filed or amended if required herein, shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

(c) A filing or amended filing on or after the date on which an administrative action for the imposition of a civil penalty is commenced does not prevent the imposition of such civil penalty for a failure occurring before that date. An administrative action is commenced with respect to a failure when an investigating official determines in writing to commence an investigation of an allegation of such failure.

(d) In determining whether to impose a civil penalty, and the amount of any such penalty, by reason of a violation by any person, the agency shall consider the nature, circumstances, extent, and gravity of the violation, the effect on the ability of such person to continue in business, any prior violations by such person, the degree of culpability of such person, the ability of the person to pay the penalty, and such other matters as may be appropriate.

(e) First offenders under paragraphs (a) or (b) of this section shall be subject to a civil penalty of $10,000, absent aggravating circumstances. Second and subsequent offenses by persons shall be subject to an appropriate civil penalty between $10,000 and $100,000, as determined by the agency head or his or her designee.

(f) An imposition of a civil penalty under this section does not prevent the United States from seeking any other remedy that may apply to the same conduct that is the basis for the imposition of such civil penalty.

§ 34.405 Penalty procedures.

Agencies shall impose and collect civil penalties pursuant to the provisions of the Program Fraud and Civil Remedies Act, 31 U.S.C. 3803 (except subsection (c)), 3804, 3805, 3806, 3807, 3808, and 3812, insofar as these provisions are not inconsistent with the requirements herein.

§ 34.410 Enforcement.

The head of each agency shall take such actions as are necessary to ensure that the provisions herein are vigorously implemented and enforced in that agency.

Subpart E—Exemptions

§ 34.500 Secretary of Defense.

(a) The Secretary of Defense may exempt, on a case-by-case basis, a covered Federal action from the prohibition whenever the Secretary determines, in writing, that such an exemption is in the national interest. The Secretary shall transmit a copy of each such written exemption to Congress immediately after making such a determination.

(b) The Department of Defense may issue supplemental regulations to implement paragraph (a) of this section.

Subpart F—Agency Reports

§ 34.600 Semi-annual compilation.

(a) The head of each agency shall collect and compile the disclosure reports (see appendix B) and, on May 31 and November 30 of each year, submit to the Secretary of the Senate and the Clerk of the House of Representatives a report containing a compilation of the

information contained in the disclosure reports received during the six-month period ending on March 31 or September 30, respectively, of that year.

(b) The report, including the compilation, shall be available for public inspection 30 days after receipt of the report by the Secretary and the Clerk.

(c) Information that involves intelligence matters shall be reported only to the Select Committee on Intelligence of the Senate, the Permanent Select Committee on Intelligence of the House of Representatives, and the Committees on Appropriations of the Senate and the House of Representatives in accordance with procedures agreed to by such committees. Such information shall not be available for public inspection.

(d) Information that is classified under Executive Order 12356 or any successor order shall be reported only to the Committee on Foreign Relations of the Senate and the Committee on Foreign Affairs of the House of Representatives or the Committees on Armed Services of the Senate and the House of Representatives (whichever such committees have jurisdiction of matters involving such information) and to the Committees on Appropriations of the Senate and the House of Representatives in accordance with procedures agreed to by such committees. Such information shall not be available for public inspection.

(e) The first semi-annual compilation shall be submitted on May 31, 1990, and shall contain a compilation of the disclosure reports received from December 23, 1989 to March 31, 1990.

(f) Major agencies, designated by the Office of Management and Budget (OMB), are required to provide machine-readable compilations to the Secretary of the Senate and the Clerk of the House of Representatives no later than with the compilations due on May 31, 1991. OMB shall provide detailed specifications in a memorandum to these agencies.

(g) Non-major agencies are requested to provide machine-readable compilations to the Secretary of the Senate and the Clerk of the House of Representatives.

(h) Agencies shall keep the originals of all disclosure reports in the official files of the agency.

§ 34.605 Inspector General report.

(a) The Inspector General, or other official as specified in paragraph (b) of this section, of each agency shall prepare and submit to Congress each year, commencing with submission of the President's Budget in 1991, an evaluation of the compliance of that agency with, and the effectiveness of, the requirements herein. The evaluation may include any recommended changes that may be necessary to strengthen or improve the requirements.

(b) In the case of an agency that does not have an Inspector General, the agency official comparable to an Inspector General shall prepare and submit the annual report, or, if there is no such comparable official, the head of the agency shall prepare and submit the annual report.

(c) The annual report shall be submitted at the same time the agency submits its annual budget justifications to Congress.

(d) The annual report shall include the following: All alleged violations relating to the agency's covered Federal actions during the year covered by the report, the actions taken by the head of the agency in the year covered by the report with respect to those alleged violations and alleged violations in previous years, and the amounts of civil penalties imposed by the agency in the year covered by the report.

APPENDIX A TO PART 34—CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the

extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, ''Disclosure Form to Report Lobbying,'' in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, ''Disclosure Form to Report Lobbying,'' in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

APPENDIX B TO PART 34—DISCLOSURE FORM TO REPORT LOBBYING

DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB
0348-0046

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. **Type of Federal Action:** ☐ a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. **Status of Federal Action:** ☐ a. bid/offer/application b. initial award c. post-award	3. **Report Type:** ☐ a. initial filing b. material change **For Material Change Only:** year _____ quarter _____ date of last report _____

4. **Name and Address of Reporting Entity:** ☐ Prime ☐ Subawardee Tier ____, *if known*: **Congressional District,** *if known*:	5. **If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:** **Congressional District,** *if known*:
6. **Federal Department/Agency:**	7. **Federal Program Name/Description:** CFDA Number, *if applicable*: _____
8. **Federal Action Number,** *if known*:	9. **Award Amount,** *if known*: $
10. **a. Name and Address of Lobbying Entity** *(if individual, last name, first name, MI)*:	**b. Individuals Performing Services** *(including address if different from No. 10a)* *(last name, first name, MI)*:

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

11. **Amount of Payment** *(check all that apply)*: $ _____ ☐ actual ☐ planned	13. **Type of Payment** *(check all that apply)*: ☐ a. retainer ☐ b. one-time fee ☐ c. commission ☐ d. contingent fee ☐ e. deferred ☐ f. other; specify: _____
12. **Form of Payment** *(check all that apply)*: ☐ a. cash ☐ b. in-kind; specify: nature _____ value _____	

14. **Brief Description of Services Performed or to be Performed and Date(s) of Service, including officer(s), employee(s), or Member(s) contacted, for Payment Indicated in Item 11:**

(attach Continuation Sheet(s) SF-LLL-A, if necessary)

15. **Continuation Sheet(s) SF-LLL-A attached:** ☐ Yes ☐ No

16. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.	**Signature:** _____ **Print Name:** _____ **Title:** _____ **Telephone No.:** _____ **Date:** _____
Federal Use Only:	**Authorized for Local Reproduction Standard Form - LLL**

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Use the SF-LLL-A Continuation Sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
14. Provide a specific and detailed description of the services that the lobbyist has performed, or will be expected to perform, and the date(s) of any services rendered. Include all preparatory and related activity, not just time spent in actual contact with Federal officials. Identify the Federal official(s) or employee(s) contacted or the officer(s), employee(s), or Member(s) of Congress that were contacted.
15. Check whether or not a SF-LLL-A Continuation Sheet(s) is attached.
16. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

Public reporting burden for this collection of information is estimated to average 30 mintues per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

DISCLOSURE OF LOBBYING ACTIVITIES
CONTINUATION SHEET

Approved by OMB
0348-0046

Reporting Entity: _____ **Page** _____ **of** _____

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Standard Form - LLL-A

ATTACHMENT 11

Federal Cross-Cutting Authorities Review Memorandum

FEDERAL CROSS-CUTTING AUTHORITIES REVIEW MEMORANDUM

From: Arielle Gerstein, Program Manager, WIFIA Program

To: Record

Subject: Federal Cross-Cutting Authorities Review for the Sewerage and Water Board of New Orleans' (SWBNO) Sewer and Water Line Rehabilitation, Repair, and Replacement Program (SWR3) (WIFIA ID 19137LA)

Date: February 1, 2021

This memorandum summarizes the WIFIA Engineering Team's evaluation of the applicability of federal environmental cross-cutting authorities, the impacts from the project, the results of coordination and consultations with other agencies, and documents the review process.

PROJECT DESCRIPTION:

The requested WIFIA loan would be used to fund water projects which fall into four categories:

- Federal Emergency Management Agency (FEMA) funded Water Line Replacement via the Joint Infrastructure (JIRR) Program
- SWBNO and FEMA funded Sewer Line Replacement via the Joint Infrastructure Recovery Roads (JIRR) Program
- Sewer System Evaluation and Rehabilitation Program (SSERP) mandated by EPA Consent Decree
- SWBNO funded Sewer Force Main Replacement and Improvement work

164 individual projects are included in the WIFIA loan. Individual projects are listed in Section E of the WIFIA application.

Supporting Documentation:

Attachment A: WIFIA Application Section E, Project List

PROJECT LOCATION:

The project location is defined as portions of Orleans Parish, Louisiana served by SWBNO system, which represents the majority of the parish. It is expected that the vast majority of work will be conducted within existing right of ways or where the existing pipelines are currently located.

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1. ENVIRONMENTAL JUSTICE EXECUTIVE ORDER NO.12898

Orleans Parish, has an average minority population of 32 percent, which is meaningfully greater than the 20 percent minority population of Louisiana. Although minority demographic data does not exceed 50 percent, minority-based environmental justice communities are considered to be present throughout the project area. The project area has an average low-income population of 25 percent, which is lower than the state of Louisiana at 34 percent. No tribal areas were identified within the project area.

Minor, short-term impacts on communities during construction may occur such as noise, vibration, increased construction traffic, temporary roadway detours, and erosion and runoff, which would be reduced by implementation of drainage, erosion and sediment control measures prior to initiating any work. These measures shall be in accordance with the most current federal, state, and local regulations. Ultimately, the project would improve the environmental health conditions of the area and protect public health and safety long-term. The proposed project would not have disproportionately high and adverse human health or environmental effects on minority, low-income, or federally-recognized Indian tribal communities. Therefore, this proposed action has met the provisions of Executive Order 12898.

Supporting Documentation:

Attachment A: EJ Screen Report

2. ENDANGERED SPECIES ACT (16 U.S.C. §§ 1531–1599)

On September 29, 2020, the species list was obtained from the United Stated Fish and Wildlife Service (USFWS) Louisiana Ecological Services Field Office, using the Information, Planning, and Consultation System. Three listed species were identified, including one mammal species (West Indian Manatee) and two fish species (Atlantic Sturgeon and Pallid Sturgeon). No critical habitats under the jurisdiction of the USFWS are known to occur within the project areas.

Construction activities may impact some vegetation cover existing along maintained right of ways through clearing and incidental damage from trucks backing into them, damage to root systems by trenching, excavation, soil compaction, and general site activity. The amount of temporarily disturbed area is expected to be minimal because a majority of the rehabilitation work is within well developed areas, roadways, and rights-of-way.

The Florida manatee lives in freshwater, brackish and marine habitats. Submerged, emergent, and floating vegetation are their preferred food. The Atlantic Sturgeon is an anadromous fish which migrates from salt water into large coastal rivers to spawn and spend the warm months. The majority of its life is spent in fresh water. The Pallid Sturgeon are a bottom-oriented, large river obligate fish inhabiting the Missouri and Mississippi rivers and some tributaries.

No in-water work is proposed as part of the project. The proposed project will not impact streams, rivers, or any other freshwater habitat that would be suitable habitat for listed species, and therefore will have no effect on listed species. EPA has determined that its project will have no effect on listed species, and therefore, section 7(a)(2) consultation with the USFWS is not required and EPA's

responsibilities under the Act have been satisfied.

Supporting Documentation:

Attachment B: SWBNO Species List (September 2020)

3. BALD AND GOLDEN EAGLE PROTECTION ACT (16 U.S.C. §§ 668-668C)

The proposed activity does not involve capture, transport, exhibition, collection, control or disturbance of eagles or eagle parts. No nests are anticipated to occur within the project area. Therefore, the requirements and regulations of this act do not apply.

Supporting Documentation:

Attachment B: SWBNO Species List (September 2020)

4. FISH AND WILDLIFE COORDINATION ACT (16 U.S.C. § 661 ET SEQ.)

The Project would not control or modify surface waters; therefore, the requirements and regulations of this act do not apply.

5. MARINE MAMMAL PROTECTION ACT (16 U.S.C. §§ 1361-1407)

The projects will not affect marine mammals and no in-water work is proposed; therefore, the regulations and requirements of this act do not apply.

6. NATIONAL HISTORIC PRESERVATION ACT (NHPA) AS AMENDED (54 U.S.C. § 300101 ET SEQ.: HISTORIC PRESERVATION) AND ARCHEOLOGICAL AND HISTORIC PRESERVATION ACT, AS AMENDED (54 U.S.C. §§ 312501-312508: PRESERVATION OF HISTORICAL AND ARCHEOLOGICAL DATA)

The proposed Project includes 164 projects that will rehabilitate and repair the sewer system to minimize sanitary system overflows. A majority of these projects fall under the scope of the JIRR administered by FEMA. As part of the JIRR, the City of New Orleans and the Applicant have proposed a phased approach to damage repair, replacement, or improvements that can be systematically reviewed by FEMA in accordance with this document as plans and specifications for individual repair projects are developed. 139 of these projects fall under the JIRR Abbreviated Consultation Process (ACP) agreement and 26 have been reviewed by the Louisiana State Historic Preservation Officer (SHPO) as part of the Southshore Basin Sanitary Sewer Rehabilitation (SSERP) projects.

Only one project, the SWB Gen DeGaulle Sewer Force Main Replacement Project, required separate consultation by EPA. EPA only submitted this project to the Louisiana SHPO because the remaining projects fall under the JIRR or SSERP agreements already in place so they have already been determined to have no effect by SHPO or will be submitted by the FEMA through the JIRR agreement. The EPA has reviewed the supporting documentation for the SWB Gen DeGaulle Sewer Force Main Replacement Project, and initiated consultation with the Louisiana SHPO on November 17, 2020, and a response from the SHPO's archaeologist was received, dated December 8, 2020. The SHPO response stated that "No historic properties will be affected for this undertaking." for the SWB Gen DeGaulle Sewer Force Main Replacement included under the WIFIA loan.

Supporting Documentation:

Attachment A: Project List (denoting JIRR or SSERP consultation)

Attachment C: SHPO Correspondences (November 17 and December 8, 2020)

7. ARCHAEOLOGICAL RESOURCES PROTECTION ACT (16 U.S.C. §§ 470AA-MM)

The project is not located on federal or Indian lands; therefore, the regulations and requirements of this act do not apply. (See EPA's EnviroMapper, EPA Tribal Areas (lower 48 states) data layer at https://enviro.epa.gov/enviro/em4ef.home).

8. NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (25 U.S.C. § 3001 ET SEQ.)

The project is not located on federal or Indian lands; therefore, the regulations and requirements of this act do not apply. (See EPA's EnviroMapper, EPA Tribal Areas (lower 48 states) data layer at https://www.epa.gov/emefdata/em4ef.home).

9. CLEAN WATER ACT (SECTION 404) AND RIVERS AND HARBORS ACT (SECTION 10)

The project area does not contain streams, wetlands, and waters of the United States. The projects will be designed to avoid impacts to wetlands. Therefore, a Section 404 permit is not required. The project will not impact any Section 10 waters of the Rivers and Harbors Act.

Supporting Documentation:

Attachment D: U.S. Fish and Wildlife Service NWI Wetlands data accessed through NEPAssist (October 2020)

10. PROTECTION OF WETLANDS (EXECUTIVE ORDER NO. 11990 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12608 (1997))

The project area does not contain streams, wetlands, and waters of the United States. The projects will be designed to avoid impacts to wetlands; therefore, this executive order does not apply.

11. FLOOD PLAIN MANAGEMENT (EXECUTIVE ORDER NO. 11988 (1977), AS AMENDED BY EXECUTIVE ORDER NO. 12148 (1979))

The project area is within the 100-year flood plain. New Orleans faces the risk of flooding from the Mississippi River, heavy rains, and hurricane storm surge through Lake Pontchartrain and Lake Borgne. Although the projects are in a flood zone, the impact to the floodplain is negligible. The project involves the replacement and rehabilitation of existing infrastructure and does not involve the construction of new facilities, therefore, the project is not expected to result in changes to floodplains.

Supporting Documentation:

Attachment D: FEMA Flood layer data accessed through NEPAssist (October 2020)

12. SAFE DRINKING WATER ACT (42 U.S.C. §§ 300F-300J-26)

The project area is not located within a sole source aquifer; therefore, the regulations and requirements ofthe Safe Drinking Water Act do not apply.

Supporting Documentation:

Attachment C: Data.gov data accesses through NEPAssist for project site (October 2020)

13. FARMLAND PROTECTION POLICY ACT (7 U.S.C. §§ 4201-4209)

The locations proposed for infrastructure repair and restoration are fully developed, with no natural soil surface remaining. Although approximately a small percentage of the soil mapped within Orleans Parish is considered to be prime farmland, the Farmland Protection Policy Act (FPAA) addresses the conversion of farmland to non-farmland uses only. Because the various proposed project locations would already be developed, urbanized areas, the FPPA is precluded.

Attachment D: U.S. Geological Survey's National Land Cover Database layer accessed through NEPAssist

14. COASTAL ZONE MANAGEMENT ACT (16 U.S.C. §§ 1451-1466)

The Louisiana coastal zone includes all of Orleans Parish. On October 8, 2020, EPA determined that the projects are consistent with the Louisiana Coastal Zone Management (CZM), and requested the Louisiana CZM concurrence on this determination. On October 8, 2020, the Louisiana CZM concurred with EPA's determination as the Office of Coastal Management (OCM) provided general consistency concurrence as it has found that financial assistance of a proposed project would be not be inconsistent with the state CZM program. The CZM Determination provided (Attachment G) is a blanket letter covering all infrastructure projects in the state. The state grants this determination to any agency providing funding for infrastructure projects within the state of Louisiana.

Supporting Documentation:

Attachment F: CZM Determination Request

Attachment G: CZM Determination

15. COASTAL BARRIERS RESOURCES ACT (16 U.S.C. §§ 3501-3510)

According to the USFWS Official Coastal Barrier Resources System Maps, there are no coastal barriers within or near the study areas. Therefore, the regulations and requirements of this act do not apply. (See https://www.fws.gov/ecological-services/habitat-conservation/cbra/maps/mapper.html.)

16. WILD AND SCENIC RIVERS ACT (16 U.S.C. §§ 1271-1287)

There are no Wild and Scenic Rivers within the project area; therefore, the regulations and requirements of this act do not apply. (See https://www.rivers.gov/river-app/index.html?state=LA)

17. ESSENTIAL FISH HABITAT CONSULTATION PROCESS UNDER THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT (16 U.S.C. §§ 1801-1891)

Although the City of New Orleans is surrounded by essential fish habitats, the projects are not located with in essential fish habitat and would therefore not significantly affect essential fish habitat. See https://www.habitat.noaa.gov/protection/efh/efhmapper/.

18. MIGRATORY BIRD TREATY ACT (16 U.S.C. §§ 703-712)

This project does not involve the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and/or nests; therefore the regulations and requirements of this act do not apply.

19. CLEAN AIR ACT CONFORMITY (42 U.S.C. § 7506(C))

The project area is in attainment for all criteria pollutants, except ozone, lead, and particulate matter (PM2.5 and PM10). The emissions associated with this project are limited to construction. No operational emissions are expected to occur. Construction-related emissions will be generated from the exhaust of mobile equipment and fugitive dust from earthmoving and are not expected to affect the area's attainment of air quality standards.

Supporting Documentation:

Attachment D: U.S. EPA Non-Attainment Area data accessed through NEPAssist for project site (October 2020)

20. WILDERNESS ACT (16 U.S.C. § 1131 ET SEQ.)

Projects are not located within a National Wilderness Area; therefore, the regulations and requirements of this act do not apply. (See http://www.wilderness.net/map.cfm).

SECTION 00 73 00.A SUPPLEMENTARY CONDITIONS FOR CLEAN WATER STATE REVOLVING FUND PRJECTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.

B. The below forms must be completed and signed by the successful bidder except for form RF-373. The RF-373 must be signed by the authorized representative of the loan recipient.

C. Clean Water State Revolving Fund Project Required Forms:

1. RF-200: Contractor's Guide & Record for Implementation of Six Good Faith Efforts
2. EPA 5700-49: Certification Regarding Debarment, Suspension, and Other Responsibility Matters
3. EPA 6100-2: Subcontractor Participation Form
4. EPA 6100-3: Subcontractor Performance Form
5. EPA 6100-4: Subcontractor Utilization Form
6. RF-373: MBE/WBE Certification (signed by Loan Recipient)

D. Required Clauses for Contract Documents

1. EQUAL OPPORTUNITY CLAUSE: 40 CFR PART 8
2. HISTORICAL PRESERVATION CLAUSE: 36 CFR PART 800
3. ENDANGERED SPECIES CLAUSE: ENDANGERED SPECIES ACT OF 1973, AS AMENDED
4. PRESIDENTIAL EXECUTIVE ORDERS
5. USE OF AMERICAN IRON AND STEEL
6. DAVIS BACON AND RELATED ACTS
7. Wage Rate Requirements Under the Clean Water Act, Section 513

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 00 73 00.A

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Section 00 731.B

WIFIA REQUIRED CLAUSES FOR CONTRACT DOCUMENTS

The "Specification Package and Bid and Contract Language" packet is a document that includes everything that must be in the specification package as a requirement of the WIFIA program. The package provides all necessary language for WIFIA funded projects.

EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THE FEDERAL LANGUAGE PROVISIONS WITH RESPECT TO STATE OR LOCAL LAW.

Borrower-Specific Requirements

- Demonstration Cities and Metropolitan Development Act, 42 USC 3301 et seq., as amended and Executive Order 12372, 47 FR 30959, July 16, 1982
- Prohibitions relating to violations of CWA and CAA with respect to Federal contracts, grants, or loans under 42 USC 7606 and 33 USC 1368 and EO 11738, 38 FR 25161, September 12, 1973
- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 USC 4601 et seq

Economic and Miscellaneous Authorities

Debarment and Suspension, Executive Order 12549, 51 FR 6370, February 21, 1986

Suggested Contract Language: Contractor certifies that it will not knowingly enter into a contract with anyone who is ineligible under the 2 CFR part 180 and part 1532 or who is prohibited under Section 306 of the Clean Air Act or Section 508 of the Clean Water Act to participate in the Project. Suspension and debarment information can be accessed at http://www.sam.gov. Contractor represents and warrants that it has or will include a term or conditions requiring compliance with this provision in all of its subcontracts under this Agreement.

New Restrictions on Lobbying, 31 U.S.C 1352

Suggested Contract Language: FEDERAL LOBBYING RESTRICTIONS. Recipients of federal financial assistance may not pay any person for influencing or attempting to influence any officer or employee of a federal agency, a member of Congress, an officer or employee of Congress, or an employee of a member of Congress with respect to the award, continuation, renewal, amendment, or modification of a federal grant, loan, or contract. These requirements are implemented for USEPA in 40 CFR Part 34, which also describes types of activities, such as legislative liaison activities and professional and technical services, which are not subject to this prohibition. Upon award of this contract, Contractor shall complete and submit to the City the certification and disclosure forms in Appendix A and Appendix B to 40 CFR Part 34. Contractor shall also require all subcontractors and suppliers of any tier awarded a subcontract over $100,000 to similarly complete and submit the certification and disclosure forms pursuant to the process set forth in 40 CFR 34.110.

Civil Rights, Nondiscrimination, EEO Authorities

General Introductory Language

CIVIL RIGHTS OBLIGATIONS. Contractor shall comply with the following federal non- discrimination requirements:

a. Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color, and national origin, including limited English proficiency (LEP). (42 U.S.C 2000D, et. seq)

b. Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against persons with disabilities. (29 U.S.C. 794, supplemented by EO 11914, 41 FR 17871, April 29, 1976 and EO 11250, 30 FR 13003, October 13, 1965)

c. The Age Discrimination Act of 1975, which prohibits age discrimination. (42 U.S.C 6101 et. seq)

d. Section 13 of the Federal Water Pollution Control Act Amendments of 1972, which prohibits discrimination on the basis of sex.

e. 40 CFR Part 7, as it relates to the foregoing.

Equal Employment Opportunity, (41 CFR Part 60). (EO 11246, 30 FR 12319, September 28, 1965)

*****EEO Required Contract Language. Must be included verbatim. *****

Equal Employment Opportunity Obligations Under EO 11246:

The Contractor shall comply with Executive Order 11246, entitled 'Equal Employment Opportunity,' as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Part 60).

Contractor's compliance with Executive order 11246 shall be based on implementation of the Equal Opportunity Clause, and specific affirmative active obligations required by the Standard Federal Equal Employment Opportunity Construction Contract Specifications, as set forth in 41 CFR Part 60-4.

During the performance of this contract, the contractor agrees as follows:

1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.
2) The contractor will, in all solicitations or advancements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment

without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5) The contractor will comply with all provisions of Executive Order No. 11246 of Sept. 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6) The contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 11246 of Sept. 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
8) The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States. [Sec. 202 amended by EO 11375 of Oct. 13, 1967, 32 FR 14303, 3 CFR, 1966–1970 Comp., p. 684, EO 12086 of Oct. 5, 1978, 43 FR 46501, 3 CFR, 1978 Comp., p. 230, EO 13665 of April 8, 2014, 79 FR 20749, EO 13672 of July 21, 2014, 79 FR 42971]

Standard Federal Equal Employment Opportunity Construction Contract Specifications (41 CFR 60-4.3):

1) As used in these specifications:
   a) "Covered area" means the geographical area described in the solicitation from which this

contract resulted;

b) "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c) "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d) "Minority" includes:

i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2) Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3) If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4) The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during

the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7) The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:
   a) Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
   b) Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
   c) Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the Contractor may have taken.
   d) Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
   e) Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
   f) Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.
   g) Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General

Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h) Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i) Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j) Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k) Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR part 60-3.

l) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m) Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n) Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o) Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p) Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p of these Specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9) A single goal for minorities and a separate single goal for women have been established. The

Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10) The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, sexual orientation, gender identity, or national origin.
11) The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.
12) The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
13) The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.
14) The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.
15) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

Segregated Facilities, 41 CRF 60-1.8

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, sexual orientation, gender identity, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensuring that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. This obligation extends to all contracts containing the equal opportunity clause regardless of the amount of the contract. The term “facilities,” as used in this section, means waiting rooms, work areas, restaurants and other

eating areas, time clocks, restrooms, wash rooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees; Provided, That separate or single-user restrooms and necessary dressing or sleeping areas shall be provided to assure privacy between the sexes.

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246) located at 41 CFR § 60-4.2:

1. The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.
2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Time-tables	**Goals for minority participation for each trade**	**Goals for female participation in each trade**
	Insert goals for each year[2]	6.9%[3]

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

[2] Goals can be found at: https://www.dol.gov/ofccp/TAguides/TAC_FedContractors_JRF_QA_508c.pdf
[3] Nationwide goal for all covered areas

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any).

Participation by Disadvantaged Business Enterprises in Procurement under EPA Financial Assistance Agreements, 73 FR 15904

**Note:* The WIFIA program only requires use of the EPA DBE program' six good faith efforts during contract procurement. States may require additional DBE reporting.

Disadvantaged Business Enterprises (DBE). The contractor must ensure that the DBE's six good faith efforts are used during the procurement of subcontractors for the (Project). The six good faith efforts are found at: https://ww.epa.gov/grants/disadvantaged-business-enterprise-program-requirements#sixgoodfaithefforts.

American Iron and Steel and Federal Labor Standards

American Iron and Steel (AIS) Requirement

The Contractor acknowledges to and for the benefit of Sewerage and Water Board of New Orleans ("Purchaser") and the United States Environmental Protection Agency ("EPA") that it understands the goods and services under this Agreement are being funded with monies made available by the Water Infrastructure Finance and Innovation Act program of the EPA that has statutory requirements commonly known as "American Iron and Steel" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents, warrants and covenants to and for the benefit of the Purchaser and the EPA that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the EPA. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or the EPA to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or the EPA resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the EPA or any damages owed to the EPA by the Purchaser). While the Contractor has no direct contractual privity with the EPA, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the EPA is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the EPA.

Note that the language below addresses Davis Bacon and Related Acts and incorporates the WIFIA borrower (Sewerage and Water Board of New Orleans) as an authorized representative, in accordance with the WIFIA loan agreement, to ensure compliance with this federal requirement.

***Required** Contract Language.*

Compliance with Davis-Bacon and Related Acts.

(a) In any contract in excess of $2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in 29 C.F.R. § 5.1, the following clauses (or any modifications thereof to meet the particular needs of the agency, provided that such modifications are first approved by the Department of Labor):

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-

Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)

(A) The WIFIA assistance recipient, [*Sewerage and Water Board of New Orleans*], on behalf of the U.S. Environmental Protection Agency (EPA), shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The WIFIA assistance recipient shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the WIFIA assistance recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent to the Administrator of the Wage and Hour Division (WHD Administrator), U.S. Department of Labor, Washington, DC 20210. The WHD Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30- day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the WIFIA assistance recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the WIFIA assistance recipient shall refer the questions, including the views of all interested parties and the recommendation of the WIFIA assistance recipient, to the WHD Administrator for determination. The WHD Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the WIFIA assistance recipient or will notify the WIFIA assistance recipient within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the

contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. [*Sewerage and Water Board of New Orleans*], shall upon written request of the WIFIA Director or an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the WIFIA Director may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or

trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) {no text here}

(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to [*Sewerage and Water Board of New Orleans*] . The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to [*Sewerage and Water Board of New Orleans*], for transmission to the EPA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to[*Sewerage and Water Board of New Orleans*]).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable

wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of *Sewerage and Water Board of New Orleans*, EPA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the EPA may, after written notice to the [*Sewerage and Water Board of New Orleans*], take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees –

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates

(expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the WHD Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the WHD Administrator determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the

requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and [*Sewerage and Water Board of New Orleans*], EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

(b) Contract Work Hours and Safety Standards Act. The following clauses set forth in paragraphs (b)(1), (2), (3), and (4) of this section shall be inserted in full in any contract in an amount in excess of
$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by § 5.5(a) or § 4.6 of part 4 of this title. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in

such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of $25 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The [*Sewerage and Water Board of New Orleans*] shall upon its own action or upon written request of an authorized representative of the Department of Labor, or the EPA, withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

(c) In addition to the clauses contained in paragraph (b), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in § 5.1, the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the EPA shall cause or require the *Sewerage and Water Board of New Orleans*] to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the [*Sewerage and Water Board of New Orleans*], EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

END OF SECTION

LATEST UPDATES ON FEDERAL REQUIREMENTS

BUILD AMERICA, BUY AMERICA ACT

Other language may be included on contracts for clarity on this federal requirement if an applicable waiver applies. For example, if the WIFIA program has determined program waiver coverage, indicate in contract documents, "This Project is covered under the WIFIA Program Waiver (June 22, 2022), which waives BABA requirements."

Build America, Buy America (Effective May 14, 2022)
The Contractor acknowledges to and for the benefit of ("Purchaser") and the United States Environmental Protection Agency ("EPA") that it understands the goods and services under this Agreement are being funded with federal monies made available by the Water Infrastructure Finance and Innovation Act program of EPA that have statutory requirements commonly known as "Build America, Buy America;" that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States ("Build America, Buy America Requirements") including iron and steel, manufactured products, and construction materials provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Purchaser or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment (Effective August 13, 2020). The John S. McCain National Defense Authorization Act for Fiscal Year 2019 (P.L. 115- 232), at Section 889, prohibits EPA financial assistance recipients, including WIFIA borrowers, from expending loan funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in the Act, "covered telecommunications equipment or services" means:

a) Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
b) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
c) Telecommunications or video surveillance services provided by such entities or using such equipment.
d) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The Act does not prohibit:

a) Procuring with an entity to provide a service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements.
b) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

END OF SECTION

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FEMA PWs 21032 and 21031Correspondences

Governor's Office of Homeland Security
and Emergency Preparedness
State of Louisiana

JOHN BEL EDWARDS
GOVERNOR

CASEY TINGLE
DIRECTOR

February 22, 2022

Mr. Josh W. Hartley
City of New Orleans
1340 Poydras Street – Suite 1000
New Orleans, LA 70112

Ms. Jovan Walker
FEMA Grants Manager
Sewerage and Water Board of New Orleans
625 St. Joseph Street
New Orleans, LA 70165

RE: FEMA-1603-DR-LA, FIPS 071-55000-00 and 071-06A69-00
City of New Orleans, Project Worksheet 21032
Sewerage and Water Board of New Orleans, Project Worksheet 21031
Carrollton ESSA & SSERP Sewer Project No. S139/Project ID S139
Sandy Recovery Improvement Act/Joint Infrastructure Recovery Request Amendment
Alternate and Improved Database (AIDB) #2958

Dear Mr. Hartley and Ms. Walker,

This office has received the enclosed FEMA email dated February 17, 2022 concerning an amendment to the scope of work for the City of New Orleans (CNO/City) and Sewerage and Water Board of New Orleans (SWBNO) Sandy Recovery Improvement Act (SRIA) / Joint Infrastructure Recovery Request (JIRR), formulated in Project Worksheets (PW) 21032 and 21031, respectively. The referenced FEMA correspondence addresses Carrollton ESSA & SSERP Sewer Project No. S139/Project ID S139: AIDB 2958.

FEMA's email states, "FEMA accepts the proposed project submitted under PWs 21032 and 21031. FEMA understands the SOW may extend beyond the FEMA eligible SOW. As such, any improvements or enhancements will need to be reconciled against the aggregate eligible grant and SOW under the consolidated grant at closeout."

The FEMA correspondence, Record of Environmental Consideration and other associated documents impose requirements and restrictions that should be examined very closely prior to the commencement of any construction related activities; including notifications prior to construction.

The enclosed Record of Environmental Consideration (REC) includes, but is not limited to, the following comments, paraphrased herein by GOHSEP. "FEMA has determined the Undertaking will adversely affect historic properties. FEMA proposed to resolve the adverse effects through an Abbreviated Consultation Process (ACP)." CNO is required to implement the conditions defined in the ACP for minimizing and avoiding adverse effects to historic properties.

It is CNO's and SWBNO's responsibility to ensure all work applicable to this approval is in accordance with all restrictions or conditions stipulated in the enclosed FEMA documents for PWs 21032 and 21031, respectively.

If you have any questions, please do not hesitate to contact me at phone number (225) 338-7342 or via email to Lynne.Browning@la.gov.

Respectfully,

Lynne Browning
Assistant Deputy Director - State Public Assistance

LB: am

Enclosure

Cc: Joseph Threat, CNO (via email)
LaNitrah Hasan, CNO (via email)
Kelly Cryer, CNO (via email)
Nguyen Phan, CNO DPW (via email)
Donnell Bonnee, CNO DPW (via email)
Khalid Saleh (via email)
Mark Van Hala, SWBNO (via email)
Nathan Gary, GOHSEP (via email)
Anitra Adams, GOHSEP (via email)
Ellen Ibert, GOHSEP (via email)
Daniel Crothers, GOHSEP (via email)
Margaret DeJean, GOHSEP (via email)
Jaron Herd, GOHSEP (via email)

EMAIL NOTIFICATION

RE: FEMA-1603-DR-LA, FIPS 071-55000-00 and 071-06A69-00
City of New Orleans, Project Worksheet 21032
Sewerage and Water Board of New Orleans, Project Worksheet 21031
Carrollton ESSA & SSERP Sewer Project No. S139/Project ID S139
Sandy Recovery Improvement Act/Joint Infrastructure Recovery Request Amendment
Alternate and Improved Database (AIDB) #2958

Dear Grantee/Subgrantee:

We received a letter from the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) dated June 28, 2021, (Attachment 1) on behalf of the City of New Orleans (CNO, Subgrantee) and the Sewerage and Water Board of New Orleans (SWBNO, Subgrantee) for an amendment to the scope of work (SOW) under large Project Worksheets (PWs) 21032 and 21031.

FEMA wrote PWs 21032 and 21031 to document approval of the Joint Infrastructure Recovery Request (JIRR), which is a consolidated subgrant under the Public Assistance (PA) Alternative Procedures Pilot Program for Permanent Work (Pilot Program) in accordance with the Sandy Recovery Improvement Act (SRIA) of 2013 (Public Law 113-2).

FEMA approved CNO to use funding under PW 21032 to repair or replace CNO roads, catch basins, curbs, gutters, drives, foot laps, curb ramps required under the Americans with Disabilities Act (ADA), sidewalks, storm water drainage lines, and other incidentals associated with CNO maintained infrastructure as outlined in the SRIA/JIRR. FEMA approved SWBNO to use funding under PW 21031 for repair or replacement of water distribution lines, sanitary sewer collection lines, and necessary curb ramps, required under the ADA.

In accordance with the requirements set forth under SRIA, FEMA, GOHSEP, CNO and SWBNO documented the agreements reached on the SRIA/JIRR projects in Letters of Undertaking for the Fixed Cost Estimate Agreement dated May 27, 2016, which GOHSEP and the Subgrantees signed on June 14, 2016 (Attachments 2 and 3). The Subgrantees agreed to its respective fixed estimate, to participate in the Pilot Program in accordance with the SRIA, and to accept responsibility for all costs above the fixed estimate. If the approved fixed estimate is less than the actual cost for the SRIA Subgrant, FEMA will not approve additional funds. In accordance with Section 428 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, FEMA concurs and agrees on the fixed estimates. Please advise the Subgrantees if they do not fulfill their obligations under the PA Pilot Program, FEMA will de-obligate the funding for the project.

The Letters of Undertaking establish a period of performance (PoP) of seven years from the date the PWs were issued. As a result, the PoP for PW 21031 and PW 21032 expire on July 20, 2023. If a further extension of the PoP is required, the Grantee and Subgrantee must submit a request for an extension to the Assistant Administrator for Recovery at FEMA Headquarters. The

Grantee and Subgrantee acknowledge that failure to comply with the terms of period of performance set forth in this letter may cause the approved funding in the fixed amount subaward referenced in the letters of undertaking to be deemed ineligible and may result in de-obligation of those funds.

In the letter dated June 28, 2021 (Attachment 1), the Subgrantees propose a SOW under the Carrollton Emergency Sewer System Assessment (ESSA) and Sewer System Evaluation and Rehabilitation Project Management (SSERP) Sewer Project (Project ID No. S139) to include roadway pavement mill (cold planing) and overlay, isolated patching, and/or full block reconstruction, inclusive of any base and subbase course work, engineering fabrics, curbs and gutters, driveways, sidewalks and foot laps, ADA ramps, associated utility (drainage, water, and/or sewer) repairs and/or replacements, and other incidental work within the public right-of-way.[1] The amendment also seeks approval for rehabilitation of the existing sanitary sewer collection system via manhole rehabilitation, mainline cleaning and CCTV inspection, excavated point repairs, full length main line replacement, service connection and lateral replacement, full-length Cured-in-Place Pipe (CIPP) lining, service lateral Cured-in-Place Pipe (CIPP) lining, traffic control, site paving and restoration work as indicated in the contract documents attached to the project. All work will be performed within existing, previously disturbed right of ways.

On November 3, 2021 (Attachment 4), FEMA sent a Request for Information (RFI) requesting drawings reflecting at least 90% complete to perform a compliance review. On a November 18, 2021, conference call including GOHSEP, SWBNO, CNO, and FEMA, SWBNO stated their drawings, although not 90%, provided enough information to show compliance with the JIRR guidelines. FEMA agreed due to the nature of the work being performed that the current drawings were sufficient for them to move forward.

FEMA has conducted the necessary reviews of the Subgrantees' request, including site visits, program eligibility determinations, and environmental and historical reviews under the National Environmental Policy Act (NEPA) and Section 106 of the National Historical Preservation Act (NHPA). Please advise the Subgrantees the Record of Environmental Consideration (Attachment 5) contains the related conditions and conclusions for the proposed work.

Estimated costs for the Carrollton ESSA and SSERP Sewer Project is $2,329,670.00. Of this amount, the Subgrantees allocated FEMA funding of $561,477.00 for CNO PW 21032 and $1,361,141.00 for SWBNO PW 21031[2]. FEMA accepts the proposed project submitted under PWs 21032 and 21031. FEMA understands the SOW will extend beyond the FEMA eligible SOW. As such, any improvements or enhancements will need to be reconciled against the aggregate eligible grant and SOW under the consolidated grant at closeout.

Any balance of funds necessary for completing the consolidated subgrants will be the responsibility of the Subgrantees. If actual costs associated with the SOW are less than the

[1]The Carrollton ESSA and SSERP sewer project lies within the Carrollton Sanitary Sewer Basin in the Carrollton neighborhood in New Orleans. General boundaries include Metairie Road to the north, I-10 to the west and the around bound by S. Claiborne Ave. to the north, State Street to the east, the Missippi River to the south, and the Orleans/Jefferson Parish Boundary to the west.

capped amounts, the Subgrantees may use excess funding from the consolidated subgrants for PA program-related purposes. Requests to use excess funds must be approved by FEMA prior to commencing work. The project utilizing excess funds must meet all other PA Program requirements and must comply with other applicable Federal requirements, including environmental and historic preservation laws, regulations, and executive orders.

The proposed SOW is not covered by the National Flood Insurance Program general property policy and is considered uninsurable. The obtain and maintain requirement is not warranted.

If GOHSEP or the Subgrantees identify any discrepancies in the information provided in this correspondence, including but not limited to project description, SOW, or costs, please contact FEMA within 30 days with a list of specific items for resolution.

If you have any questions regarding this matter, please contact Ronnie Fairley, FEMA Task Lead, at (703) 463-6938.

Approved by: Eddie Williams
Title: Louisiana Public Assistance Lead
Date:

EDDIE L WILLIAMS
Digitally signed by EDDIE L WILLIAMS
Date: 2022.02.17 12:12:24 -06'00'

Attachments:
1) GOHSEP letter dated June 28, 2021 and SWBNO letter dated June 24, 2021
2) CNO Letter of Undertaking dated May 27, 2016
3) SWBNO Letter of Undertaking dated May 27, 2016
4) FEMA Request for Information dated November 3, 2021
5) Record of Environmental Consideration dated July 19, 2021

ATTACHMENT 1

Governor's Office of Homeland Security
and Emergency Preparedness
State of Louisiana

JOHN BEL EDWARDS
GOVERNOR

JAMES B. WASKOM
DIRECTOR

June 28, 2021

Ms. Traci Brasher
Director, Recovery Division
Federal Emergency Management Agency
FRC 800 North Loop 288
Denton, TX 76209-3698

SUBJECT: Joint Infrastructure Recovery Request
Project ID No.: S139-Carrollton ESSA & SSERP Sewer Project
FEMA-1603-DR-LA; Sewerage & Water Board of New Orleans:
FIPS: #071-06A69-00 Joint Infrastructure Recovery Program
SWBNO JIRR/SRIA Phase III Recovery Roads – Project Design (PW 21031, PW 21032 and SWBNO)
Expedited Environmental Planning and Historic Preservation Request
Infrastructure Restoration Scope Project Construction (PW 21031, PW 21032, and SWBNO)
Roadway and Infrastructure Restoration Scope; AIDB # 2958

Dear Ms. Brasher:

This office received the enclosed June 24, 2021 correspondence from the City of New Orleans (CNO) Department of Public Works (DPW) and Sewerage & Water Board of New Orleans (SWBNO) requesting an Expedited Environmental and Historic Preservation review of Project Worksheet (PW) 21032 and PW 21031 Sandy Recovery Improvement Act (SRIA) Public Assistance Alternative Procedures Pilot Program Consolidated Fixed Sub-Grant Phase lll Recovery Roads Project- S139-Carrollton ESSA & SSERP Sewer Project. The project has been entered into the FEMA Al database as 2958.

Per the Applicant's request, Emergency repairs/replacement of manhole and sewer line work that lies within Pw 21031 Water Distribution and Sanitary Sewer Collection Infrastructure and street reconstruction over the sewer lines under PW 21032 Roadway, Storm Water and Sanitary Sewer Collection, Water Distribution and ADA Ramp Infrastructure (reference Attachment A) to include the following scope of work:

- S139 Sewer Rehabilitation Carrollton Basin, Project Location: Carrollton Neighborhoods. Emergency Sewer System Assessment (ESSA) and Sewer System Evaluation and Rehabilitation Program Management (SSERP) rehabilitation of the existing sanitary sewer collection system via manhole rehabilitation, mainline cleaning and CCTV inspection, excavated point repairs, full length main line replacement, service connection and lateral replacement, full-length Cured-in-Place Pipe (CIPP) lining, service later Cured-in-Place (CIPP) ling, traffic control, site paving and restoration work as indicated in the Contract Documents.

Attachments 3.A – 4.3 referenced in the CNO letter have been uploaded to LouisianaPA.com in the relevant "Documents / Tasks" sections of PW 21032, and have previously been provided to FEMA.

If you have any questions, please do not hesitate to contact me at phone number (225) 338-7342 or via email to Lynne.Browning@la.gov.

Respectfully,

Lynne Browning
Assistant Deputy Director – Public Assistance

LB:mod
Enclosure

cc: Josh Hartley, CNO DPW (via email)
Mark Van Hala, SWBNO (via email)
Khalid Saleh, CNO DPW (via email)
Joe Threat, CNO PDU (via email)
Kelly Cryer, CNO PDU (via email)
LaNitrah Hasan, CNO PDU (via email)
Nguyen Phan, CNO DPW (via email)
Donnell Bonnee, CNO DPW (via email)
Jovan Walker, SWBNO (via email)
Daniel Crothers, GOHSEP (via email)
LaKeivea Warren, GOHSEP (via email)
Ellen Ibert, GOHSEP (via email)
Meg Owen, GOHSEP (via email)
Tiffany Spann, FEMA EHP (via email)

"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21ST CENTURY"

Sewerage & Water Board OF NEW ORLEANS

TRANSMITTAL COVER FORM

Project: **SWB JIRR/SRIA: S139 (PW 21031)** **Carrollton ESSA & SSERP Sewer Project**	**Date:** **06/24/21**

To:	Ms. Lynne Browning	**From:**	Mark Van Hala
	GOHSEP		Sewerage & Water Board
	7667 Independence Boulevard		of New Orleans
	Baton Rouge, LA 70806		8800 S. Claiborne Ave.
Attn.:			New Orleans, LA 7011800

We transmit: [x] herewith [**x**] via email [**x**] via __Federal Express_ the following: LAPA

Copies	Date	Rev. No.	Description	Action Code(s)
1	**06/24/21**		SWB Project ID S139 Carrollton ESSA & SSERP Sewer Project PW 21031/21032 Preliminary Plans Check Environmental Planning & Historic Preservation Request	5

Received By: _____

Action Codes:		
(1) Approved	**(5) For Review**	(9) As Requested
(2) Approved as Corrected	(6) For Comment	(10) For Execution
(3) Revise & Resubmit	(7) For Distribution	(11) Signature
(4) Not Approved	(8) For File	(12) Other: _____

Copies To:	(with enclosures)	(without enclosures)
Albert Walters, FEMA PA	☑	☐
Tiffany Spann, FEMA EHP	☐	☑
LaKeivea Warren, GOHSEP	☐	☑
Nguyen Phan, CNO DPW	☐	☑
Joseph Threat, CNO PDU	☐	☑
Mark Van Hala, SWB PDU	☐	☑
Jovan Walker, SWB DPW	☐	☑
Monique Rainey, SWB PDU	☐	☑
Josh Hartley, CNO DPW	☐	☑

"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21st CENTURY"

Sewerage & Water Board OF NEW ORLEANS

625 ST. JOSEPH STREET
NEW ORLEANS, LA 70165 • 504-529-2837 OR 52-WATER
www.swbno.org

June 24, 2021

Ms. Lynne Browning
Assistant Deputy Director
Governor's Office of Homeland Security
and Emergency Preparedness
7667 Independence Boulevard
Baton Rouge, Louisiana 70806

Subject: S139 - Carrollton ESSA & SSERP Sewer Project
FEMA-1603-DR-LA; Sewerage &Water Board of New Orleans
Joint Infrastructure Recovery Program
Project Design (PW 21031, PW 21032 and SWBNO)
Environmental Planning and Historic Preservation Request
Infrastructure Restoration Scope Project Construction (PW 21031, PW 21032, and SWBNO)

Dear Ms. Browning,

Sewerage & Water Board of New Orleans (SWBNO) is requesting an expedited Environmental Planning and Historic Preservation review of the Sandy Recovery Improvement Act (SRIA) Public Assistance Alternative Procedures Pilot Program Consolidated Fixed Sub-Grant Phase III Recovery Roads Project – Emergency replacement of sewer lines that lie within Project Worksheets (PW) 21031 Water Distribution and Sanitary Sewer Collection Infrastructure and street reconstruction over the sewer lines under PW 21032 Roadway, Storm Water and Sanitary Sewer Collection, Water Distribution, & ADA Ramp Infrastructure (reference Attachment A) to include the following scope of work as described below:

Project Scope of Work Summary – S139 Sewer Rehabilitation Carrollton Basin. Project Location: Carrollton Neighborhoods. Emergency Sewer System Assessment (ESSA) and Sewer System Evaluation and Rehabilitation Program Management (SSERP) rehabilitation of the existing sanitary sewer collection system via manhole rehabilitation, mainline cleaning and CCTV inspection, excavated point repairs, full length main line replacement, service connection and lateral replacement, full-length Cured-in-Place Pipe (CIPP) lining, service lateral Cured-in-Place Pipe (CIPP) lining, traffic control, site paving and restoration work as indicated in the Contract Documents.

Members of the Board: ANDREW AMACKER • ROBIN BARNES • LATOYA CANTRELL • DR. TAMIKA DUPLESSIS • CILEEN GLEASON RALPH W. JOHNSON • STACY HORN KOCH • JOSEPH PEYCHAUD • LEWIS STIRLING, III • LYNES R "POCO" SLOSS
•An Equal Opportunffy Employer"

The estimated cost of construction for S139 - Carrollton ESSA & SSERP Sewer Project is approximately $2,329,670.00 (PW 21031 = $1,361,141.00, PW 21032 = $561,477.00, and SWBNO = $407,052.00) exclusive of any soft, direct administrative or closeout incentive costs.

This utility system is located in the eligible geographic area meeting the criteria of the Sandy Recovery Improvement Act (SRIA) Public Assistance Alternative Procedures Pilot Program Consolidated Fixed Sub-Grant and Water Distribution and Sanitary Sewer collection Infrastructure guidance. If needed, the SWBNO is prepared to provide any additional information upon request to the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Federal Emergency Management Agency (FEMA) Public Assistance (PA), FEMA Environmental Planning and Historic Preservation (EHP) review group and FEMA Alternate/Improved Project (AI) review group in hard copy and electronic form. The final project bid package inclusive of the final plans and specifications, final construction cost estimate, and updated project schedule if needed will be provided following the conclusion the final design stage. Additionally, the SWBNO is requesting concurrent FEMA A/I review with the FEMA EHP review in expediting the approval process.

Please contact Mark Van Hala at (504) 930-7223 or via email at mvanhala@swbno.org, if you have any questions. Thank you for your continued support of the full recovery of the City of New Orleans and the Sewerage & Water Board of New Orleans from Hurricane Katrina.

Sincerely,

Mark D Van Hala, PE
JIRR Program Administrator
Sewerage & Water Board of New Orleans

cc:
Albert Walters, FEMA PA
Tiffany Spann, FEMA EHP
LaKeivea Warren, GOHSEP
M. Ron Spooner, PE, SWBNO, GSO
E. Grey Lewis, SWBNO CFO
Jovan Walker, SWBNO, PDU
Monique T. Rainey, SWBNO, PDU
Josh W. Hartley, PE, CNO DPW
Joseph Threat, CNO

Members of the Board: ANDREW AMACKER • ROBIN BARNES • LATOYA CANTRELL • DR. TAMIKA DUPLESSIS • CILEEN GLEASON RALPH W. JOHNSON • STACY HORN KOCH • JOSEPH PEYCHAUD • LEWIS STIRLING, III • LYNES R "POCO" SLOSS
•An Equal Opportunffy Employer"

ATTACHMENT 2

U.S. Department of Homeland Security
FEMA Region VI
FRC 800 North Loop 228
Denton, TX 76209-3698

FEMA

LETTER OF UNDERTAKING FOR FIXED COST ESTIMATE AGREEMENT

May 27, 2016

James B. Waskom, Director
GOHSEP, State of Louisiana
1500 Main Street
Baton Rouge, LA 70802

Mitchell J. Landrieu, Mayor
City of New Orleans
1300 Perdido St.
New Orleans, LA 70112

Re: City of New Orleans - Joint Infrastructure Recovery Request (JIRR) Consolidated Subaward

Dear Director Wascom and Mayor Landrieu:

This letter confirms the understanding that was reached on December 18, 2015, between the Federal Emergency Management Agency (FEMA), the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) (the "Recipient[1]"), and the City of New Orleans (the "Subrecipient"), regarding the restoration of the city's roads and storm water drainage system infrastructure. The facilities sustained flooding and other disaster-related damages from Hurricane Katrina. This project is to be funded under the Public Assistance Grant Program authorized for the major disaster declaration FEMA-1603-DR-LA declared on August 29, 2005.

Please sign a confirmation of the essential elements of the undertaking below no later than two (2) weeks from the date of this letter. Once I receive your signed confirmation, FEMA will work with the Recipient and the Subrecipient to develop and execute a Public Assistance alternative procedure pilot project for permanent work and supporting Project Worksheets ("PW") in accordance with 42 U.S.C. § 5189f and the terms of this letter of undertaking.

---

[1] The terms "recipient," "subrecipient," "award," and "subaward" are used in place of the terminology of the "grantee," "subgrantee," "grant," and "subgrant," respectively. This language has been changed in order to comport with the definitions provided in 2 CFR Part 200.

Essential Elements of Alternative Procedures Pilot Project for Restoration of the Roads and Storm Water Drainage Lines under FEMA-1603-DR-LA

1. FEMA agrees that due to damage sustained as a result of the declared event, the following elements of the damaged facilities are eligible for restoration pursuant to Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, codified in 42 U.S.C. § 5172. Further, FEMA, the Recipient, and the Subrecipient (collectively, the "Parties") agree upon the eligible scope of work description to repair the damage caused as a direct result of the declared event that will be captured in the new Sandy Recovery Improvement Act (SRIA) Project Worksheet (PW) (PW Ref# C2479) that FEMA will generate for the facilities. A summary of the agreed upon damages for the applicable facilities is described in the Damage Description and Dimensions section of the SRIA PW.

Facilities - Element by Neighborhood	***Linear Miles of Right-of-Way Damage*** (Including: road pavement, curb and gutter, drive aprons, sidewalk, storm water drainage lines, water distribution lines, sanitary sewer collection lines)
1) Milneburg	13
2) Lakeview	31
3) Lower Ninth Ward	36
4) St. Claude	25
5) Lakeshore/Lake Vista	16
6) Broadmoor	15
7) Bywater & Marigny	16
8) Marlyville-Fontainebleau	16
9) Filmore	19
10) St. Bernard Area	4
11) Dillard	9
12) Treme-Lafitte	11
13) Freret	6
14) Lakewood	5
15) Read Blvd East/Viavant/Venetian Isles	22
16) Milan/Touro	13
17) West End	11
18) Florida Area/Development	16
19) Central Business District/Lower Garden District	8
20) West Lake Forest	4
21) St. Roch	15
22) Holy Cross	11
23) Navarre	6
24) Little Words	25
25) Iberville & Tulane-Gravier	10
26) Plum Orchard	12
27) Pontchartrain Park	9

28) St. Anthony	18
29) French Quarter	5
30) Mid City	29
31) Gentilly Woods	9
32) City Park	4
33) Lake Terrace & Oaks	6
34) Pines Village	10
35) New Aurora-English Turn	0
36) Audubon, East Carrollton, Black Pearl, Uptown & West Riverside	57
37) Read Blvd West	12
38) Central City	25
39) East Riverside, Garden District, Irish Channel, and St. Thomas Development	16
40) Leonidas & Hollygrove	32
41) Village De L'Est	9
42) Seventh Ward, Bayou St. John, & Fairgrounds	37
43) Fischer Development, Algiers Point, McDonough, Behrman, Whitney, Old Aurora, Tall Timbers-Brechtel and US Naval Base	4
44) Dixon, B.W. Cooper, & Gert Town	17
45) Desire Area, Desire Development & Gentilly Terrace	28

a. The Parties agree this subaward contains partial funding from the Arbitration Agreement for United States Civilian Board of Contract Appeals (CBCA) case number CBCA 3344-FEMA dated April 25, 2014, and entered into by FEMA, GOHSEP, and the City of New Orleans on May 6, 2014. The funding from CBCA 3344-FEMA relates to funding requested by the City in conjunction with Americans with Disabilities Act (ADA) compliant curb ramps throughout the City of New Orleans. FEMA's Arbitration Agreement provides scope of work and funding in accordance with the requirements of the Americans with Disabilities Act and Department of Justice guidance.

b. The Parties agree the specific, FEMA-approved CBCA 3344-FEMA scope of work as originally documented in FEMA-1603-DR-LA Project Worksheet 20908 must be executed in full and in accordance with Section 5 (C) of the Arbitration Agreement. Specifically, the City of New Orleans agrees to include a separate line item in the contracts for the scope of work associated with the ADA compliant curb ramps to ensure it is tracked separately from any additional ramps funded under the JIRR between CNO and SWBNO.

2. The Parties agree that the Subrecipient will accept a fixed amount Public Assistance subaward for the agreed-upon disaster damage and eligible scope of work for the disaster-damaged facilities under the alternative procedures authorized under Section 428

of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. § 5189f, and implemented as a pilot program. The Parties further agree that the terms of this project will be subject to Section 428 of the Stafford Act, the *Public Assistance Alternative Procedures Pilot Program Guide for Permanent Work* (Version 3) dated March 29, 2016, and, except where specifically modified pursuant to Section 428 of the Stafford Act, all other laws, regulations, policies, and guidance applicable to FEMA's Public Assistance Program.

3. In accordance with 42 U.S.C. § 5189f (e), FEMA, working collaboratively with representatives from the Recipient and the Subrecipient, has accepted the total fixed cost estimate for eligible work to restore the damaged facilities in the amount of **$1,399,420,109.37**. This cost estimate includes architectural and engineering design and supplemental services, project management, and any costs resulting from environmental and historic preservation (EHP) compliance reviews.

    a. Direct administrative cost (DAC)/closeout incentive (COI) is authorized separate and apart from the fixed cost estimate subaward. The authority to provide funding for DAC/COI under FEMA-1603-DR-LA is authorized under Title VI, Chapter 2, Section 638(F) of the Public Law 109-295 (Post-Katrina Emergency Management Reform Act [PKEMRA] of 2006) and under sections 406 and 407 of the Stafford Act.

    b. FEMA will obligate a separate, capped DAC/COI subaward for DAC/COI tasks specifically associated with the additional eligible funding cited in FEMA's December 7, 2015 letter. The Subrecipient may be reimbursed for DAC/COI based on actual incurred costs up to **$33,626,483.00**, which is three (3) percent of the additional funding cited in FEMA's letter dated December 7, 2015.

    Likewise, any DAC/COI costs already incurred or to be incurred in the future for other scope of work being consolidated into this SRIA PW will continue to be reimbursable through the Subrecipient's roll-up DAC/COI PW 19920. DAC/COI will be reimbursed for eligible scope of work and costs that are adequately documented, reasonable, and attributed to a specific project worksheet as described in June 12, 2012 and February 13, 2013 letters to GOHSEP from FEMA's Assistant Administrator Recovery Directorate, Deborah Ingram; and a September 8, 2009 Direct and Indirect Administrative Task List attached to a memorandum to Regional Administrators from Elizabeth Zimmerman, FEMA's Assistant Administrator Disaster Recovery Directorate.

4. In agreeing to the fixed amount Public Assistance (PA) subaward:

    a. Fixed Amount Subaward. The Parties agree that the subaward will be capped at the amount of **$1,399,420,109.37** for restoration of the damaged facilities, and acknowledge that it reflects 100% of the agreed-upon total project costs. The Parties further agree that a separate subaward will be capped at the amount of **$33,626,483.00** to cover DAC/COI associated with this project. The total agreed-

upon fixed amount of **$1,433,046,592.37** includes the 100% federal cost-share and the 0% non-federal cost-share. The Recipient and the Subrecipient acknowledge that, in accordance with section 428 of the Stafford Act, 42 U.S.C. §5189f, the Subrecipient accepts this fixed amount subawards for permanent work with full knowledge and understanding that it will not receive any additional Public Assistance funding if the actual cost to restore the roads and storm water drainage system facilities based on the eligible scope of work exceeds the agreed-upon fixed amount.

b. Changes to the Approved Scope of Work. FEMA acknowledges that the Subrecipient may exercise flexibility in completing work associated with the fixed amount subaward.

   i. The Parties acknowledge that the Subrecipient must notify FEMA and the Recipient prior to initiating a change to the scope of work described in the SRIA PW or for any changes that substantially deviate from the pre-disaster facility design and/or function.

   ii. For scope of work changes that involve historic properties listed on or eligible for listing on the National Register of Historic Places and/or result in changes that do not substantially conform to the pre-disaster design, function, and/or location, FEMA will conduct an EHP compliance review required under 44 C.F.R. Part 10.

   iii. If the Subrecipient wants to complete a scope of work that does not restore the facility or its function, it must submit a request for an alternate project to FEMA prior to the start of construction, in accordance with 44 C.F.R. §206.203(d)(2) and applicable PA policy. The parties acknowledge that FEMA must review and approve alternate projects in accordance with PA program requirements, including without limitation, EHP compliance.

c. Period of Performance for Complex Projects. In accordance with 42 U.S.C. § 5189f (f), FEMA has the authority to carry out alternative procedures as a pilot program. FEMA acknowledges that due to the magnitude and complexity of the work, the Subrecipient will require an extension to the period of performance set forth in 44 C.F.R. § 206.204(c). Accordingly, FEMA will establish a period of performance of 7 years from the date the SRIA PW is issued. If the Subrecipient requires any further extension(s) of the period of performance, then it shall submit its request for an extension to the Assistant Administrator for Recovery at FEMA Headquarters in accordance with 44 C.F.R. § 206.204(d). The Recipient and Subrecipient acknowledge that failure to comply with the terms of period of performance set forth in this letter may cause the approved funding in the fixed amount subaward referenced in this letter of undertaking to be deemed ineligible and may result in de-obligation of those funds.

d. Insurance. Pursuant to Section 312 of the Stafford Act and 44 C.F.R. Part 206, Subpart I, the Subrecipient may not receive disaster assistance for losses covered by insurance.

FEMA, the Recipient, and the Subrecipient acknowledge and agree that Section 312 of the Stafford Act and 44 C.F.R. Part 206, Subpart I, are not applicable to these facilities.

i. Further, the Parties acknowledge and agree that Section 406(d) of the Stafford Act and 44 C.F.R. §§ 206.250(d) and 206.252(a), are not applicable to these facilities.

ii. Finally, the Parties acknowledge and agree that Section 311(b) of the Stafford Act and 44 C.F.R. § 206.252(d), are not applicable to these facilities.

5. For all eligible work:

a. In accordance with 42 U.S.C. § 5189f (f), FEMA will carry out the proposed alternative procedure project for the Subrecipient as part of a pilot program.

b. The Recipient and Subrecipient agree to waive any and all rights to bring appeals pursuant to 44 CFR §206.206 or arbitration pursuant to 44 CFR §206.209 against FEMA for additional costs related to the fixed estimate subaward articulated in section 4(a) above.

c. The Office of Inspector General has the ability to audit any Subrecipient and/or subaward, and FEMA may conduct compliance reviews to ensure that the Subrecipient complied with this document's guidelines and other applicable requirements. Any corrective actions (including de-obligations) that FEMA takes as a result of these audits or compliance reviews may be appealed in accordance with 44 C.F.R. § 206.206 or arbitrated in accordance with 44 C.F.R. § 206.209.

d. Pursuant to the Arbitration Agreement for the United States Civilian Board of Contract Appeals (CBCA) case number CBCA 3344-FEMA dated April 25, 2014 and executed on May 6, 2014, the Subrecipient must use the Settlement Agreement funding transferring to the new SRIA PW (PW Ref. # C2479) associated with this Agreement for the sole purpose of installation of ADA compliant curb ramps identified as meeting the criteria in the ADA Settlement Agreement.

In the event the Subrecipient has funding left over after installation of all eligible curb ramps funded by FEMA through the ADA Settlement Agreement, the Subrecipient may apply the remainder of funding towards installation of ADA compliant curb ramps not identified by FEMA, but meets the criteria per the ADA Settlement Agreement. The associated Settlement Agreement soft costs, based on a flat 23.3 percent of the agreed to construction cost for the installation of ADA

ramps, may be applied towards installation of additional Subrecipient-installed ADA ramps. CNO must submit to FEMA all additional curb ramps where the remaining funding will be used for installation of ADA curb ramps for standard FEMA EHP review prior to the start of construction. CNO must provide documentation at closeout of this SRIA PW, which clearly shows the remaining funding was used for installation of ADA compliant curb ramps not identified as part of FEMA's original eligible scope of work, but meets the criteria per the ADA Settlement Agreement. Failure on the part of the Subrecipient to provide this information at closeout of the SRIA PW will result in the de-obligation of any remaining funding for the installation of ADA ramps associated with the ADA Settlement Agreement.

e. Any soft costs not expended as of this Agreement, but associated with the ADA compliant ramp work approved pursuant to the ADA Settlement Agreement, shall be transferred to the SRIA PW for this Agreement. Soft costs shall include Program/Project Management, Engineering Layout, Engineering Basic Services, Inspection, Material Testing, Geotechnical, Survey, etc.

f. Upon receiving the Recipient's and the Subrecipient's signed confirmation of the essential elements of this understanding, FEMA will generate a DAC/COI PW of **$33,626,483.00,** and a SRIA PW resulting in a fixed Public Assistance subaward for the agreed upon total of **$1,399,420,109.37,** which will include, the flexibility authorized by 42 U.S.C. § 5189f (e)(1) and further outlined in the PA Alternative Procedures Pilot Program Guide, and be based upon the terms and conditions contained of this letter.

Sincerely,

George A. Robinson
Regional Administrator
FEMA, Region VI

By signing below, the parties confirm their understanding of and their agreement to the essential elements of this undertaking as set forth above:

Governor's Office of Homeland Security and Emergency Preparedness:

James B. Waskom, Director
Governor's Office of Homeland Security and Emergency Preparedness

6/14/2016
Date

City of New Orleans:

Mitchell J. Landrieu, Mayor
City of New Orleans

6/13/2016
Date

ATTACHMENT 3

U.S. Department of Homeland Security
FEMA Region VI
FRC 800 North Loop 228
Denton, TX 76209-3698

FEMA

LETTER OF UNDERTAKING
FOR FIXED COST ESTIMATE AGREEMENT

May 27, 2016

James B. Waskom, Director
GOHSEP, State of Louisiana
1500 Main Street
Baton Rouge, LA 70802

Cedric S. Grant, Executive Director
Sewerage and Water Board of New Orleans
625 Saint Joseph Street, Room 237
New Orleans, LA 70165

Re: Sewerage and Water Board of New Orleans - Joint Infrastructure Recovery Request (JIRR) Consolidated Subaward

Dear Director Wascom and Executive Director Grant:

This letter confirms the understanding that was reached on December 18, 2015, between the Federal Emergency Management Agency (FEMA), the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) (the "Recipient[1]"), and the Sewerage and Water Board of New Orleans (the "Subrecipient"), regarding the restoration of the water distribution lines, sanitary sewer collection lines, and Americans with Disabilities Act (ADA) compliant curb ramps. The facilities sustained flooding damages from Hurricane Katrina. This project is to be funded under the Public Assistance Grant Program authorized for the major disaster declaration FEMA-1603-DR-LA declared on August 29, 2005.

Please sign a confirmation of the essential elements of the undertaking below no later than two (2) weeks from the date of this letter. Once I receive your signed confirmation, FEMA will work with the Recipient and the Subrecipient to develop and execute a Public Assistance alternative

[1] The terms "recipient," "subrecipient," "award," and "subaward" are used in place of the terminology of the "grantee," "subgrantee," "grant," and "subgrant," respectively. This language has been changed in order to comport with the definitions provided in 2 CFR Part 200.

procedure pilot project for permanent work and supporting Project Worksheets ("PW") in accordance with 42 U.S.C. § 5189f and the terms of this letter of undertaking.

Essential Elements of Alternative Procedures Pilot Project for Restoration of Water Distribution Lines, Sanitary Sewer Collection Lines, and ADA-Compliant Curb Ramps under FEMA-1603-DR-LA

1. FEMA agrees that due to damage sustained as a result of the declared event, the following elements of the damaged facilities are eligible for restoration pursuant to Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, codified in 42 U.S.C. § 5172. Further, FEMA, the Recipient, and the Subrecipient (collectively, the "Parties") agree upon the detailed description of damage caused as a direct result of the declared event, including associated dimensions, and an eligible scope of work that will be captured in the PW that FEMA will generate for the facilities. A summary of the agreed upon damages for the applicable facilities is below:

Facilities Element by Neighborhood	***Linear Miles of Right-of-Way Damage*** (Including: road pavement, curb and gutter, drive aprons, sidewalk, storm water drainage lines, water distribution lines, sanitary sewer collection lines)
1) Lake Shore – Lake Vista	16
2) St. Claude	57
3) Holy Cross	11
4) French Quarter – Iberville	5
5) Treme-Lafitte	11
6) Central Business District	3
7) Lower Garden District	5
8) Seventh Ward	12
9) Lakewood	5
10) Navarre	6
11) Read East – Venetian Isle	16
12) Touro	7
13) Marlyville – Fountainbleu	16
14) St. Anthony	18
15) West Lake Forest	4
16) City Park	4
17) Littlewoods	25
18) Broadmoor	15
19) St. Bernard	4
20) Lower Ninth Ward	36
21) Lake Terrace – Lake Oaks	6
22) Milan	6
23) Filmore	19
24) West End	11
25) Dillard	9
26) Bayou St. John	12
27) Desire	14
28) Irish Channel	8

29) Gentilly Woods	9
30) Freret	6
31) West Riverside	12
32) St. Roch	15
33) Audubon-University	12
34) Uptown	11
35) Dixon	6
36) Village D'Lest	9
37) Back Pearl	11
38) Central City	25
39) Pines Village	10
40) Lakeview	31
41) East Riverside	4
42) B.W. Cooper	6
43) Tulane-Gravier	10
44) Viavant	6
45) Mid City	29
46) Fairgrounds	13
47) Garden District	4
48) Gentilly Terrace	14
49) Hollygrove	16
50) Gert Town	5
51) Read Blvd West	12
52) East Carrollton	11
53) Leonidas-West Carrollton	16
54) Milneburg	13
55) Plum Orchard	12
56) Pontchartrain Park	9

a. The Parties agree this subaward contains funding for Americans with Disabilities Act (ADA) compliant curb ramps throughout New Orleans. The Parties agree when the Subrecipient's scope of work enters a roadway intersection and triggers the implementation of ADA compliant curb ramps, these ADA compliant curb ramps must be executed in accordance with the "Department of Justice/Department of Transportation Joint Technical Assistance on the Title II of the American with Disabilities Act Requirements to Provide Curb Ramps when Streets, Roads or Highways are Altered through Resurfacing" dated July 8, 2013.

2. The Parties agree that the Subrecipient will accept a fixed amount Public Assistance subaward for the agreed-upon disaster damage and eligible scope of work for the disaster-damaged facilities under the alternative procedures authorized under Section 428 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. § 5189f, and implemented as a pilot program. The Parties further agree that the terms of this project will be subject to Section 428 of the Stafford Act, the *Public Assistance Alternative Procedures Pilot Program Guide for Permanent Work* (Version 3) dated

March 29, 2016, and, except where specifically modified pursuant to Section 428 of the Stafford Act, all other laws, regulations, policies, and guidance applicable to FEMA's Public Assistance Program.

3. In accordance with 42 U.S.C. § 5189f (e), FEMA, working collaboratively with representatives from the Recipient and the Subrecipient, has validated and accepted the total fixed cost estimate for eligible work to restore the damaged facilities in the amount of **$264,579,387.15**. This cost estimate includes architectural and engineering design and supplemental services, project management, and any costs resulting from environmental and historic preservation (EHP) compliance reviews.

    a. Direct administrative cost (DAC)/closeout incentive (COI) is authorized separate and apart from the fixed cost estimate subaward. The authority to provide funding for DAC/COI under FEMA-1603-DR-LA is authorized under Title VI, Chapter 2, Section 638(F) of the Public Law 109-295 (Post-Katrina Emergency Management Reform Act [PKEMRA] of 2006) and under sections 406 and 407 of the Stafford Act.

    b. FEMA will obligate a separate, capped DAC/COI subaward for DAC/COI tasks specifically associated with the additional eligible funding cited in FEMA's December 7, 2015 letter. The Subrecipient may be reimbursed for DAC/COI based on actual incurred costs up to **$3,869,581.00**, which is three (3) percent of the additional funding cited in FEMA's letter dated December 7, 2015. Likewise, any DAC/COI costs already incurred or to be incurred in the future for other scope of work being consolidated into this Sandy Recovery Improvement Act (SRIA) Project Worksheet (PW) will continue to be reimbursable through the Subrecipient's roll-up DAC/COI PW 20808. DAC/COI will be reimbursed for eligible scope of work and costs that are adequately documented, reasonable, and attributed to a specific project worksheet as described in a June 12, 2012 letter to GOHSEP from FEMA's Assistant Administrator Recovery Directorate, Deborah Ingram; and a September 8, 2009 Direct and Indirect Administrative Task List attached to a memorandum to Regional Administrators from Elizabeth Zimmerman, FEMA's Assistant Administrator Disaster Recovery Directorate.

4. In agreeing to the fixed amount Public Assistance (PA) subaward:

    a. Fixed Amount Subaward. The Parties agree that the subaward will be capped at the amount of **$264,579,387.15** for the restoration of the damaged facilities, and acknowledge that it reflects 100% of the agreed-upon total project costs. The Parties further agree that a separate subaward will be capped at the amount of **$3,869,581.00** to cover DAC/COI associated with this project. The total agreed-upon fixed amount of **$268,448,968.15** includes the 100% federal cost-share and the 0% nonfederal cost-share. The Recipient and the Subrecipient acknowledge that, in accordance with section 428 of the Stafford Act, 42 U.S.C. §5189f, the Subrecipient accepts this fixed amount subawards for permanent work with full knowledge and understanding that it will not receive any additional Public Assistance funding if the actual cost to

restore the facility based on the eligible scope of work exceeds the agreed-upon fixed amount.

b. Changes to the Approved Scope of Work. FEMA acknowledges that the Subrecipient may exercise flexibility in completing work associated with the fixed amount subaward.

   i. The Parties acknowledge that the Subrecipient must notify FEMA and the Recipient prior to initiating a change to the scope of work, even changes that substantially conform to pre-disaster design, function.

   ii. For scope of work changes that involve historic properties listed on or eligible for listing on the National Register of Historic Places and/or result in changes that do not substantially conform to the pre-disaster design, function, and/or location, FEMA will conduct an EHP compliance review required under 44 C.F.R. Part 10.

   iii. If the Subrecipient wants to complete a scope of work that does not restore the facility or its function, it must submit a request for an alternate project to FEMA prior to the start of construction, in accordance with 44 C.F.R. §206.203(d)(2) and applicable PA policy. The parties acknowledge that FEMA must review and approve alternate projects in accordance with PA program requirements, including without limitation, EHP compliance.

c. Period of Performance for Complex Projects. In accordance with 42 U.S.C. § 5189f (f), FEMA has the authority to carry out alternative procedures as a pilot program. FEMA acknowledges that due to the magnitude and complexity of the work, the Subrecipient will require an extension to the period of performance set forth in 44 C.F.R. § 206.204(c). Accordingly, FEMA will establish a period of performance of 7 years from the date the PW is issued. If the Subrecipient requires any further extension(s) of the period of performance, then it shall submit its request for an extension to the Assistant Administrator for Recovery at FEMA Headquarters. The Recipient and Subrecipient acknowledge that failure to comply with the terms of period of performance set forth in this letter may cause the approved funding in the fixed amount subaward referenced in this letter of undertaking to be deemed ineligible and may result in de-obligation of those funds.

d. Insurance. Pursuant to Section 312 of the Stafford Act and 44 C.F.R. Part 206, Subpart I, the Subrecipient may not receive disaster assistance for losses covered by insurance.

   FEMA, the Recipient, and the Subrecipient acknowledge and agree that Section 312 of the Stafford Act and 44 C.F.R. Part 206, Subpart I, are not applicable to these facilities.

iv. Further, the Parties acknowledge and agree that Section 406(d) of the Stafford Act and 44 C.F.R. §§ 206.250(d) and 206.252(a), are not applicable to these facilities.

v. Finally, the Parties acknowledge and agree that Section 311(b) of the Stafford Act and 44 C.F.R. § 206.252(d), are not applicable to these facilities.

5. For all eligible work:

a. In accordance with 42 U.S.C. § 5189f (f), FEMA will carry out the proposed alternative procedure project for the Subrecipient as part of a pilot program.

b. The Recipient and Subrecipient agree to waive any and all rights to bring appeals pursuant to 44 CFR §206.206 or arbitration pursuant to 44 CFR §206.209 against FEMA for additional costs related to the fixed estimate subaward articulated in section 4(a) above.

c. The Office of Inspector General has the ability to audit any Subrecipient and/or subaward, and FEMA may conduct compliance reviews to ensure that the Subrecipient complied with this document's guidelines and other applicable requirements. Any corrective actions (including de-obligations) that FEMA takes as a result of these audits or compliance reviews may be appealed in accordance with 44 C.F.R. § 206.206 or arbitrated in accordance with 44 C.F.R. § 206.209.

d. Upon receiving the Recipient's and the Subrecipient's signed confirmation of the essential elements of this understanding, FEMA will generate a DAC/COI PW of **$3,869,581.00**, and a PW resulting in a fixed Public Assistance subaward for the agreed upon total of **$264,579,387.15**, which will include, the flexibility authorized by 42 U.S.C. § 5189f (e)(1) and further outlined in the PA Alternative Procedures Pilot Program Guide, and be based upon the terms and conditions contained of this letter.

Sincerely,

George A. Robinson
Regional Administrator
FEMA, Region VI

By signing below, the parties confirm their understanding of and their agreement to the essential elements of this undertaking as set forth above:

Governor's Office of Homeland Security and Emergency Preparedness:

6/14/2016

James B. Waskom, Director
Governor's Office of Homeland Security and Emergency Preparedness

Date

Sewerage and Water Board of New Orleans:

6/14/2016

Cedric S. Grant, Executive Director
Sewerage and Water Board of New Orleans

Date

ATTACHMENT 4

REQUEST FOR INFORMATION

RE: FEMA-1603-DR-LA, FIPS 071-55000-00 and 071-06A69-00
City of New Orleans, Project Worksheet 21032
Sewerage and Water Board of New Orleans, Project Worksheet 21031
Mid-City ESSA and SSERP Sewerage Project No. S137
Carrollton Sewerage Project No. S139
Sandy Recovery Improvement Act/Joint Infrastructure Recovery Request Amendment
Alternate and Improved Database (AIDB) #2957 and 2958

Dear Grantee/Subgrantee:

We received letters from the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) dated June 28, 2021 (Attachment 1) and June 25, 2021 (Attachment 2) on behalf of the City of New Orleans (CNO, Subgrantee) and the Sewerage and Water Board of New Orleans (SWBNO, Subgrantee) for an amendment to the scope of work (SOW) under large Project Worksheets (PWs) 21032 and 21031.

In the letter dated June 28, 2021, within the Carrollton neighborhood, the Subgrantees request to perform an emergency sewer system assessment (ESSA) and sewer system evaluation and rehabilitation program (SSERP) of the existing sanitary sewer collection system via manhole rehabilitation, mainline cleaning and CCTV inspection, excavated point repairs, full length main line replacement, service connection and lateral replacement, full-length Cured-in-Place Pipe (CIPP) lining, service lateral Cured-In-Place (CIPP) lining, traffic control, site paving and restoration work. In the letter dated June 25, 2021, in the Mid-City neighborhood, the Subgrantees request to perform the same repair work as described above.

To date, FEMA has not received plans with enough detail to complete a compliance review.

Subsequently:

- On June 29, 2021, FEMA sent an e-mail to the Subgrantees requesting design development documents at least 90-95% complete for both submittals. On June 30, 2021, FEMA sent a sample compliance checklist (Attachment 3) demonstrating the detail of information required to complete the compliance review.

- On July 20, 2021, the Subgrantees sent an e-mail with completed compliance checklists (Attachment 4) for both projects to FEMA for review.

- On August 2, 2021, GOHSEP sent an addendum to the Mid-City neighborhood request, including an updated plan set, adding the 3300 block of Banks Street and manhole rehabilitation at the intersections of 3300 Banks Street at S. Rendon Street and 2600 Toulouse Street at N. Broad Street.

- On September 15, 2021, the Subgrantees informed FEMA updated plans, specs, and a cost estimate for the Carrollton neighborhood request was added to the task under PW 21031, and all files included "revised" or "updated in the title. On September 21, 2021, GOHSEP informed FEMA that official correspondence would not be sent with the updates.

FEMA has determined the updated drawings do not provide sufficient detail to complete the compliance review.

FEMA requests the Subgrantees provide drawings reflecting at least 90% complete for both projects. FEMA requests this information no later than 30 days from the date of this e-mail notification. If we do not receive a response by then, we will return both requests to GOHSEP and the Subgrantees with no action taken.

If you have any questions regarding this matter, please contact Ronnie Fairley, FEMA Task Lead, at (703) 463-6938.

Approved by: Eddie Williams
Title: Louisiana Public Assistance Lead
Date:

EDDIE L WILLIAMS
Digitally signed by EDDIE L WILLIAMS
Date: 2021.11.03 12:24:54 -05'00'

Attachment: 1) GOHSEP letter dated June 28, 2021 and SWBNO letter dated June 24, 2021
2) GOHSEP letter dated June 25, 2021 and SWBNO letter dated June 24, 2021
3) FEMA sample compliance checklist sent on June 30, 2021
4) SWBNO compliance checklists received on July 20, 2021

ATTACHMENT 5

RECORD OF ENVIRONMENTAL CONSIDERATION

See FEMA Directive 108-1 and FEMA Instruction 108-1-1.

Project Name/Number: Sewerage &Water Board of New Orleans
Roadway and Joint Infrastructure Recovery Program
CNO DPW JIRR/SRIA Phase III Recovery Roads – Carrollton ESSA Sewerage-S139 Sewer Rehabilitation Carrollton Basin
FEMA- DR 1603-LA; Sewerage &Water Board of New Orleans,
AI 2958
PW 21032 (Donor PW 19901), SWB 21031 (Donor PW 20649)

Project Location: Carrollton, New Orleans, Orleans Parish, LA 70118
Northwest Corner: 29.953127, -90.136883
Northeast Corner: 29.980968, -90.113956
Southeast Corner: 29.946847, -90.089531
Southwest Corner: 29.916703, -90.132947

Project Description:

In order to comply with the provisions of the National Environmental Policy Act of 1969 (NEPA) and the President's Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 of the Code of Federal Regulations [C.F.R.] Parts 1500-1508) (Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act 2005), and to streamline funding for road, water, and sewer infrastructure projects in the City of New Orleans, FEMA developed a Programmatic Environmental Assessment (PEA), which would encompass the project now under review. The Programmatic EA was entitled "The City of New Orleans Sewerage and Water Board of New Orleans Joint Infrastructure Recovery Request Project" (JIRR). This PEA concluded with a Finding of No Significant Impact (FONSI), dated 16 June 2016.

On August 29, 2005, high winds and heavy rain from Hurricane Katrina caused extensive damage to the roads and streets in New Orleans, LA. In addition, the storm caused extensive damage to the underground infrastructure, including water mains, sewer systems, and other utility systems. The City of New Orleans has entered into contracts in order to repair, restore, or replace, as needed, these systems in the New Orleans Mid-city area.

The purpose of the City of New Orleans (CNO) Department of Public Works (DPW) and Sewerage & Water Board of New Orleans (SWB) JIRR is to repair damage sustained due to Hurricane Katrina to roads, minor drainage lines, water lines, and sewer lines, and other incidentals associated with and for the proper implementation of the planned infrastructure repairs in accordance with the Department of Public Works DPW and Sewerage & Water Board standards, within the incorporated limits of the City of New Orleans, and restore this infrastructure to its pre-storm function and condition. Roadway segments and the associated utility systems within the Carrollton neighborhood in the City of New Orleans were impacted and damaged as a direct result of Hurricane Katrina and the post-disaster operations. As such the City plans to repair portions of the Carrollton area, local city street network and utility systems under the SWBNO S139–The location of this contract is in the Carrollton Sanitary Sewer Basin in New Orleans, LA, generally bound by C Carrollton Sanitary Sewer Basin in New Orleans, LA, generally bound by Metairie Rd to the North, I-10 to the East, S Claiborne Ave to the South and the Orleans/Jefferson Parish Boundary to the West and the around bound by S Claiborne Ave to the North, State St to the East, the Mississippi River to the South and the Orleans/Jefferson Parish Boundary to the West. (See attached project plans for specific block locations and currently designed work scope.)

SWBNO S139- Sewer Rehabilitation Carrollton Basin project, based on the current anticipated designed scope of work will typically consist of PCCP (concrete) roadway pavement isolated patching (incidental roadway repairs or minor pavement rehabilitation), full panel replacement (minor pavement rehabilitation), and/or full block reconstruction (major pavement rehabilitation); asphaltic concrete roadway pavement isolated full depth patching (incidental roadway repairs or minor pavement rehabilitation), mill (cold planing) & overlay (major

pavement rehabilitation), and/or full block reconstruction (major pavement rehabilitation); and composite pavement (asphaltic concrete topped PCCP pavement) isolated full depth patching (incidental roadway repairs or minor pavement rehabilitation), mill (cold planning) & overlay (major pavement rehabilitation), and/or full block reconstruction (major pavement rehabilitation). In addition to the roadway pavement restoration scope, the project scope will also consist of any necessary associated demolition, removal and reconstruction of the roadway pavement structure, subbase and/or base courses, placement of engineering fabrics (geotextile and/or geogrid), bus pads, curbs, curbs & gutters, driveway aprons, sidewalks, ADA-compliant handicapped ramps, roadway striping and pavement markings, ditches, swales and bio swales, parking and bicycle lanes, relocation of underground streetlight and/or traffic signal conduit, restoration of medians, other incidental paved areas, and/or other street system feature work within the public right-of-way. In some instances, public maintained brick, paver, stone, and/or aggregate pavement sections or services alleyways will be repaired as needed to restore to the pre-disaster function and condition.

For the individual street blocks undergoing roadway restoration work, where necessitated due to disaster related damages or constructability and/or site condition issues, the construction scope may also incorporate a combination of utility infrastructure structures/components, including but not limited to, minor drainage (storm sewer) (< 36" in diameter), water, and/or sewerage (sanitary sewer) mains and service lateral and house connection repairs, relocations/offsets, or replacements; utility manhole, drop manhole, catch basin, drop inlet, conflict box, and other utility structure adjustments, repairs or replacements, including associated trench excavation, bedding, backfill and pavement restoration or pipe boring jacking operations and associated pit restoration; water and sewer meter, valve, hydrant, and other utility system appurtenances and components cleaning, adjustments, relocations, repairs or replacements within the public right-of-way or publicly maintained servitude or easement. Drainage structures may require assessment, clean-out, CCTV inspection and/or other analysis, to identify specific damages and necessary repair scope.

In addition to the general programmatic SOW listed above, this amendment seeks approval for an Emergency Sewer System Assessment (ESSA) and Sewer System Evaluation and Rehabilitation Program Management (SSERP) rehabilitation of the existing sanitary sewer collection system via manhole rehabilitation, mainline cleaning and CCTV inspection, excavated point repairs, full length main line replacement, service connection and lateral replacement, full-length Cured-in-Place Pipe (CIPP) lining, service lateral Cured-in-Place Pipe (CIPP) lining, traffic control, site paving and restoration work as indicated in the contract documents attached to the project. All work will be performed within existing, previously disturbed right of ways.

National Environmental Policy Act (NEPA) Determination

☐ Statutorily excluded from NEPA review. (Review Concluded)
☐ Categorical Exclusion - Category ()
  ☐ No Extraordinary Circumstances exist.
    Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
  ☐ Extraordinary Circumstances exist (See Section IV).
    ☐ Extraordinary Circumstances mitigated. (See Section IV comments)
      Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
☐ Environmental Assessment. See FONSI for determination, conditions and approval.
☒ Programmatic Environmental Assessment See FONSI for determination, conditions and approval.
☐ Supplemental Environmental Assessment (Reference EA or PEA in comments)
☐ Environmental Impact Statement
  ☐ Alternative Arrangements
    ☐ Public Involvement Plan on file (see comments below)
    Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

Comments: In accordance with 44 CFR part 10, a Programmatic Environmental Assessment (PEA) was prepared pursuant to Section 102 of the National Environmental Policy Act (NEPA) of 1969, as implemented by the regulations promulgated by the President's Council on Environmental Quality (CEQ; 40 CFR Parts 1500-1508). The PEA resulted in a Finding of No Significant Impact (FONSI) dated June 16, 2016. Particular attention should be given to the project conditions before and during project implementation. Failure to comply with these conditions may jeopardize federal assistance including funding. M Myers, Environmental Specialist

Reviewer and Approvals

☐ Project is Non-Compliant (See attached documentation justifying selection).

FEMA Environmental Reviewer.

Name: Megan Myers, Sr. Environmental Protection Specialist, FEMA-LIRO

Signature MEGAN F MYERS Digitally signed by MEGAN F MYERS Date: 2021.07.19 14:01:12 -05'00' Date _____.

FEMA Regional Environmental Officer or delegated approving official.

Name: Melanie O'Keefe, Sr. Environmental Protection Specialist, FEMA-LIRO

Signature MELANIE P O'KEEFE Digitally signed by MELANIE P O'KEEFE Date: 2021.07.19 14:05:42 -05'00' Date _____.

I. Compliance Review for Environmental Laws (other than NEPA)

A. National Historic Preservation Act

☐ Not type of activity with potential to affect historic properties. **(Review Concluded)**
☒ Applicable executed Programmatic Agreement December 21, 2016, amended August 13, 2018. Otherwise, conduct standard Section 106 review.

☐ Activity meets Programmatic Allowance
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

HISTORIC BUILDINGS AND STRUCTURES

☐ No historic properties 50 years or older in project area. **(Review Concluded)**
☒ Building or structure 50 years or older in project area and activity not exempt from review.

☐ Determination of No Historic Properties Affected (FEMA finding/SHPO/THPO concurrence on file)
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☒ Determination of Historic Properties Affected (FEMA finding/SHPO/THPO concurrence on file)

☒ Property a National Historic Landmark and National Park Service was provided early notification during the consultation process. If not, explain in comments

☐ No Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence on file).
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☒ Adverse Effect Determination (FEMA finding/SHPO/THPO concurrence on file)

☒ Resolution of Adverse Effect completed. (MOA on file)
Are project conditions required ☒ Yes (see section V) ☐ No **(Review Concluded)**

ARCHEOLOGICAL RESOURCES

☐ Project affects only previously disturbed ground. **(Review Concluded)**
☒ Project affects undisturbed ground.

☐ Project area has no potential for presence of archeological resources

☐ Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence or consultation on file). **(Review Concluded)**

☒ Project area has potential for presence of archeological resources

☐ Determination of no historic properties affected (FEMA finding/SHPO/THPO concurrence on file)
Are project conditions required ☐ Yes (see section V) ☐ No **(Review Concluded)**

☒ Determination of historic properties affected

☐ NR eligible resources not present (FEMA finding/SHPO/THPO concurrence on file).
Are project conditions required ☐Yes (see section V) ☐ No **(Review Concluded)**

☒ NR eligible resources present in project area. (FEMA finding/ SHPO/THPO concurrence on file)

☐ No Adverse Effect Determination. (FEMA finding/ SHPO/THPO concurrence on file)
Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**

☒ Adverse Effect Determination. (FEMA finding/ SHPO/THPO concurrence on file)

☒ Resolution of Adverse Effect completed. (MOA on file)
Are project conditions required? ☒ Yes (see section V) ☐ No
(Review Concluded)

***Comments*:** A review of this amendment was conducted in accordance with FEMA's Programmatic Agreement dated December 21, 2016 and amended on August 13, 2018 (PA). FEMA determined that approximately 30% of the proposed Undertaking with fall within eligible or listed historic districts, and that 33% of the proposed Undertaking will fall within areas of high archaeological concern. In accordance with Stipulation II.C.5 of the PA and 36 CFR§ 800.5, FEMA has determined the Undertaking will adversely affect historic properties. FEMA consulted with SHPO and Tribes to avoid, minimize, and mitigate the adverse effects of this Undertaking in accordance with Stipulation II.C.6 of the PA. FEMA proposed to resolve the adverse effects through an Abbreviated Consultation Process (ACP) (Stipulation II.C.6.a) in a letter dated November 6, 2018. None of the parties objected within the regulatory timeframe; however minor changes were proposed. A final letter dated December 11, 2018 incorporated these changes and was transmitted to parties on this same date. The ACHP responded on December 17, 2018 that they did not object to FEMA's use of the ACP to resolve potential adverse effects. To remain in compliance with Section 106, minimization and treatment measures detailed within the ACP and set out in the REC must be carried out by the Applicant. Any change to the approved scope of work will require reevaluation under Section 106. Failure to comply with these conditions may jeopardize receipt of FEMA funding.
Correspondence/Consultation/References: Kathryn Wollan, Historic Preservation Specialist

B. Endangered Species Act

☒ No listed species and/or designated critical habitat present in areas affected directly or indirectly by the Federal action. **(Review Concluded)**

☐ Listed species and/or designated critical habitat present in the areas affected directly or indirectly by the Federal action.

- ☐ No effect to species or designated critical habitat**.**
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ May affect, but not likely to adversely affect species or designated critical habitat (FEMA determination/USFWS/NMFS concurrence on file)
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ Likely to adversely affect species or designated critical habitat
  - ☐ Formal consultation concluded. (Biological Assessment and Biological Opinion on file)
    Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: Project is for repairs, upgrades, and replacement of infrastructure within previously disturbed areas, but does not include work that would affect a federally listed threatened or endangered species.
Correspondence/Consultation/References: ESA and MBTA Project Review tool (http://www.fws.gov/lafayette/pdc/Default.aspx), accessed 7/12/2021

C. Coastal Barrier Resources Act

☒ Project is not on or connected to CBRA Unit or Otherwise Protected Area **(Review Concluded)**

☐ Project is on or connected to CBRA Unit or Otherwise Protected Area. (FEMA determination/USFWS consultation on file)

- ☐ Proposed action an exception under Section 3505.a.6 (**Review Concluded)**
- ☐ Proposed action not excepted under Section 3505.a.6.
  Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: Project is not on or connected to a CBRA Unit or Otherwise Protected Area.
Correspondence/Consultation/References: Louisiana Coastal Barrier Resource System Maps, referenced 7/12/2021

D. Clean Water Act

☒ Project site located outside of and would not affect any waters of the U.S. **(Review Concluded)**
☐ Project site located in or would affect waters, including wetlands, of the U.S.
- ☐ Project exempted as in kind replacement or other exemption. **(Review Concluded)**
- ☐ Project requires Section 404/401/10 or Section 9/10 (Rivers and Harbors Act) permit, including qualification under Nationwide Permits.

Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

***Comments**:* The proposed work will take place in existing rights-of-way and involve existing infrastructure only. No jurisdictional waters of the U.S., including wetlands, occur in the project areas. In a letter from the LDEQ dated 7/5/2017 and 6/8/2020, LDEQ granted the CNO a LPDES Construction General Permit. The project authorization number is LAR10M215. This construction project, if qualified under the conditions of the permit and unless notified otherwise by this office, is authorized to discharge storm water associated with construction activity to Lake Pontchartrain , Bayou Bienvenue, Algiers Canal and Gulf Intracoastal Waterway under the terms and conditions established under Louisiana's LPDES Construction General Permit. This number and the Agency Interest Number (206772) listed above should be referenced in all future correspondence with this office. Coverage under this general permit will be terminated on March 28, 2024, as indicated by the year(s) selected. Please note extensions of coverage beyond March 28, 2024, (the expiration date of the LPDES Large Construction General Permit) may not be granted. Permittees with coverage upon the expiration date of the general permit will be provided with instructions for permit renewal when the general permit is reissued.
In a letter dated October 10, 2017, the USACE stated "the agency has reviewed the City's Joint Infrastructure Recovery project and has determined that a Department of the Army permit under Section 404 of the Clean Water Act is not required (Attachment #1) since the work scope will take place within the existing rights-of-way. The City understands that any modifications to the current project will require a secondary review by the Army Corps of Engineers."
Correspondence/Consultation/References: USFWS National Wetlands Inventory map (http://www.fws.gov/wetlands/Wetlands-Mapper.html), queried on 6/9/2021. Letter dated 7/5/2017 from the LDEQ. Letter dated 10/10/2017 from the USACE.

E. Coastal Zone Management Act

☐ Project is not located in a coastal zone area – (**Review concluded)**
☒ Project is located in a coastal zone area:
- ☐ State administering agency does not require consistency review. **(Review Concluded)**
- ☒ State administering agency requires consistency review.

Are project conditions required? ☒ YES (see section V) ☐ NO **(Review Concluded)**

Comments: This project is located within the Louisiana Coastal Management Zone. LA DNR has determined that receipt of federal assistance is consistent with the Louisiana Coastal Resource Program. See conditions.
Correspondence/Consultation/References: Louisiana Coastal Zone maps, referenced 7/12/2021

F. Fish and Wildlife Coordination Act

☒ Not applicable for financial assistance**. (Review Concluded)**

***Comments*:** The proposed work will take place in existing rights-of-way and involve existing infrastructure only. Project scope does not include impoundment, diversion, control, or other modification of waters of any stream or body of water.
***Correspondence/Consultation/References**:* M Myers, Environmental Specialist

G. Clean Air Act

☒ Project will not result in permanent air emissions. **(Review Concluded)**
☐ Project is located in an attainment area. **(Review Concluded)**
☐ Project is located in a non-attainment area.
☐ Coordination required with applicable state administering agency.
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: Project is for repair, restoration, and replacement of existing infrastructure, as needed. The proposed project includes activities that would produce minor, temporary, and localized impacts on air quality from vehicle emissions and fugitive dust particles. No long-term air quality impacts are anticipated. See conditions.
Correspondence/Consultation/References: EPA Region 6 Non-Attainment Map (http://www.epa.gov/oaqps001/greenbk/map/mapnpoll.pdf), queried 7/12/2021

H. Farmland Protection Policy Act

☒ Project does not affect designated prime or unique farmland. **(Review Concluded)**
☐ Project causes unnecessary or irreversible conversion of designated prime or unique farmland.
☐ Coordination with Natural Resource Conservation Commission required.
☐ Farmland Conversion Impact Rating, Form AD-1006, completed.
Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The project site is in a developed urbanized area and Farmland Protection Policy Act (FPPA) is precluded.
Correspondence/Consultation/References: National Resource Conservation Service, Web Soil Survey (http://websoilsurvey.nrcs.usda.gov/app), referenced 7/12/2021

I. Migratory Bird Treaty Act

☐ Project not located within a flyway zone. **(Review Concluded)**
☒ Project located within a flyway zone.
☒ Project does not have potential to take migratory birds.
Are project conditions required? ☐ Yes (see section V) ☒ No **(Review Concluded)**
☐ Project has potential to take migratory birds.
☐ Contact made with USFWS
Are project conditions required? ☐ YES (see section V) ☐ NO **(Review Concluded)**

Comments: The site is an existing disturbed area with little value to migratory birds and would not be included in the USFWS migratory bird management program.
Correspondence/Consultation/References: ESA and MBTA Project Review tool (http://www.fws.gov/lafayette/pdc/Default.aspx), accessed 7/12/2021

J. Magnuson-Stevens Fishery Conservation and Management Act

☒ Project not located in or near Essential Fish Habitat. **(Review Concluded)**
☐ Project located in or near Essential Fish Habitat.
- ☐ Project does not adversely affect Essential Fish Habitat.
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ Project adversely affects Essential Fish Habitat (FEMA determination/USFWS/NMFS/NOAA concurrence on file)
  - ☐ NOAA Fisheries provided no recommendation(s)
    Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
  - ☐ NOAA Fisheries provided recommendation(s)
    - ☐ Written reply to NOAA Fisheries recommendations completed.
      Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The proposed work will take place in existing rights-of-way and involve existing infrastructure only. Project is not located in or near any surface waters with the potential to affect EFH species.
***Correspondence/Consultation/References*:** M. Myers, Environmental Specialist

K. Wild and Scenic Rivers Act

☒ Project is not along and does not affect Wild or Scenic River (WSR) - **(Review Concluded)**
☐ Project is along or affects WSR
- ☐ Project adversely affects WSR as determined by NPS/USFS. **FEMA cannot fund the action**. (NPS/USFS/USFWS/BLM consultation on file) **(Review Concluded)**
- ☐ Project does not adversely affect WSR. (NPS/USFS/USFWS/BLM consultation on file)
  Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: Project is not along and does not affect a Wild and Scenic River (WSR).
Correspondence/Consultation/References: National Wild and Scenic Rivers (http://www.rivers.gov/louisiana.php), queried 7/12/2021

L. Other Relevant Laws and Environmental Regulations

Resource Conservation and Recovery Act (RCRA)
Unusable equipment, debris, and material shall be disposed of in an approved manner and location. The Applicant shall handle, manage, and dispose of petroleum products, hazardous materials (such as lead-based paint), and/or toxic waste in accordance with all local, state, and federal agency requirements. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files. See conditions.

Toxic Substances Control Act (TSCA)
If any asbestos containing materials, lead based paint and/or other hazardous materials are found during remediation or repair activities, the applicant shall comply with all federal, state and local abatement and disposal requirements under the national emissions standards for hazardous air pollutants (NESHAP) and Louisiana Administrative Code 33:III 5151. Demolition activities related to possible asbestos-containing materials (PACM) must be inspected for ACM/PACM where it is safe to do so. Should asbestos containing materials (ACM) be present, the applicant is responsible for ensuring proper disposal in accordance with the previously referenced administrative orders. Demolition activity notification must be sent to the LDEQ before work begins. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files.

This project involves the demolition or renovation, of a facility constructed prior to 1978 that may contain surfaces coated with Lead-Based Paint (LBP). The applicant is responsible for complying with the Toxic Substances Control Act (TSCA) Section 402(c)(3) requirements. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files.

Safe Drinking Water Act (SDWA)
According to an article from NOLA.com/Times Picayune dated July 12, 2017, entitled *New Orleans road work could raise lead levels in your water, officials warn,* which can be reviewed at http://www.nola.com/environment/index.ssf/2017/07/lead_water_new_orleans_road_wo.html#incart_river_home, the FEMA-funded road work taking place in the City of New Orleans could "unearth another aspect of the city's aging infrastructure in desperate need of repair – undiscovered lead water service lines." The New Orleans Sewerage and Water Board and Mayor Mitch Landrieu's office are notifying residents citywide of the possibility of temporary elevated lead levels in drinking water as crews begin to dig up roads in coming months. "The City of New Orleans ensures that the water coming out of the plant and into the distribution and main pipe system is lead free," Cedric Grant, Executive Director of the Sewerage & Water Board said. "We treat it extensively in the plant, but we also provide corrosion control." The Environmental Protection Agency also requires the city to complete citywide lead testing once every three years. EPA rules require that no more than 10 percent of 50 homes tested have lead levels at or above 15 parts per billion. The last official EPA sampling was completed in November 2016. Grant said more than 100 tests were completed at sites across the city and all the tests fell below the EPA threshold. (The East Bank of Orleans Parish had an average count of 7ppb and the West Bank an average of 2ppb.)

Despite treatment, lead contamination is still a possibility in New Orleans. By the time drinking water leaves your tap, it has woven through a system of dozens, if not hundreds, of water supply pipes, including service pipes that are on private property. Those private lines are the ones that remain the biggest mystery to the city. Grant noted the Sewerage & Water Board can replace all the lead pipes its finds on public property, but not those underneath private property. He said homeowners and others who want lead water pipes on their property to be replaced will need to hire their own contractor to complete the work. Road work can enhance that risk. City lines are often disconnected and reconnected with a homeowner's pipe system. That can dislodge deposits that have prevented lead from leeching into water in the homeowner's pipe. Lead can be released into the water for months after a reconnection is completed. Sarah McLaughlin Porteous, the director of the city's Special Projects & Strategic Engagement Office, said the S&WB and the city will be notifying affected property owners and renters of the possibility of elevated lead levels before each road project begins, through the city's Roadwork NOLA email newsletter, inserts in water bills, and during community meetings, which will be held at the start of each project. Grant said the S&WB will also be going door-to-door with flyers to notify property owners in areas where lead water supply pipes are found during road work.

II. Compliance Review for Executive Orders

A. E.O. 11988 - Floodplains

☐ No Effect on Floodplains/Flood levels and project outside Floodplain - **(Review Concluded)**
☒ Located in Floodplain or Effects on Floodplains/Flood levels
- ☐ No adverse effect on floodplain and not adversely affected by the floodplain.
  Are project conditions required? ☐ Yes (see section V) ☐ No **(Review Concluded)**
- ☐ Beneficial Effect on Floodplain Occupancy/Values (**Review Concluded).**
- ☒ Possible adverse effects associated with investment in floodplain, occupancy or modification of floodplain environment
  - ☒ 8 Step Process Complete - documentation on file
    Are project conditions required? ☒ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The Parish of Orleans enrolled in the National Flood Insurance Program (NFIP) on 8/3/1970. Orleans Parish adopted the DFIRMs on 9/30/16. All of Orleans Parish is within the Hurricane and Storm Damage Risk Reduction System (HSDRRS). The project area is partly located within Flood Zone "Shaded X," an area levee-protected from the base flood but subject to the 0.2% (or the 500-year) annual chance flood, based upon shallow ponding only, and/or partly in the Flood Zone "AE," areas subject to the 1.0% (or the 100-year) annual chance flood.

According to a letter dated 3 March 2017 from Jerome Landry, CFM, Floodplain Administrator, "The Department of Safety & Permits New Orleans has reviewed the [CNO] [DPW] and [NOSWB] Joint Recovery Program project for compliance with our Floodplain Ordinance, Chapter 78 of The City Code of Ordinances. The proposed work reviewed by this office will be in compliance with our floodplain ordinance. The scope of work for the Joint Recovery Program states that 'All restored pavement and other roadway structures will typically be repaired or replaced to the existing elevation, with minor changes as necessary to maintain positive drainage and minimize pooling water along paths of travel and street surfaces. The planned activities will have no significant impact on the slope of local topography or lands/properties bordering the project limits.'"

FEMA regulations at 44 CFR Part 9, Floodplain Management and Protection of Wetlands, apply to actions within or affecting the floodplain (definition included below). For "critical actions", those for which even a slight chance of flooding is too great, the minimum floodplain of concern is the 0.2% annual chance floodplain, i.e., the 500-year floodplain. Adverse effects to floodplains during construction could result from temporary service disruptions that would render portions of the system inoperable and contribute to an increase in localized flooding. Poorly maintained construction sites can lead to the release of pollutants to stormwater runoff and increased sedimentation, which would reduce water quality.

Adverse effects would be minimized in accordance with FEMA's minimization standards in 44 CFR 9.11. Treatment measures would be required to reduce adverse impacts below the level of significance. New construction must be compliant with current codes and standards. Per 44 C.F.R. § 9.11(d)(6), no project should be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the NFIP. The Subgrantee is required to coordinate with the local floodplain administrator regarding floodplain permit(s) prior to the start of any activities. Coordination pertaining to these activities and Subgrantee compliance with any conditions should be documented and copies forwarded to the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and FEMA for inclusion in the permanent project files.

In compliance with Executive Order 11988, an 8-step process was completed in conjunction with the JIRR, is attached and on file. See project conditions.

Correspondence/Consultation/References: M. Myers, Environmental Specialist

B. E.O. 11990 - Wetlands

☒ No Effects on Wetland(s) and project located outside Wetland(s) - **(Review Concluded)**
☐ Located in Wetland or effects Wetland(s)
- ☐ Beneficial Effect on Wetland - **(Review Concluded)**
- ☐ Possible adverse effect associated with constructing in or near wetland
  - ☐ Review completed as part of floodplain review
  - ☐ 8 Step Process Complete - documentation on file
    Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The proposed work will take place in existing rights-of-way and involve existing infrastructure only. No wetlands occur within the project areas.
Correspondence/Consultation/References: USFWS National Wetlands Inventory map (http://www.fws.gov/wetlands/Wetlands-Mapper.html), queried on 7/1/2021

C. E.O. 12898 - Environmental Justice for Low Income and Minority Populations

☐ No Low income or minority population in, near or affected by the project - **(Review Concluded)**
☒ Low income or minority population in or near project area
- ☒ No disproportionately high and adverse impact on low income or minority population- **(Review Concluded)**
- ☐ Disproportionately high or adverse effects on low income or minority population
  Are project conditions required? ☐ YES (see section V) ☐ NO (**Review Concluded)**

Comments: The project is located with zip code 70118. The composition of the population for zip code 70118 is 39.3% Black or African American, 50.9% White, 0.4% American Indian & Alaska Native, 4.2% Asian, 0.1% Native Hawaiian and Other Pacific Islander, 1.4% Some other race, and 3.6% two or more races. 8.1 % of the population is Hispanic or Latino (of any race). The median household income was $72,908 and 16.2% of families exist below the poverty level. Project is for repair, restoration, and/or replacement, as needed, to existing infrastructure in the Carrollton neighborhood area of New Orleans. Although low income and minority populations are located in the project area, the proposed work should have a positive effect on all groups by improving the infrastructure and road systems in the area.
Correspondence/Consultation/References: 2014 U.S. Census Bureau data available at (https://data.census.gov/cedsci), referenced 7/1/2021

III. Other Environmental Issues

Identify other potential environmental concerns in the comment box not clearly falling under a law or executive order (see environmental concerns scoping checklist for guidance).

Comments: None known.
Correspondence/Consultation/References:

IV. Extraordinary Circumstances

Based on the review of compliance with other environmental laws and Executive Orders, and in consideration of other environmental factors, review the project for extraordinary circumstances.

***** A "Yes" under any circumstance may require an Environmental Assessment (EA). If the circumstance can be mitigated, please explain in comments. If no, leave blank.

Yes

- ☐ (i) A potentially significant effect on public health or safety.
- ☐ (ii) A potentially significant effect on species or habitats protected by the ESA, Marine Mammal Protection Act, Migratory Bird Treaty Act, Magnuson-Stevens Fishery Conservation and Management Act, or other law protecting a species or habitat.
- ☐ (iii) A potentially significant effect on historic properties (e.g., districts, sites, buildings, structures, or objects) that are listed in or eligible for listing in the National Register of Historic Places, affects traditional cultural properties or sacred sites, or leads to the loss or destruction of a significant scientific, cultural, or historical resource.
- ☐ (iv) A potentially significant effect on an environmentally sensitive area.
- ☐ (v) A potential or threatened violation of a Federal, State, or local law or requirement imposed to protect the environment. Some examples of other requirements to consider are: a local noise control ordinance; the requirement to conform to an applicable State Implementation Plan for air quality standards; Federal, Tribal, State, or local requirements to control hazardous or toxic substances; and environmental permits.
- ☐ (vi) An effect on the quality of the human environment that is likely to be highly controversial in terms of scientific validity, likely to be highly uncertain, or likely to involve unique or unknown environmental risks. This also includes effects that may result from the use of new technology or unproven technology. Controversy over, including public opposition to, a proposed action absent any demonstrable potential for significant environmental impacts does not itself constitute an extraordinary circumstance.
- ☐ (vii) Extent to which a precedent is established for future actions with significant effects.
- ☐ (viii) Significantly greater scope or size than normally experienced for this particular category of action.
- ☐ (ix) Potential for significant degradation of already existing poor environmental conditions. Also, initiation of a potentially significant environmental degrading influence, activity, or effect in areas not already significantly modified from their natural condition.
- ☐ (x) Whether the action is related to other actions with individually insignificant, but cumulatively significant impacts.

Comments: None

V. Environmental Review Project Conditions

General comments: None

Project Conditions:

The following conditions and mitigation measures must be met as part of the implementation of the project. Failure to comply with these conditions and mitigation measures will jeopardize federal funds:

1. Follow applicable state, territory, tribal, and local permitting requirements for construction;
2. Fugitive dust from earth moving activities, storage piles, disturbed surface areas, unpaved areas and other construction related activities will be controlled using one or more of the following measures: watering, coverings, wind fencing, covering of haul beds, wheel washers, vegetation, restricted site access, and/or street sweeping;
3. Enclose or water down exposed dirt storage piles;
4. Minimize the disturbed area and preserve vegetation to the maximum extent possible;
5. Maintain topsoil whenever possible;

6. Phase construction activities to the extent possible;

7. The contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. The Subgrantee's Stormwater Pollution Prevention Plan and its related conditions is located in Appendix D. All project will have a SWPPP that is consistent with the Municipal Separate Storm Sewer System (MS4) Permit for the Orleans Parish area and contractors will be required to take every reasonable precaution to prevent fuels, oils, asphalts, concrete, chemical, and other harmful materials from entering the drainage system and/or ground water table in accordance with the Section C204 of the DPW General Specifications. Storm Water Control Measures (SCMs) may include storm drain system protection, spill prevention and clean-up, employee training, project site housekeeping, and temporary erosion controls. Residue from dust collectors, concrete mixers, vehicles wash racks, an entrance/exits debris will be disposed of in an approved disposal facility;

8. Establish stabilized construction entrances/exits (e.g. large crushed rocks, stone pads, steel wash racks, hose-down systems, and pads);

9. Work will primarily be performed between 7:00am and 5:00pm, Monday through Friday. Subgrantee should limit construction activities, including operation of heavy machinery, to normal business hours (M-F 7am-5pm). Contractors will be required to conform to noise level restrictions as established in Section 66-202 of the City of New Orleans Municipal Code (50-75 dBA, depending on the zoning of the area). All construction machinery and vehicles shall be equipped with practical sound muffling devices and operated in a manner to cause the least noise, consistent with efficient performance of work. Activities near noise and vibration sensitive areas such as churches, hospitals, and schools will be minimized as much as practically possible.

10. Ensure adequate maintenance of equipment, including proper engine maintenance, adequate tire inflation, and proper maintenance of pollution control devices;

11. Existing trees and other vegetation within the construction area that may be impacted within the public right of way will be protected on a location-by-location basis. In general, the Recovery Roads Program will attempt to maintain the existing healthy canopy in place. Protective measures may include fencing and signage. Any trimming, root pruning, or removal of any tree or stump within the public right of way due to construction will be minimized as much as possible and be conducted under the supervision of a licensed arborist. Any trees removed from the construction site within the public right of way will be relocated if possible to an area in close proximity to the project site. Trenching within the critical root zone of a tree of a tree will not be permitted on tree roots or within the canopy limits unless approved by Parks & Parkways. Existing vegetation or cover disturbed by construction activities will be seeded and fertilized;

12. At least 48 hours' notice will be given in advance of any street closures and anticipated areas of low water pressure to residents and emergency response agencies;

13. The Subgrantee is responsible for acquiring any Section 401/404 Clean Water Act (CWA) permits and/or Section 10 permits under the Rivers and Harbors Act. When these permits are required, Subgrantee must maintain documentation of compliance with applicable Nationwide Permit (NWP), exemption from requirements, or obtain individual permits from U.S. Army Corps of Engineers prior to construction, unless exempt by the NWP from pre-construction notification. The Subgrantee shall comply with all conditions of the required permit. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files;

14. Care should be taken to ensure that any potentially hazardous or toxic materials used for, generated, or encountered during pressure washing, cleaning, or any other construction activities, do not impact groundwater, waterways, wetlands, or nearby stormwater conveyance systems. Potentially hazardous and toxic wastes generated or encountered during these processes should be isolated, contained, and disposed of in an approved manner. This condition includes petroleum products and by-products use in machinery and equipment. The Subgrantee shall be responsible for complying with all relative rules of the Clean Water Act (CWA). No activity performed should have any impact on waters of the state;

15. Appropriate measures for the proper assessment, remediation, management, and disposal of any contamination discovered in the course of construction activities must be initiated in accordance with applicable federal, state, and local regulations. The contractor is required to take appropriate actions to prevent, minimize, and control the spill of hazardous materials at the proposed site;

16. Contractor and/or sub-contractors must properly handle, package, transport and dispose of hazardous materials and/or waste in accordance with all local, state, and federal regulations, laws, and ordinances, including all Occupational Safety and Health Administration worker exposure regulations covered within 29 C.F.R. Parts 1910 and 1926;

17. All work affecting the Agriculture Street Landfill Superfund Site must be undertaken in accordance with the Consent Decree between the City and USEPA including the *Technical Abstract for Utility Operations within the Agriculture Street Landfill Superfund Site*;

18. A spill prevention and emergency response plan (SPERP) will be required for all construction contractor groups. The SPERP will need to identify at a minimum: emergency contact numbers for local, state and federal environmental and public health agencies, material safety data sheets (MSDS) for all hazardous substances, hazardous material inventory, spill prevention plan, spill response plan/emergency response plan, spill response equipment (e.g. absorbent pads, disposal containers) and reporting requirements;

19. If any asbestos containing materials (ACM) and/or other hazardous materials are found during remediation or repair/replacement activities, the Subgrantee shall comply with all federal, state, and local abatement and disposal requirements under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Louisiana Administrative Code 33:III 5151. Demolition activities related to possible asbestos-containing materials (PACM) must be inspected for ACM/PACM where it is safe to do so. Should ACM be present, the Subgrantee is responsible for ensuring proper disposal in accordance with the previously referenced administrative orders. Regardless of the asbestos content, the Subgrantee is responsible for ensuring that all renovation or demolition activities are coordinated with the LDEQ to the extent required prior to initiating work. All documentation pertaining to these activities and Subgrantee compliance with any conditions should be forwarded to the state and FEMA for inclusion in the permanent project files;

20. Unusable equipment, debris, and material shall be disposed of in an approved manner and location. The Subgrantee must handle, manage, and dispose of petroleum products, hazardous materials, and/or toxic waste in accordance with all local, state, and federal agency requirements. All coordination pertaining to these activities should be documented and copies forwarded to the state and FEMA as part of the permanent project files;

21. Contractors will be responsible for maintaining, securing, and protecting any staging area, containers, or bins set up for construction purposes. The storage of any equipment or materials will not be permitted immediately adjacent to canals or other water bodies, trees, transportation or utility servitudes, or private property without prior approval from the respective owner or regulatory agency. The contractors will be responsible to ensure all equipment arriving at or departing from the construction limits remains clean and to take any necessary measures to ensure foreign materials or debris is not tracked or deposited on opened streets or outside the construction site limits. The contractor will also be required to store and handle any fuels or other hazardous material in accordance with OSHA requirements, and ensure any such materials required at a construction site be adequately secured and protected at all times;

22. In order to minimize indirect impacts (erosion, sedimentation, dust, and other construction-related disturbances) to nearby waters of the U.S. and surrounding drainage areas, the contractor must ensure compliance with all local, state, and federal requirements related to sediment control, disposal of solid waste, control and containment of spills, and discharge of surface runoff and stormwater from the site. All documentation pertaining to these activities and Subgrantee compliance with any conditions should be forwarded to LA GOHSEP and FEMA for inclusion in the permanent project files;

23. The Subgrantee shall ensure that best management practices are implemented to prevent erosion and sedimentation to surrounding, nearby or adjacent wetlands. This includes equipment storage and staging of construction to prevent erosion and sedimentation to ensure that wetlands are not adversely impacted per the clean water act and executive order 11990;

24. The Louisiana Department of Natural Resources (LDNR) requires that a complete Coastal Use Permit (CUP) Application package (Joint Application Form, location maps, project illustration plats with plan and cross section views, etc.) along with the appropriate application fee, be submitted to their office prior to construction. The Subgrantee is responsible for coordinating with and obtaining any required CUPs or other authorizations from the LDNR OCM's Permits and Mitigation Division prior to initiating work. The Subgrantee must comply with all conditions of the required permits. All documentation pertaining to these activities and Subgrantee compliance with any conditions should be forwarded to the state and FEMA for inclusion in the permanent project files;

25. Coordination with the appropriate local levee district(s) and USACE would be required for work within 1,500 feet of Mississippi River levees and/or within 300 feet of hurricane protection levees. CNO and SWBNO are responsible for obtaining any required permits from these districts and following any conditions imposed;

26. Avoid engaging in construction activities within 660 feet of a bald or golden eagle nest during nesting and fledging where there is no visual buffer or 330 feet where there is a visual buffer, as nesting eagles are quite sensitive to human activities during these times;

27. No project may be built to a floodplain management standard that is less protective than what the community has adopted in local ordinances through their participation in the NFIP. FEMA PA-funded projects carried out in the floodplain must be coordinated with the local floodplain administrator for a floodplain development permit prior to the undertaking, and the action must be carried out in compliance with relevant, applicable, and required local codes and standards and thereby, will reduce the risk of future flood loss, minimize the impacts of floods on safety, health, and welfare, and preserve and possibly restore beneficial floodplain values as required by E.O. 11988. Coordination pertaining to these activities and Subgrantee compliance with any conditions should be documented and copies forwarded to the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) and FEMA for inclusion in the permanent project files;

28. Adverse effects must be minimized in accordance with FEMA's minimization standards in 44 C.F.R. § 9.11. Treatment measures would be required to reduce adverse impacts below the level of significance;

29. Louisiana law (Part VII of Chapter 8 of Title 40, and the sections as R.S. 40:1749.11 to 40:1749.26) requires excavators and demolishers to call a regional notification center prior to beginning work. Prior to any excavation or demolition, each excavator or demolisher, including cable television owners or operators, shall serve telephonic notice of the intent to excavate or demolish to the regional notification center serving the area in which the proposed excavation or demolition is to take place. Such notice shall be given to the notification center at least 96 hours, but not more than 120 hours (excluding weekends and holidays) prior to the commencement of any excavation or demolition activity. See entire laws at www.laonecall.com or call 1-800-272-3020 for more information;

30. This project involves the modification of a public structure that may contain surfaces coated with lead-based paint. The Subgrantee is responsible complying with all local, state, and federal laws and ensuring that project activities are coordinated with the Louisiana Department of Environmental Quality for abatement activities;

31. The Subgrantee is responsible for obtaining and/or complying with all federal, state and local permits, ordinances and/or requirements for the collection, handling, storage, transportation and disposal of any medical, hazardous, biological, radiological, pharmaceutical or toxic related waste or debris. Equipment such as ice machines, refrigerators, generators, air conditioning units, computers, and televisions may contain chlorofluorocarbons (CFCs), used oil, diesel and other petroleum products, mercury switches, used oil filters, fuel filters, and batteries. The Subgrantee shall handle, manage, and dispose of damaged materials and equipment that may be hazardous waste, universal waste, and hazardous materials in accordance with the requirements of local, state, and federal regulations;

32. If your project results in a discharge to waters of the state, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary;

33. All waste is to be transported by an entity maintaining a current "waste hauler permit" specifically for the waste being transported, as required by Louisiana Department of Transportation and Development (DOTD), LDEQ, and other regulations;

34. Disposal of demolition debris must be in accordance with all federal, state, and local laws, regulations, and rules. Prior to disposal, the Subgrantee must identify and provide to FEMA and GOHSEP the waste disposal site, including the complete name, location, telephone number, and contact person of the facility. Due to the presence of the Agriculture Street Landfill Superfund site and the potentially hazardous nature of material to be removed from the site, all construction and demolition debris must be disposed in a Type I Industrial Landfill. The disposal facility must be permitted by the State of Louisiana Department of Environmental Quality Permit Support Division to receive Regulated Asbestos Containing Material. Waste must be packaged, labeled, manifested, and transported in accordance with LDEQ regulations and requirements. Further, the Subgrantee must comply with Best Management Practices for Demolition, Construction, and Renovation Sites Under Five Acres (See Appendix D);

35. Contractors will be responsible for maintaining, securing, and protecting any staging area, containers, or bins set up for construction purposes. The storage of any equipment or materials will not be permitted immediately adjacent to canals or other water bodies, trees, transportation or utility servitudes, or private property without prior approval from the respective owner or regulatory agency. The contractors will be responsible to ensure all

equipment arriving at or departing from the construction limits remains clean and to take any necessary measures to ensure foreign materials or debris is not tracked or deposited on opened streets or outside the construction site limits. The contractor will also be required to store and handle any fuels or other hazardous material in accordance with OSHA requirements, and ensure any such materials required at a construction site be adequately secured and protected at all times. Contractor and/or Subcontractors will properly handle, package, transport and dispose of hazardous materials and/or waste in accordance with all local, state and federal regulations, laws and ordinances including all OSHA worker exposure regulations covered within 29 CFR 1910 and 1926;

36. To minimize worker and public health and safety risks from project construction and closure, all construction and closure work must be done using qualified personnel trained in the proper use of construction equipment, including all appropriate safety precautions. Additionally, all activities must be conducted in a safe manner in accordance with the standards specified in OSHA regulations;

37. Appropriate signage and barriers shall be in place prior to construction activities in order to alert pedestrians and motorists of project activities and traffic pattern changes. The contractor will implement traffic control measures, as necessary. This shall include Subgrantee 24-hour emergency contact information;

38. Subgrantee is responsible for maintaining construction site perimeter fencing where possible;

39. The Subgrantee and its contractor(s) must take all reasonable precautions to control construction site access during project implementation, including posting appropriate signage and fencing, where possible, to minimize foreseeable potential public safety concerns. All activities shall be conducted in a safe manner in accordance with OSHA work zone traffic safety requirements. Truck and equipment routes must be kept free of construction debris;

40. The Subgrantee and its contractor(s) are responsible for implementing all traffic control and warning in accordance with the Manual of Uniform Traffic Control Devices, including placing signs and signals in advance of construction activities in order to alert pedestrians and motorists of the upcoming work and traffic pattern changes. Subgrantee is responsible for compliance with Section C129, Temporary Signs, Barricades Pavement Markings, Construction Signing, Traffic Maintenance and Public Safety (See Appendix D);

41. Subgrantee will perform all Treatment Measures identified by FEMA in consultation with SHPO and other consulting parties through the Section 106 review to offset any adverse effects;

42. The applicant is required to adhere to the following minimization and treatment measures and timeframes established within the final ACP consultation letter, dated December 11, 2018, and summarized below:

    a) CNO has hired an archaeologist and historic preservation specialist who meet the SOI Professional Qualification Standards to serve as liaisons to FEMA and SHPO/Tribes for the JIRR Undertaking. CNO must notify FEMA in writing, if in the future, one or both of these positions is not filled and consult with FEMA, SWBNO, GOHSEP, SHPO, and Tribes to determine what steps must be taken during any such vacancy.

    b) CNO/SWBNO will report on the number of projects and treatment measures during semi-annual meetings to be held on or about March 15th and September 15th of each year. The CNO archaeologist and historic preservation specialist will email the consulting parties a copy of the report prior to the semi-annual meetings. CNO/SWBNO will provide the consulting parties with a written summary describing the information discussed at the meeting.

    Archaeology:

    c) The CNO archaeologist is responsible for monitoring work where there is an identified potential for burials, human remains, burial furniture or artifacts, or pre-contact, contact and colonial era archaeological sites. If the discovery appears to be pre-contact, contact or colonial era archaeological deposits, the CNO archaeologist will assess the NRHP eligibility of the discovery in consultation with FEMA, SHPO, Tribes, and GOHSEP; develop a response or mitigation strategy in consultation with FEMA, SHPO, Tribes, and GOHSEP

    d) The CNO archaeologist will ensure that the protocol for the discovery of human remains detailed in Appendix 4 of the ACP is followed, and will ensure that a report on each discovery of human remains is prepared and submitted to parties described in the ACP.

    e) CNO/SWBNO will be responsible for the development of a cultural resource context statement as described in the ACP.

    f) CNO/SWBNO will ensure the development of a public outreach program for archaeology based on the cultural resource context statement as described in the ACP.

Built Environment:

g) The CNO historic preservation specialist is responsible for implementing and fulfilling CNO/SWBNO's responsibilities described in the ACP and will serve as CNO/SWBNO's primary point-of-contact for all issues regarding the built environment.

h) The historic preservation specialist will record the following CDFs scheduled for removal in full reconstruction projects or projects within NHL districts or adjacent to individual NHL properties: brick or stone street pavers (including driveways and driveway aprons); brick or stone parking boundaries; brick or stone crosswalks; brick or stone curbs; brick or stone open gutters; brick or stone gutter bottoms; inlaid decoration in sidewalks, foot laps, driveways, or driveway aprons; streetcar tracks or pavers; mounting blocks or steps (aka carriage steps, footbridges over open gutters); and abandoned fire hydrants.

i) CNO/SWBNO will avoid or minimize effects to CDFs within National Register Historic and National Historic Landmark Districts by adhering to the avoidance/minimization effort listed in Appendix 2 of the ACP.

j) CNO/SWBNO will be responsible for conducting research and a field sampling survey of character defining streetscape features in each affected NRHP listed or eligible district as described in the ACP.

k) CNO/SWBNO will be responsible for drafting a historic context statement focusing on the history of the streetscape throughout all affected NRHP listed or eligible districts as described in the ACP.

43. If the project results in a discharge of wastewater to an existing wastewater treatment system, that wastewater treatment system may need to modify its LPDES permit before accepting the additional wastewater;

44. All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one acre. It is recommended that you contact the LDEQ Water Permits Division at (225) 219-9371 to determine if your proposed project requires a permit.

45. If your project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit is required. An application or Notice of Intent will be required if the sludge management practice includes preparing biosolids for land application or preparing sewage sludge to be hauled to a landfill. Additional information may be obtained on the LDEQ website at http://www.deq.louisiana.gov/portal/tabid/ 2296/Default.aspx or by contacting the LDEQ Water Permits Division at (225) 219- 9371;

46. All precautions should be observed to protect the groundwater of the region;

47. Please be advised that water softeners generate wastewaters that may require special limitations depending on local water quality considerations. Therefore if your water system improvements include water softeners, you are advised to contact the LDEQ Water Permits to determine if special water quality-based limitations will be necessary;

48. If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents;

49. Any renovation or remodeling must comply with LAC 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

50. Permit LAR10M215 requires certain storm water pollution prevention and control measures, possible monitoring and reporting, and regular inspections. You must prepare and implement a storm water pollution prevention plan (SWPPP) that is tailored to your site. As a construction project authorized to discharge under this general permit, all terms and conditions of the permit must be complied with in order to maintain coverage and to avoid possible penalties. Coverage under this permit does not relieve the permittee from any regulatory responsibility to apply for and receive other permits or authorizations that may be required as a result of activities ongoing or planned at this site. Any activity resulting in a discharge to waters of the state, such as that from a sanitary sewage treatment plant, must have all necessary permits prior to commencement of the planned discharge.

SECTION 00 73 73 STATUTORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this section.

B. Character Defining Features of Historic Features, see attachment:

1. Character Defining Features (CDFs) of Streetscapes Found in the National Register Historic Districts (NRHDs) and National Historic Landmark Districts (NHLs) of New Orleans; and avoidance/minimization efforts.

C. Debarment and Suspension, Executive Order 12549, 51 FR 6370, February 21, 1986

1. Contractor certifies that it will not knowingly enter into a contract with anyone who is ineligible under the 40 CFR Part 32 to participate in the Project. Suspension and debarment information can be accessed at http://www.sam.gov. Contractor represents and warrants that it has or will include a term or conditions requiring compliance with this provision in all of its subcontracts under this Agreement.

D. Demonstration Cities and Metropolitan Development Act, 42 USC 3301 et seq., as amended and Executive Order 12372, 47 FR 30959, July 16, 1982.

E. Prohibitions relating to violations of CWA and CAA with respect to Federal contracts, grants, or loans under 42 USC 7606 and 33 USC 1368 and EO 11738, 38 FR 25161, September 12, 1973.

F. Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 USC 4601 et seq.

G. Civil Rights Obligations

1. Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color, and national origin, including limited English proficiency (LEP).
2. Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination against persons with disabilities.
3. The Age Discrimination Act of 1975, which prohibits age discrimination.
4. Section 13 of the Federal Water Pollution Control Act Amendments of 1972, which prohibits discrimination on the basis of sex.
5. 40 CFR Part 7, as it relates to the foregoing.
6. Executive Order No. 11246.
7. Title VI of the Civil Rights Act of 1964, 42 USC 2000d et seq.
8. Section 504 of the Rehabilitation Act, 29 USC 794, supplemented by EO 11914, 41 FR 17871, April 29, 1976 and 11250, 30 FR 13003, October 13, 1965.
9. Age Discrimination Act, 42 USC 6101 et seq.
10. 40 CFR Part 7.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 007373

SECTION 011000 – SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Project information.
2. Specification and Drawing conventions.
3. Miscellaneous provisions.

B. Related Requirements:

1. Section 011100 "Summary of Work"
2. Section 011400 "Work Restrictions"

1.3 PROJECT INFORMATION

A. Project Identification: Contract 30266 NEW 16” SEWER FORCE MAIN ON LAFITTE ST. (N. DORGENOIS ST.-N. GALVEZ ST.) & NEW 48” SEWER FORCE MAIN ON N. GALVEZ ST. (CONTI ST.-LAFITTE ST.)

1. Project Location: Carrollton Sanitary Sewer Basin, Leonidas Neighborhood.

B. Owner: Sewerage & Water Board of New Orleans.

C. Engineer/Owner's Representative: Stantec Consulting Services, Inc.

D. Designer: Stantec Consulting Services, Inc.

E. Construction Manager: To be identified at the preconstruction meeting and serve as the Prime Contractors point of contact.

1.4 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

1. The fact that certain paragraphs of the General Requirements have been specified as applying to this contract does not in any way imply that paragraphs not quoted do not apply; in all cases where the General Requirements are not directly contradicted by other sections, the General Requirements shall have full force and effect; nor shall the fact that certain clauses of the General Requirements refer to operations not constituting a part of the work of this contract be construed as in any way weakening the binding force of the General Requirements in the remaining clauses.

2. In the case of any conflict between the “General Requirements” herein, and all other sections included in Part 3 – “Specifications,” the latter shall govern.

3. In case of conflict between the bid documents (drawings and specifications) the Owner’s Representative shall be the sole authority in determining which of the two shall take precedence.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

D. Contract Drawings and Specifications:
1. Contract drawings and specifications are available gratis from the Sewerage and Water Board of New Orleans website: www.swbno.org or through the Sewerage and Water Board’s Purchasing Department for a fee.
2. Contract drawings are descriptive of the work to be performed and are to be used for General Guidance only. Contractor shall take and verify all measurements and dimensions in the field. Do not scale. Contractor shall assume all responsibility for failure to take proper and accurate measurements.
3. These plans and specifications shall be considered to be complimentary, one to the other, and work indicated in/on one shall be as binding as if indicated in both. Discrepancies between drawings and specifications or any clarifications deemed necessary shall be brought to the attention of the Engineer prior to the submission of a bonafide bid. Submission of a bonafide bid indicates that the Contractor has been adequately informed on all phases of the work and that he can and will perform in accordance with these plans and specifications.
4. After award of contract, the Engineer's interpretation of these documents shall be final.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011000

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SECTION 011100 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Work covered by Contract Documents.
2. Work by Owner.
3. Preconstruction.

B. Related Requirements:

1. Section 011000 "Summary" for project information.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes the following:

1. The installation of new 16” forcemain along Lafitte St. from SPS8 at N. Dorgenois St. to tie into the existing 48” sewer forcemain at N. Galvez St. and the replacement of existing 48” sewer forcemain along N. Galvez between Conti St. and Lafitte St. The work also includes all associated traffic control, site paving and restoration work as indicated in the Contract Documents.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.4 WORK BY OWNER

A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

B. Concurrent Work: Owner/Stakeholders will perform the following construction operations at Project site. Those operations will be conducted simultaneously with Work under this Contract.

1. City of New Orleans Department of Public Works (DPW) may have contracts operating adjacent and concurrent to this contract for street paving rehabilitation. Where the area of

work between this contract and a DPW contract overlap, this Contractor shall perform additional project coordination to ensure all utility work is complete prior to the DPW contractor mobilizing for pavement rehabilitation. In some cases, the Owner's Representative may dictate by field directive that the Contractor is to install “Maintenance Aggregate” or “Interim Pavement” and then turn the jobsite over to the DPW Contractor.

C. Subsequent Work: Owner/Stakeholders may perform additional work at site after Substantial Completion. Completion of that work will depend on successful completion of preparatory Work under this Contract.

1. City of New Orleans Department of Public Works (DPW) may have contracts operating subsequent to this contract for street paving rehabilitation. Where the area of work between this contract and a DPW contract overlap, this Contractor shall perform additional project coordination to ensure all utility work is complete prior to the DPW contractor mobilizing for pavement rehabilitation. In some cases, the Owner's Representative may dictate by field directive that the Contractor is to install “Maintenance Aggregate” or “Interim Pavement” and then turn the jobsite over to the DPW Contractor.

D. DPW Schedule of Concurrent and/or Subsequent Work: The following DPW projects are scheduled to overlap in work area with this contract:

1. RR182 Treme-Lafitte Group A
2. RR183 Treme-Lafitte Group B
3. RR218 Hollygrove Group C & F

E. Deletion of Work: In cases where sanitary sewer rehabilitation work has already been completed by others prior to the mobilization of this contract or during the performance of this contract, that respective work will be deleted from this contract. There will be no compensation to the contractor for work removed from this contract by the owner.

1.5 PRECONSTRUCTION

A. Before undertaking each part of the work, the Contractor shall carefully study and compare the contract documents and check and verify pertinent figures shown thereon including all pertinent field measurements. Contractor shall promptly report in writing to the Engineer any conflict, error or discrepancy that the Contractor may discover. Prior to commencement of work under this Contract or the continuance of any work hereunder or under any modification to the Contract Documents, Contractor shall provide written notice to the Engineer of any defects in the plans and specifications and the specific engineering reasons thereof, and of any prospective damages to persons or property that could be or would be caused by the work and/or duties to be performed under this contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011100

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SECTION 011400 – WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Work covered by Contract Documents.
2. Work by Owner.
3. Access to site.
4. Site Security.
5. Coordination with occupants.
6. Public Relations.
7. Work restrictions.

B. Related Requirements:

1. Section 011000 "Summary" for project information.

C. Reference Standards:

1. City of New Orleans Department of Public Works
2. City of New Orleans Department of Parks and Parkways

1.3 ACCESS TO SITE

A. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

B. Use of Site: Limit use of Project site to areas within the Contract limits as indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine construction operations to the limits of public rights of way owned and operated by the Sewerage & Water Board of New Orleans and the City of New Orleans Department of Public Works. Use of neutral ground or other areas maintained by Department of Parks and Parkways is prohibited without express written consent of Parks and Parkways.

2. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to property Owner, property Owner's employees, adjacent occupants and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Condition of Existing Infrastructure: Maintain portions of existing infrastructure (roadways and utilities) affected by construction operations in a sound condition throughout construction period. Repair damage caused by construction operations at no additional cost to Owner.

D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations at no additional cost to Owner.

1.4 SITE SECURITY

A. All Contract Employees who enter the Sewerage and Water Board Facilities shall have current and legible picture ID. No one will be allowed to enter the Facilities without displaying an ID.

B. The Contractor shall insure that the site is properly secured at the end of each workday. Fences shall be intact and gates locked. The Contractor shall also provide and maintain all necessary flagmen, watchmen, barricades devices as required for protection and safety of the work and the public against personal injury and property damages. The Contractor shall be responsible for any and all damages, injury or loss resulting from his failure to provide such necessary protective precautions.

1.5 COORDINATION WITH OCCUPANTS

A. Full Owner(s) Occupancy: Property Owner(s) and Residents will occupy sites adjacent to the work site during entire construction period. Cooperate with Property Owner(s) and Residents during construction operations to minimize conflicts and facilitate Property Owner(s) and Residents usage. Perform the Work so as not to interfere with Property Owner's day-to-day access. Maintain existing exits unless otherwise indicated.

1. Maintain access to existing driveways, walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Engineer and approval of authorities having jurisdiction.
2. Notify Property Owner(s) and Residents within 1,000 feet of construction operations, along construction access roads or those areas anticipated to be affected by the work, not less than 72 hours in advance of activities that will affect Property Owner's access, or prior to the marking of underground utilities, whichever is earlier.
3. The Contractor shall provide a draft of the notification letters to the Engineer and Construction Manager for review at least fifteen (15) working days prior to the schedule of delivery. The final notification letter shall be in a format acceptable to the Engineer.
4. Notification letters shall include information about the nature and duration of any unavoidable inconveniences which may be expected, including road closures and/or alternate traffic route descriptions, and how such inconveniences may be mitigated. Notification letter must be received by residents no less than two (2) days before construction operations or final restoration operations begin.

a. The notification letters distributed prior to the start of construction operations shall be printed on yellow (canary) paper. The notification letters distributed prior to the start of final restoration operations shall be printed on green paper.

5. The Contractor shall distribute notifications regarding other project updates on short notice for time-sensitive project issues such as the initiation of night work.

1.6 PUBLIC RELATIONS

A. The Contractor shall coordinate and provide project information to the Owner's Community and Intergovernmental Relations Department. The Contractor shall notify the S&WB Community and Intergovernmental Relations Department immediately of any emergency situations with respect to the work or the residents in the area of the work. The Contractor shall obtain approval from the S&WB Community and Intergovernmental Relations Department prior to attending any public meetings for the purpose of discussing the work.

B. The Contractor shall provide the name and phone number of the contact person to respond to public inquiries and complaints/concerns regarding the construction activities in a timely manner. Any major complaint or concern shall be forwarded to the Sewerage and Water Board Risk Management Department, Engineer, and Construction Manager immediately. The Contractor shall maintain a Public Contact Log and document all inquiries and complaints, and Contractor's responses and actions taken. The Contractor shall forward completed inquiry/complaint documentation to the Sewerage and Water Board Risk Management Department, Engineer, and Construction Manager each month.

1.7 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work on the existing site to normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, unless otherwise indicated.

1. Night, Weekend, or Holiday work which requires the presence of an engineer or inspector will not be permitted except in cases of emergency or by permission of the Owner. Except in cases of emergency, all requests for night, weekend, or holiday work shall be submitted in writing no sooner than 72 hours prior to the work being performed. Any approved night, weekend, or holiday work requires prior written authorization from the Owner.

C. Existing Utility Interruptions: Do not interrupt utilities serving occupied facilities.

1. The work on this project pertains to existing public or private sewers; the Contractor shall schedule operations in such a manner that all existing sewer service may be adequately maintained.
2. The Contractor shall not use any existing sanitary sewer to divert or dispose of storm or surface water. Flow diversion pumping shall be conducted, as approved by the Engineer on an as needed basis, in accordance with Section 330130.03 Sewer Flow Control.

3. The Contractor shall be responsible for the removal of any debris and sedimentation in the existing sewer mains, laterals, and manholes which is attributable to the Contractor's work under this Contract, in accordance with Section 017419 Construction Waste Management and Disposal.

D. Restricted Substances: Use of controlled substances on Project site is not permitted; refer to the Sewerage and Water Board of New Orleans Drug – Free Work Place Policy Contractor Requirements, Section 007300, Attachment 1.

E. Employee Screening: Comply with Owner's requirements for drug screening of Contractor personnel working on Project site; refer to the Sewerage and Water Board of New Orleans Drug – Free Work Place Policy Contractor Requirements, Section 007300, Attachment 1.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011400

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SECTION 01 22 00 - UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

A. Unit price is a price per unit of measurement for plant, labor, construction aids, utilities, pumping, mobilization, sewer flow control, materials, equipment, supplies or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, profit, and all other incidentals.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3 Execution. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price No. C202(52)C: Removal and Disposal of Existing Portland Cement Concrete Pavement

1. Description: This work consists of removal and satisfactory disposal of existing Portland cement concrete roadway, in accordance with the plans and these specifications.
2. Unit of Measurement: Square Yard

B. Unit Price No. C202(52)D: Removal and Disposal of Existing Sidewalk, Driveway, Foot Lap (Concrete, Brick, Asphalt, Etc.)

1. Description: This work consists of removal and satisfactory disposal of existing sidewalk, driveway, foot lap (concrete, brick asphalt, or other materials, or combinations of materials).
2. Unit of Measurement: Square Yard

C. Unit Price No. C202(52)E: Removal and Disposal of Existing Curb (Concrete, Asphalt, Brick, Etc.)

1. Description: This work consists of removal and satisfactory disposal of existing curb (concrete, asphalt, brick, or other materials, or combinations of materials).
2. Unit of Measurement: Linear Foot

D. Unit Price No. C202(52)(I): Removal and Disposal of Existing Asphaltic Concrete Pavement.

1. Description: This work consists of removal and satisfactory disposal of existing asphaltic concrete pavement.

2. Unit of Measurement: Square Yard

E. Unit Price No. C203(51): Roadway Excavation

1. Description: This work consists of excavation of roadway base and earthen material beneath roadway pavement to be replaced as required to establish pre-existing or field modified grades, excluding any excavation inclusive to excavated sewer or water repairs, as indicated on the drawings and specified herein according to Division 31 and Division 32 of the specifications.
2. Unit of Measurement: Cubic Yard

F. Unit Price No. C203(59): Geotextile Fabric for Stabilization

1. Description: This work consists of furnishing and installing all geotextile fabrics for embankment separation, subgrade reinforcement of roadways, subsurface drainage, or riprap lining in a manner and at locations as detailed and specified according to Section 310519 “Geosynthetics for Earthwork”, as shown in the drawings or as otherwise directed by the Construction Manager.

2. Unit of Measurement: Square Yard

G. Unit Price No. C203(60): Geogrid

1. Description: This work consists of furnishing and installing all geogrid for embankment separation, subgrade reinforcement of roadways, subsurface drainage, or riprap lining in a manner specified according to Section 310519 “Geosynthetics for Earthwork”, in locations shown in the drawings or as otherwise directed by the Construction Manager.
2. Unit of Measurement: Square Yard

H. Unit Price No. C302(51): Base Course

1. Description: This work includes procuring and properly installing aggregate base course on acceptable subbase, as indicated on the drawings and specified herein according to Section 321123 “Aggregate Base Course”. The work also includes all efforts necessary to schedule and allow for testing of material, as well as satisfactory removal and cleanup of unused material from the work site.
2. Unit of Measurement: Cubic Yard

I. Unit Price No. C502(52): Superpave Asphaltic Concrete Binder Course for Composite Roadways

1. Description: This work consists of placing an asphaltic concrete binder course (2” Thick), on top of concrete roadway, as shown in the New Orleans DPW Standard Details and according to Section 321216 “Asphalt Paving.”
2. Unit of Measurement: Square Yard

J. Unit Price No. C502(53)-1: Superpave Asphaltic Concrete Wearing Course (2” Thick)

1. Description: This work consists of placing an asphaltic concrete wearing surface course (2” Thick), to the specified thickness, on binder course in conformity with the typical sections shown in the New Orleans DPW Standard Details and according to Section 321216 “Asphalt Paving.”
2. Unit of Measurement: Square Yard

K. Unit Price No. C502(53)-2: Superpave Asphaltic Concrete Binder Course (5” Thick)

1. Description: This work consists of placing concrete binder course (5” Thick), to the specified thickness, on precast concrete in conformity with the typical sections shown in the New Orleans DPW Standard Details and according to Section 321216 “Asphalt Paving.”
2. Unit of Measurement: Square Yard

L. Unit Price No. C509(51)A: Cold Planning Asphaltic Pavement (2” Thick)

1. Description: This work consists of milling existing asphalt (2” Thick), to the specified thickness, in the New Orleans DPW Standard Details and according to Section 321216 “Asphalt Paving.”
2. Unit of Measurement: Square Yard

M. Unit Price No. C706(51)A: Concrete Sidewalk (4” Thick)

1. Description: This work consists of constructing concrete sidewalks in conformance with the specifications and in conformity with the locations, lines, grades, slopes, thickness, sections, and strength shown in the New Orleans DPW Standard Details and according to Section 321623 “Sidewalks and Driveways.”
2. Unit of Measurement: Square Yard

N. Unit Price No. C707(56): 8” Concrete Barrier Curb with Dowels

1. Description: This work consists of constructing 8” concrete barrier curb with dowels in conformance with the specifications and in conformity with the locations, lines, grades, slopes, thickness, sections, and strength shown in the New Orleans DPW Standard Details and according to Section 321613 “Curbs and Gutters.”
2. Unit of Measurement: Linear Foot

O. Unit Price No. C714(51): Sodding

1. Description: This work consists of furnishing, hauling, planting, rolling, watering, and maintaining placed and in-place live grass sod at locations shown on the plans or as directed according to Section 329223 “Sodding.”
2. Unit of Measurement: Square Yard

P. Unit Price No. C742(52)(F): New 16” Plug Valve

1. Description: This work consists of furnishing and installing a new 16 inch sewer plug valve, in accordance with these plans and specifications.
2. Unit of Measure: Each

Q. Unit Price No. C742(52)(H): New 36” Plug Valve with Valve Box and Access Door

1. Description: This work consists of furnishing and installing a new 36 inch sewer plug valve, in accordance with these plans and specifications. A subsidiary obligation to this pay item is to furnish and install a valve box with an access door.
2. Unit of Measure: Each

R. Unit Price Nos. C741(55)(A), C741(55)(B), and C741(55)(C): Replace Lead Service Line Water House Connection (From Meter to Main)

1. Description: This work consists of the removal of exposed Lead Service Line Water House Connections with new Polyethylene Water House Connections, from the Water Main to the Water Meter, is accordance with Section 330110.73 Excavated Rehabilitation of Water Utility Piping.
2. Unit of Measure: Each
3. This unit price is broken down into specific pay items based on nominal service line diameter as per the Bid Form.
4. Unit Prices by Diameter: Measurement and Payment for these Unit Price items will be made by the nominal diameter as per the Bid Form.
    a. Unit Price No. C741(55)A: 5/8” to 1” Lead Service Line.
    b. Unit Price No. C741(55)B: 1-1/2” Lead Service Line.
    c. Unit Price No. C741(55)C: 2” Lead Service Line.

S. Unit Price No. C741(78): Plug Existing 48” Sewer Main and Fill with Flowable Fill (Sand/Cement Mixture)

1. Description: This work consists of glugging and filling existing 48” sewer mains with flowable fill.
2. Unit of Measurement: Linear Feet

T. Unit Price No. C742(60): Replace Existing, Sewer House Connection (H.C.) From New Main to Back of Curb

1. Description: This work consists of the replacement of sewer house connected pipelines and sewer service laterals by means of excavation including full line replacement, partial line replacement (point repair) and line relocations from the sewer main to the back of curb according to Section 330130.73 “Rehabilitation of Sewers.”
2. Unit of Measure: Each

U. Unit Price No. C742(63): Replace Existing, Sewer H.C. Beyond Back of Curb

1. Description: This work consists of the replacement of sewer house connected pipelines and sewer service laterals by means of excavation including full line replacement, partial line replacement (point repair) and line relocations from the back of curb to the property line according to Section 330130.73 “Rehabilitation of Sewers.”
2. Unit of Measure: Linear Foot

V. Unit Price Nos. CSW-01 and CSW-02: Repair Water Main with Full Circle Clamp

1. Description: This work consists of the rehabilitation of water mains by means of excavation and installation of full circle clamps including partial line replacement (point repair) and line relocations according to Section 330110.73 Excavated Rehabilitation of Water Utility Piping.
2. Unit of Measure: Each
3. This unit price is broken down into specific pay items based on nominal pipe diameter as per the Bid Form.
4. Unit Prices by Diameter: Measurement and Payment for these Unit Price items will be made by the nominal diameter as per the Bid Form.
    a. Unit Price No. CSW-01: Pipe Diameter 4” – 8”.
    b. Unit Price No. CSW-02: Pipe Diameter 12” – 16”.

W. Unit Price Nos. CSW-03 and CSW-04: Repair Water Main with Bell Joint Clamp

1. Description: This work consists of the rehabilitation of water mains by means of excavation and installation of bell joint clamps including partial line replacement (point repair) and line relocations according to Section 330110.73 Excavated Rehabilitation of Water Utility Piping.
2. Unit of Measure: Each
3. This unit price is broken down into specific pay items based on nominal pipe diameter as per the Bid Form.
4. Unit Prices by Diameter: Measurement and Payment for these Unit Price items will be made by the nominal diameter as per the Bid Form.
    a. Unit Price No. CSW-03: Pipe Diameter 4” – 12”.
    b. Unit Price No. CSW-04: Pipe Diameter 16” – 24”.

X. Unit Price No. CF-3: Saw Cut Concrete Curb, Pavement, Sidewalk, Driveway, Etc. According to Plans (8" Depth)

1. Description: This work consists of saw cutting existing concrete curb, pavement, sidewalk, driveway, etc. in accordance with these plans and specifications.
2. Unit of Measure: Linear Foot

Y. Unit Price No. C706(54)R: Removal of Handicap ramps, Curb and Gutter, and Concrete Sidewalks at Intersections Including Saw Cutting.

1. Description: This work consists of removal and satisfactory disposal of existing handicap ramps, curb and gutter, and concrete sidewalks at intersections including saw cutting.
2. Unit of Measurement: Square Yard

Z. Unit Price No. C706(54): Handicap Ramps, Curbs and Gutter, and Concrete Sidewalks at Intersections

1. Description: This work consists of all excavation, surface preparation, joint materials, welded wire fabrics, ADA compliant detectable warnings, and incidentals associated with the installation of ADA accessible handicap ramps.
2. Unit of Measurement: Square Yard

AA. Unit Price No. C706(54)SW: Sidewalk Transition Adjacent to Handicapped Ramps

1. Description: This work consists of all excavation, surface preparation, joint materials, welded wire fabrics, and incidentals associated with the installation of ADA accessible handicap ramps and their adjacent sidewalk transitions.
2. Unit of Measurement: Square Yard

BB. Unit Price No. C742(57)C: Sewer Point Repair, Up to 12 Feet

1. Description: This work consists of the rehabilitation of sewer pipelines and sewer service laterals by means of excavation including full line replacement, partial line replacement (point repair) and line relocations according to Section 330130.73 "Rehabilitation of Sewers."
2. Unit of Measure: Each
3. This unit price is broken down into specific pay items based on nominal pipe diameter and average depth of inverts as per the specific unit price items as stated on the Bid Form.
4. Unit Prices by Diameter: Measurement and payment for these unit price items will be made by the nominal diameter as per the Bid Form.
5. Unit Prices by Invert Depth: Measurement and payment for these unit price items will be made by the average depth of invert per the Bid Form.
    a. Unit Price No. C742(57)C: Eight-Inch (8") Diameter at 6.1-ft to 8.0-ft Depth

CC. Unit Price No. C742(58)C: Sewer Point Repair, Beyond 12 Feet

1. Description: This work consists of the rehabilitation of sewer pipelines and sewer service laterals by means of excavation including full line replacement, partial line replacement (point repair) and line relocations beyond 12 feet according to Section 330130.73 "Rehabilitation of Sewers."

2. Unit of Measure: Linear Foot
3. This unit price is broken down into specific pay items based on nominal pipe diameter and average depth of inverts as per the Bid Form.
4. Unit Prices by Diameter: Measurement and payment for these unit price items will be made by the nominal diameter as per the Bid Form.
5. Unit Prices by Average Invert Depth: Measurement and payment for these unit Price items will be made by the average depth of inverts per the Bid Form.
    a. Unit Price No. C742(58)C: Eight-Inch (8") Diameter at 6.1-ft to 8.0-ft Depth

DD. Unit Price Nos. C742(51)(16)D, C742(51)(I)D, C742(51)(J)D, and C742(51)(J)(D2): Install Sewer Main

1. Description: This work consists of the installation of sewer pipelines by means of excavation or horizontal directional drilling (HDD) including full line replacement, partial line replacement (point repair) and line relocations according to Sections 330130.73 "Rehabilitation of Sewers", 333111 "Public Sewerage Gravity Piping", and 330507.13 "Utility Directional Drilling." All ductile iron pipe shall be Pressure Class 150.
2. For sections of direct bury pipe, the geotextile fabric for the pipe is subsidiary to the respective pay items.
3. For sections of direct bury pipe, the aggregate bedding for the pipe is subsidiary to the respective pay items.
4. Unit of Measure: Linear Foot
5. This unit price is broken down into specific pay items based on nominal pipe diameter, method of installation, and average depth of sewer pipe invert as per the Bid Form.
6. Unit Prices by Diameter: Measurement and Payment for these Unit Price items will be made by the nominal diameter as per the Bid Form.
7. Unit Prices by Pipe Invert Depth: Measurement and payment for these unit price items will be made by the average depth of sewer pipe invert as per the Bid Form.
    a. Unit Price No. C742(51)(16)D: Install Sixteen-Inch (16") HDPE Sewer Force Main
    b. Unit Price No. C742(51)(I)D: Install Thirty-Six-Inch (36") DI Sewer Force Main
    c. Unit Price No. C742(51)(J)D: Install Forty-Eight-Inch (48") HDPE Sewer Force Main
    d. Unit Price No. C742(51)(J)(D2): Install Forty-Eight-Inch (48") DI Sewer Force Main

EE. Unit Price No. C742(51)(16)HDD: Install 16" HDPE Sewer Force Main Via Horizontal Directional Drilling (HDD)

1. Description: The work consists of replacing an existing sewer line with a new high-density polyethylene (HDPE) sewer line by means of HDD according to Sections 330507.13 "Utility Directional Drilling."
2. Unit of Measure: Linear Foot
3. This unit price is broken down into specific pay items based on nominal pipe diameter as per the Bid Form.
4. Unit Prices by Diameter: Measurement and Payment for these Unit Price items will be made by the nominal diameter as per the Bid Form.
    a. Unit Price No. C742(51)(16)HDD: Install Sixteen-Inch (16") HDPE Sewer Force Main Via HDD.

FF. Unit Price No. DCR-1: Drainage Canal Rehabilitation

1. Description: The work consists of removing and replacing an existing top section of an under-ground drainage canal. This includes any and all proper removal and disposal of existing I-beams, steel plates, grout, wire mesh, bricks, and 6” reinforced concrete. The size and scope of removal will be determined by the Engineer based on the existing materials field conditions, contractor opinion, and engineering decision. This pay item also includes furnishing and installing the replacement items based on the determined scope. This work will be performed in accordance with these plans and specifications.
2. Unit of Measure: Lump Sum

GG. Unit Price No. SP-1: Demo Existing Air Release Box
1. Description: The work consists of removing and properly disposing of the existing air release valve box, in accordance with these plans and specifications.
2. Unit of Measure: Each

HH. Unit Price No. C742(55)(E): Install Sewer Valve Manhole
1. Description: This work consists of furnishing and installing a new 48” brick manhole for a 16” sewer valve (C742(52)F, in accordance with these plans and specifications.
2. Unit of Measurement: Vertical Feet

II. Unit Price No. C706(51)(C): Median Maintenance Drive
1. Description: This work consists of installing a new concrete median maintenance drive, in accordance with these plans and specifications.
2. Unit of Measurement: Each

JJ. Unit Price No. ARV-1: Aire Release Valve
1. Description: This work consists of furnishing and installing a new air release valve (H-Tech Model 989-00 or approved equal).
2. Unit of Measurement: Each

KK. Unit Price Nos. C732(52)(A)W, C732(52)(A)Y, C732(53)(A)W, C732(53)(A)Y, C732(52)(D)W, & C732 (52)(E)W: Plastic Pavement Striping

1. Description: The work consists of furnishing and installing plastic pavement striping, in accordance with DPW’s standard specifications and standard drawings.
2. Unit of Measure: Linear Foot
3. This unit price is broken down into specific pay items based on stripe color and width, as per the Bid Form.
4. Unit Prices by color and width: Measurement and Payment for these Unit Price items will be made by the color and width as per the Bid Form.
    a. Unit Price No. C732(52)(A)W: Plastic Pavement Striping (4” Solid White).
    b. Unit Price No. C732(52)(A)Y: Plastic Pavement Striping (4” Solid Yellow).
    c. Unit Price No. C732(53)(A)W: Plastic Pavement Striping (4” Dashed White).
    d. Unit Price No. C732(53)(A)Y: Plastic Pavement Striping (4” Dashed Yellow).
    e. Unit Price No. C732(52)(D)W: Plastic Pavement Striping (12” White Stop Bar)
    f. Unit Price No. C732(52)(E)W: Plastic Pavement Striping (24” Solid White Pedestrian Crosswalk)

LL. Unit Price No. C742(55)D: Doghouse Manhole with Hatch Lid
1. Description: This work consists of furnishing and installing a new 60” doghouse manhole, in accordance with these plans and specifications. The doghouse manhole shall have a Halliday Products Model No. R1R60 Hatch Lid (or approved equal).

2. Unit of Measurement: Each

MM. Unit Price No. C742(51)H: 20” Temporary Bypass Line

1. Description: This work consists of installing maintain and removing a temporary bypass line according to Section 330130.03 Sewer Flow Control.
2. Unit of Measure: Linear Foot

NN. Unit Price No. CSS-01: New 48” Linestop
1. Description: This work consists of installing a new 48” linestop for bypass operations.
2. Unit of Measurement: Each

END OF SECTION 012200

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SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 007200 General Conditions.
2. Section 016000 Product Requirements.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use facsimile of form provided in Contract Documents.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section.

Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of Engineers and Owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Engineer’s Action: If necessary, Engineer will request additional information or documentation for evaluation within seven (7) days of receipt of a request for substitution. Engineer will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Engineer’s Supplemental Instructions for minor changes in the Work.
b. Use product specified if Engineer does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution within forty-five (45) days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.

1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Engineer will consider requests for substitution if received within forty-five (45) days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Engineer.

1. Conditions: Engineer will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Engineer will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012500

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:

1. Section 007200 General Conditions
2. Section 012500 Substitution Procedures
3. Section 012200 Unit Prices
4. Section 013100 Project Management and Coordination

1.3 DEFINITIONS

A. Claim: A demand or assertion by Owner/Contractor seeking an adjustment of contract price and/or time or other relief with respect to the terms of the contract. A demand for money or services by a third party is not a claim.

1.4 REQUESTS FOR INFORMATION

A. Contractor shall submit requests for information in accordance with the requirements of Section 013100 Project Management and Coordination.

1.5 MINOR CHANGES IN THE WORK

A. Engineer will issue through Construction Manager “field directives” (supplemental instructions) authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on the Contract Agreement Form.

1.6 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Construction Manager will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Construction Manager are not instructions either to stop work in progress or to execute the proposed change.

2. Within time specified in Proposal Request or 20 days when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    e. Quotation Form: Use forms acceptable to Construction Manager.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Construction Manager.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to Construction Manager.

1.7 ADMINISTRATIVE CHANGE ORDERS

A. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.8 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Construction Manager will issue a Change Order for signatures of Owner and Contractor on forms provided by the Owner.

1.9 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Construction Manager may issue a Construction Change Directive, also called a “Field Change”. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012600

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SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for:
   1. Schedule of Values
   2. Applications for Payment

B. Related Requirements:

   1. Section 004113 Louisiana Uniform Public Work Bid Form.
   2. Section 007200 General Conditions.
   3. Section 012200 Unit Prices.
   4. Section 012600 Contract Modification Procedures.
   5. Section 013200 Construction Progress Documentation.

1.3 DEFINITIONS

A. Schedule of Values: A listing of the various items of work and the corresponding quantity and value of each item. The sum total of the value of all items equals the total value of the contract. The SOV is to be used by the contractor to record monthly and job-to-date quantities of items completed, and to calculate the monthly and job-to-date value of completed items.

B. Application for Payment: Contractor's monthly progress payment submittal, which includes all required forms, schedules and documentation.

1.4 SCHEDULE OF VALUES

A. The Contractor's completed and submitted Louisiana Uniform Public Work Bid Form – Unit Price Form, Section 004143, shall constitute the Contractor's Schedule of Values.

1.5 APPLICATIONS FOR PAYMENT

A. Applications for payment shall be in compliance with Article 14 of the General Conditions in Section 007200.

B. Each Application for Payment that follows the initial Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by Owner.

C. Payment Application Times: The period covered by each Application for Payment is one month, beginning on the first day of the month and ending on the last day of the month. Within the first 14 calendar days after the end of the month, Contractor shall submit to the Engineer for review and approval, a draft copy of the Application for Payment, which shall include all required forms, schedules and documentation. Within 7 calendar days after receipt, the Engineer will notify the Contractor of any errors or omissions that require correction and resubmittal. The Engineer will review and respond to revised applications within 7 calendar days after receipt. When the Engineer determines that the draft is complete and correct, the Contractor will be directed to submit two notarized original Applications for Payment.

D. Forms, schedules and documentation required to complete the Application for Payment submittal include:
   1. Transmittal Document (Letter or Form) that identifies every item included in the submittal.
   2. AIA Document G702.
   3. AIA Document G703.
   4. Schedule of Values.
   5. Current Project Schedule updated through the end of the application period.
   6. Summary Completion Schedule that compares the percent of work remaining to the percent of time remaining.
   7. DBE Participation Report.
   8. Documentation of Completed Work (Work Order Forms, Post-construction CCTV Inspection Videos, Certification Reports, As-Built Drawings, and all other documentation or data required by the Engineer to verify the quantity and/or quality of the completed Work).
   9. Restoration Status for Repairs Completed Through "***Month Day, Year***."

E. Application Preparation: Complete all required fields on every form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will reject incomplete applications without action.
   1. Entries on AIA forms and the Schedule of Values must agree.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed through the end of the payment period.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
   4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
   5. Contractor shall invoice separately for SSERP repairs and FEMA funded repairs, including roadway restoration associated with each repair. Each invoice must be clearly identified as either SSERP or FEMA on the transmittal document and at the top of AIA Document, G702.

F. Stored Materials: Payment requests for stored materials must include justification and must be submitted in writing to the Construction Manager for approval. Should payment be approved, stored materials are to be invoiced separately and exclusive of other unit price or lump sum work. Payment for material stored shall be made at 90% of the paid invoice value and 5% retainage will be withheld from this amount. Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

G. Contractor Invoices: Invoices shall be accompanied by Restoration Status for Repairs Completed reports. All reports should include point repair completion dates and the restoration status for each completed point repair as shown in the sample below. Invoices shall also be accompanied by completed Work Order Form using attached template. Each repair shall have a unique work order number generated by the Contractor.

USMH (xxx-xxx)	DSMH (xxx-xxx)	BLOCK ADDRESS	REPAIR TYPE	STATION ID (FT)	REPAIR COMPLETE (DATE)	REPAIR COMPLETE? (YES/NO)	RESTORATION COMPLETE (DATE)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 012900

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S&WB CONTRACT NO.

WORK ORDER NO.:		**DATE COMPLETED:**	
SHEET NO.:		**CONTRACTOR:**	
STREET NAME:			
UPSTREAM M/H		**DOWNSTREAM M/H**	
BEG. FOOTAGE		**END. FOOTAGE**	

DESCRIPTION OF WORK TO BE PERFORMED

WORK DESCRIPTION: **REPAIR #**

COMMENTS:

DATE STARTED: **DATE COMPLETED:**

ITEM	DESCRIPTON	UNIT	QTY	UNIT PRICE
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
			W.O. TOTAL COST	$ -

FOREMAN'S SIGNATURE

RESTORATION WORK TO BE PERFORMED

WORK DESCRIPTION **RESTORATION WORK**

COMMENTS:

DATE STARTED: **DATE COMPLETED:**

ITEM	DESCRIPTON	UNIT	QTY	UNIT PRICE
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
			W.O. TOTAL COST	$ -

FOREMAN'S SIGNATURE

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The Sewerage and Water Board of New Orleans, hereafter known as Owner, will utilize a web-based construction project management collaboration software Procore (www.procore.com) to share, manage, track, distribute and collaborate on project documentation and action items.

B. The intent of utilizing a web-based construction management application is to reduce cost and schedule risk, improve quality and safety, and maintain a healthy team dynamic by improving information flow, reducing non- productive activities, reducing rework, and decreasing turnaround times.

C. Related Requirements:

1. Section 013300 Submittal Procedures.

1.3 SOFTWARE CAPABILITIES (including but not limited to)

A. Daily Log

1. Provide daily log entry from web and mobile with automatic capture of daily weather conditions.

2. Provide ability to attach photographs to entries directly from mobile.

3. Provide reporting capabilities to easily report on man-hours and activities for a certain time frame and contractor.

B. Dashboards

1. Provide a dashboard that shows the status of all currently assigned items with drill down capability to see the subject, assignee, and due date of each item.

C. Deficiency Tracking

1. Provide a means for recording, assigning, and confirming completion of any deficiency or observation noted during the course of construction. Must be accessible from web and mobile.

D. Directory

1. Provide a directory of all team member's contact information that is accessible from web and mobile.

E. Documents

1. Provide a storage location for miscellaneous project documents with the ability to have a folder hierarchy and privacy settings on folders.

2. There should not be a storage limit.
3. Provide download tracking.
4. Provide the ability to revision and check out files, with access to all previous revisions.

F. Drawings
1. Provide access to a system maintained current set of drawings on web and mobile, with access to all previous revisions as well.
2. Provide automatic hyperlinking capability for detail callouts.
3. Provide drawing markup capabilities on web and mobile.
4. Provide ability to link RFls, Submittals, Punchlist Items, Photos and Project Documents to the drawings.
5. Drawing Markups should be carried forward when new revisions are uploaded.
6. Markups and linked documentation should be able to be public or private.

G. Financial Management
1. Provide ability to manage contracts, payment applications and change orders through the software.
2. Provide ability to view contracts and change orders from web and mobile.

H. Inspections
1. Provide ability to create inspections from web and mobile.
2. Provide ability to create a deficiency item from an inspection that can be assigned and tracked to completion.

I. Meetings
1. Provide ability to create, edit and view meeting minutes from web and mobile.
2. Provide ability to create action items with assignees and due dates from a meeting item.

J. Mobile Accessibility
1. Provide native mobile applications for iOS and Android phones at a minimum that provide access to relevant project documentation, including as-built versions of Drawings and Specifications, even when there is no internet access.

K. Photos
1. Provide ability to upload and view photos from web and mobile.
2. Provide ability to markup photos from mobile to clarify anything important in the photo.
3. Provide ability to link photos to specific locations on drawings.

L. Punchlist
1. Provide ability to create punch list items from web and mobile and link them to specific locations on the drawings.
2. Provide ability to distribute punch list items to all contractors, for contractors to mark them as resolved with photographic proof of resolution via mobile, and for

the items to be marked as complete via mobile or web.

M. Requests for Information (RFIs)

1. Provide ability to create RFIs with assignees, due dates, and attachments.
2. Provide ability for assignees to respond to RFIs both via the software and by responding to the system generated email.
3. Provide an auto-generated log of all RFIs.

N. Schedule

1. Provide ability to display schedules from typical scheduling software such as Microsoft Project, Primavera P3, Primavera P6 or Asta Powerproject.

O. Specifications

1. Provide ability to upload project specifications and manage them at the individual specification level.
2. Provide ability to view and search specifications on web and mobile.
3. Provide ability to upload revisions to individual specifications and maintain all revision history.
4. Provide an auto-generated current specification log that provides access to the current version of each specification.
5. Provide ability to link specifications to submittals and view the specification from the submittal.

P. Submittals

1. Provide ability to upload a submittal register of all expected submittals.
2. Provide ability to create multi-step approval workflows for submittals, with reminder notifications for the current assignee.
3. Provide the ability to upload any file type without size restrictions.
4. Provide an auto-generated submittal log.

1.4 TECHNOLOGY

A. Fully web based with mobile apps for Windows, iOS, and Android phones.

B. Accessible without logging in through a virtual private network (VPN).

C. Works on the current version of Internet Explorer, Google Chrome, Mozilla Firefox, and Apple Safari browsers.

D. Can generate emails automatically, and all attachments are included in the emails via download links to avoid emails not being delivered due to size.

E. PDF output of forms such as RFIs, Submittals, Meetings, Change Orders, etc. will be available and customizable.

F. The Engineer and the Contractor shall provide their personnel assigned to the project the necessary equipment to perform their duties on the software. This can include but is not limited to: cell phones with data plans and phone numbers; tablets or other mobile devices such as smart cell phones capable of making and receiving phone calls, sending and receiving emails, taking photos, and running the software

application.

1.5 TRAINING AND SUPPORT

A. The Procore Software provides support to all parties via email, phone, and live chat at no additional charge.

B. The Procore Software provides training in the form of self-paced learning videos as well as interactive webinars.

C. At the Preconstruction Conference organized by the Engineer, the Owner will discuss how the software will be used, routing & naming protocols, etc.

1.6 PROCEDURES

A. Project Setup

1. Each Project should be setup in Procure with the S&WB Project Title as the Contract Title in Procure.
2. Procure should be setup so that all generated emails from Procure include the Project Number (i.e. 30252) in the subject line.
3. All generated emails from Procure shall include a distribution to the email address DC.NOL4@stantec.com for work including consent decree requirements.

B. RFIs and Submittals

1. The Contractor will be responsible for submitting all RFIs and Submittals through the software and assigning them to the appropriate parties.
2. The contractor shall be required to respond to Submittal and RFI comments within 7 calendar days.
3. Owner's Representative shall be required respond to Submittals within 14 calendar days.
4. Owner's Representative shall be required respond to RFI's within 14 calendar days.
5. Owner's Representative shall be required to respond to pay requests within 10 calendar days.
6. The Engineer is responsible for posting all responses to these items via the software, including all relevant attachments.
7. The Owner will retain rights to request additional information from the Contractor and/or the Engineer and shall have sole responsibility of closing the RFI when responses are deemed sufficient and adequate.
8. The Contractor will be responsible to distribute responses to all affected subcontractors and confirm agreement with the response.
9. See Section 013300 Submittal Procedures for more detailed requirements. Email and paper transmittal requirements in this section shall be construed as an equivalent Procore submittal equivalent.
10. All sewer CCTV inspections will be submitted as RFIs via Procore, with

one CCTV video per RFI.

C. Construction Documentation

1. Engineer will record and distribute meeting minutes and action items via the software.
2. Contractor and Resident Inspector will take daily site photos and make them available and organized as directed by the Owner.

D. Punchlist

1. All punch list items will be managed through the software.
2. Punchlist items will be created by the Contractor while walking with the Owner and applicable consultants.
3. It will be at the Owner's discretion whether or not Punchlist Items can be closed while a representative from the Owner or applicable consultant is not present.

E. General

1. It is intended that the Contractor will utilize the software for at least all functions identified in the "Section 1.3 – Software Capabilities."

1.7 PRICING

A. The Contractor shall not be responsible for any software costs. The cost of Procore Technologies services has been paid in full by the Owner.

B. The Procore Software allows for unlimited users to ensure that all parties have access to the system.

1.8 HARDWARE

A. The Contractor will ensure all necessary users have access to devices compatible with Procore

B. The Contractor will maintain at least one Procore compatible device on site with a screen of 7" or larger for ease of viewing, sharing, and discussing plans in the field.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013000

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SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Informational Submittals.
2. General coordination procedures.
3. Requests For Information.
4. Digital project management procedures.

B. Related Requirements:

1. Section 013200 Construction Progress Documentation.
2. Section 017300 Execution.
3. Section 017700 Closeout Procedures.
4. Section 013113 Project Coordination.
5. Section 013119 Project Meetings.

1.3 DEFINITIONS

A. RFI: Request for Information. Request from Contractor to Construction Manager, seeking information required by or clarifications of the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design within 15 days of starting construction operations. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and cellular telephone

numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.

1. Key Personnel can be contacted by the Engineer twenty-four hours per day, seven days per week, including holidays, to respond to emergencies, or other issues that require the Contractor's immediate action, as determined necessary by the Owner's Representative.

C. The Prime Contractor shall have a supervisor on site whenever work is being performed by any personnel or subcontractors for which the Prime is responsible. The Prime must provide this individuals contact information to the Construction Manager at the preconstruction meeting and whenever there is a change in personnel at that position.

1.5 GENERAL COORDINATION PROCEDURES

A. The Owner reserves the right to direct the Contractor to prioritize work as needed.

1. All cleaning and CCTV work for line segments designated as "Find and Fix" shall be prioritized to be completed first so a rehabilitation recommendation can be submitted by the Contractor to the Owner's Representative.

B. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

C. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its own operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

D. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

E. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.6 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Construction Manager will return without response those RFIs submitted to Construction Manager by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Date.
4. Name of Contractor.
5. Name of Construction Manager.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

    a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.

C. RFI Forms: Form with substantially the same content as indicated above, acceptable to the Construction Manager.

1. Attachments shall be electronic files in PDF format.

D. Construction Manager's Action: Construction Manager will review each RFI, determine action required, and respond. Allow ten (10) working days for Engineer/Owner response for each RFI. RFIs received by Construction Manager after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:

a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for approval of Contractor's means and methods.
d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Construction Manager actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Construction Manager’s action may include a request for additional information, in which case Construction Manager time for response will date from time of receipt by Construction Manager of additional information.
3. Construction Manager’s action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."

a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Construction Manager in writing within ten (10) days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log monthly.

1. Project name.
2. Name and address of Contractor.
3. Name and address of Construction Manager.
4. RFI number including RFIs that were returned without action or withdrawn.
5. RFI description.
6. Date the RFI was submitted.
7. Date Construction Manager's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

F. On receipt of Construction Manager's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Construction Manager within fourteen (14) days if Contractor disagrees with response.

1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Designer’s Data Files Not Available: Construction Manager will not provide Designer’s CAD drawing digital data files for Contractor's use during construction.

B. PDF Document Preparation: Where PDFs are required to be submitted to Construction Manager, prepare as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013100

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SECTION 013113 - PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. SSERP General Coordination Requirements.
2. Louisiana One Call.
3. Sewerage & Water Board, Department of House Connections.
4. Sewerage & Water Board, Environmental Affairs.
5. Sewerage & Water Board, Water Purification Department.
6. City of New Orleans Department of Public Works.
7. City of New Orleans Department of Parks and Parkways.
8. Louisiana Department of Transportation and Development.
9. Orleans Levee Board.
10. Regional Transit Authority.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. The Contractor is responsible for all permit fees required to obtain traffic control and other necessary permits for the duration of the contract.

D. Related Requirements:

1. Section 013100 “Project Management and Coordination” for general coordination requirements.

1.3 SSERP GENERAL COORDINATION REQUIREMENTS

A. The prime Contractor is solely responsible for all contract coordination. Contract coordination shall not be delegated to any Subcontractor.

B. The Contractor shall coordinate work amongst all of his Subcontractors. Additional time or compensation will not be made due to Subcontractor availability to perform work within the terms of the contract agreement.

C. The Contractor shall not perform any work without prior coordination with Construction Manager and applicable stakeholders.

D. The Contractor shall coordinate all required utility protection, relocation and repair or replacement to damaged elements with the respective utility owner at no additional cost to the Owner.

E. Do not obstruct spaces or access to fire hydrants, electrical utilities, water valves or other critical utility appurtenances and the Contractor shall make access to these features to the respective owners and/or emergency services at any time and at no additional cost to the Owner.

F. Do not cover any work until inspected and/or tested in accordance with these specifications.

G. "Two Week Look Ahead" Reporting Requirement:

1. Weekly, by Close of Business each Friday, the Contractor shall provide a "Two Week Look Ahead" report as a Contract Submittal. This report should list crew work days and locations projected for the next two weeks and should include, but is not limited to, pipe cleaning and CCTV crews, excavated repair or replace crews, HDD crews and pavement/restoration crews. The report should also include any scheduled non-working days (such as holidays) and any special requested work days (weekends and holidays).

H. Daily Crew Tracker Report

I. The Contractor shall submit a "Daily Crew Tracker Report" to the construction manager via email indicating the location of each work crew for that day. The report should also include updates to the status of day, such as no work due to weather, or no work due to scheduled non-working day. The reports should be submitted no later than 7:00 am each day, Monday through Friday and on scheduled working Saturdays, Sundays or Holidays. The report need not be submitted on weekends or holidays where work was not scheduled. The distribution for this email will be provided at the Pre-Construction Conference.

1.4 LOUISIANA ONE CALL

A. The Contractor shall contact Louisiana One Call Service concurrent with his site mobilization and prior to the start of any work at the site.

B. For the purpose of this contract, a "Site" may refer to one or more contiguous blocks.

C. The Contractor is responsible to remain in full compliance with Louisiana Revised Statute §40:1749.11 through §40:1749.25.

1.5 SEWERAGE & WATER BOARD, DEPARTMENT OF HOUSE CONNECTIONS

A. Contractor shall contact the Department of House Connections to obtain wye cards for all existing sewer service and/or water service house connections prior to the start of work on any block.

1.6 SEWERAGE & WATER BOARD ENVIRONMENTAL AFFAIRS

A. Contractor shall immediately notify the Sewerage & Water Board Department of Environmental Affairs at 504-942-3855 in the event of sanitary sewer spill or overflow. The Contractor shall subsequently notify the Engineer.

1.7 SEWERAGE & WATER BOARD PURIFICATION DEPARTMENT

A. Contractor shall contact the S&WB Water Purification Department (504) 865-0572, a minimum of 72 hours prior to chlorinating the new main to schedule the sample collection.

1.8 SEWERAGE & WATER BOARD NETWORKS DEPARTMENT

A. Contractor shall contact the S&WB Water Networks Department at (504)942-3891 to request a water test closure a minimum of seven (7) working days in advance of the scheduled tie-ins.

1.9 SEWERAGE & WATER BOARD, MAINTENANCE YARD

A. Contractor shall coordinate and schedule with the S&WB, Maintenance Yard the delivery of salvaged items seven (7) days in advance.

1.10 CITY OF NEW ORLEANS DEPARTMENT OF PUBLIC WORKS

A. The Engineer to provide City of New Orleans DPW Street Cut permits prior to the start of work. The Construction Manager shall be notified immediately regarding any Contractor initiated revisions, to the street cut, demolition and restoration quantities as a result of the street cut permit requirements.

B. Contractor is solely responsible to prepare, submit and obtain the DPW traffic control permit prior to the start of work.

C. Contractor shall coordinate work schedules at least two weeks in advance of the start of work in accordance with paragraph 1.3.G.

D. Contractor shall coordinate and schedule with the New Orleans DPW, Maintenance Yard the delivery of salvaged items seven (7) days in advance

1.11 CITY OF NEW ORLEANS DEPARTMENT OF PARKS AND PARKWAYS

A. Refer to Sections 015639 Temporary Tree and Plant Protection, 329219 Seeding and 329293 Sodding for all Parks and Parkways requirements.

B. Contractor shall coordinate with Parks and Parkways for any required protection, trimming, removal, or replacement of protected trees.

C. Required coordination shall be included in the report required in paragraph 1.3.G.

1.12 LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

A. The Engineer to provide the DOTD project permit prior to the start of work.

B. Contractor is solely responsible to prepare and submit traffic plans through DOTD and obtain traffic control permit prior to the start of work.

C. Contractor shall schedule and coordinate with the Construction Manager any and all work within the DOTD right of way at least two weeks in advance for DOTD notification requirements as per paragraph 1.3.G.

1.13 ORLEANS LEVEE DISTRICT

A. The Engineer is solely responsible to prepare, submit and obtain the OLD project permit prior to the start of work.

B. Contractor shall schedule and coordinate with the Construction Manager any and all work within the OLD rights of ways and servitudes at least fifteen days in advance for OLD notification requirements.

C. Contractor shall be fully aware of any and all schedule constraints imposed by OLD constraints.

1.14 REGIONAL TRANSIT AUTHORITY

A. The Contractor shall notify the Regional Transit Authority (RTA) and the Construction Manager ten (10) days prior to starting work within 10 ft of street car right-of-way or when work will obstruct a bus stop.

1.15 NOTICE OF DISRUPTION

A. Contractor shall distribute the attached "NOTICE OF CONSTRUCTION" (Attachment 1) to all residences and businesses located within a sewer construction work area, including all properties where the property boundary is fronting or otherwise adjacent to the work zone. The work zone is defined as 1) the area between the upstream and downstream manholes of the sewer line segment being rehabilitated, 2) located where the contractor will be staging materials and equipment and 3) located where parking will be prohibited due to construction activities and/or associated traffic control. When access to private driveways must be temporarily denied due to construction operations, the Contractor shall provide the "NOTICE OF TEMPORARY DRIVEWAY CLOSURE" (Attachment 1) to the resident at least 24 hours in advance of closure.

1.16 NOTIFICATION OF LEAD SERVICES

A. Contractor shall distribute the attached "LOCATED" lead service door hanger/flyer (Attachment 2) upon discovery that a home and/or business is being serviced by a lead service water line within the same working day of discovery.

B. Contractor shall distribute the attached "Lead Service Line Replacement" door hanger/flyer (Attachment 3) upon replacement of the lead service line from the water main line to the meter within the same working day that the lead service line has been replaced.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013113

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ATTACHMENT 1

Notice of Service Disruption Flyer

SWBNO Contract 302[##] [Project Name]

NOTICE OF CONSTRUCTION

Sewerage & Water Board of New Orleans (SWBNO) contactor, [CONTRACTOR NAME], will begin pavement disturbances and sewer construction in your area.

BEGIN DATE: [DAY], [DATE] at [TIME]
END DATE: [DAY], [DATE] at [TIME] (90 day window)

In general, crews will work between 7 a.m. – 6 p.m. Monday through Friday.

WHERE: [LIST BLOCK NUMBER(S) AFFECTED]

What residents need to do differently?
This/These block(s) will be experiencing [REPAIR TYPE – REPAIR / REHABILITATION]. As this work is being completed, this block will be temporarily closed to traffic during work hours. During this process, you may temporarily lose access to the driveway of your home. Barricades and detour signs will be present throughout the neighborhood to direct vehicle traffic. Please note that during this time, there may be large trucks and heavy equipment hauling materials in the area.

Please move all vehicles off the street before [DATE] at [TIME]. **We ask that residents please adhere to no parking signage on the streets. Vehicles parked in these zones will be ticketed and towed.**

Additional notice will be given to residents prior to work impacting driveway access. **If you have mobility or medical issues where special accommodations are needed, please notify Sewerage & Water Board Community Outreach.**

U.S. Postal Service and sanitation/recycling services will continue throughout construction; however, if your block is undergoing construction that limits roadway or driveway access, you may need to bring your garbage and recycling bins to the nearest accessible corner on your normal collection days. If you need assistance with this, please ask a Construction worker to assist you.

QUESTIONS: *Sewerage & Water Board Community Outreach*
504-585-2232 or outreach@swbno.org

SWBNO Contract 302[##] [Project Name]

NOTICE OF TEMPORARY DRIVEWAY CLOSURE

As part of our ongoing construction project in your neighborhood, we would like to inform you that access to your driveway will be temporarily restricted due to necessary construction operations.

BEGIN DATE: [DAY], [DATE] at [TIME]
END DATE: [DAY], [DATE] at [TIME]

In general, crews will work between 7 a.m. – 6 p.m. Monday through Friday.

WHERE: [ADRESS(ES) AFFECTED]

Reason for Closure: [Briefly describe the reason for the closure, e.g., "Installation of new utility lines."]

We understand that this may cause some inconvenience and we apologize for any disruption this may cause. Our team will make every effort to minimize the impact and complete the work as quickly as possible. **If you have mobility or medical issues where special accommodations are needed, please notify Sewerage & Water Board Community Outreach.**

Alternative Parking: [If applicable, provide details of alternative parking arrangements.]

Contractor Contact Information: If you have any questions or concerns, please feel free to contact our project team at [Insert Contact Information].

Thank you for your understanding and cooperation.

QUESTIONS: *Sewerage & Water Board Community Outreach*
504-585-2232 or outreach@swbno.org

ATTACHMENT 2

Notice of Lead Service Discovery

Sewerage and Water Board has LOCATED a lead service line between the water main and your water meter.

As a result, the publicly owned portion of this water service line will be replaced which may cause temporary increases in lead levels. Following replacement, S&WB advises you to complete the following steps:

- Run the cold water at a high flow at each faucet for at least five minutes, one at a time, starting with the faucet closest to the water meter, to remove any lead particles that may have gotten into your plumbing when the service line was replaced. This includes outside faucets.

- After flushing your faucets, clean your faucet's aerators where lead particles may be trapped. Simply unscrew the aerator from the tip of the faucet, rinse and replace.

(over)

- Continue flushing for at least a month, at one faucet, for 10 minutes before using the water for drinking and cooking after the repair has been completed.

- Have a Licensed Master Plumber inspect your service line from the meter to your home. If it is a lead service line, we suggest you have it replaced.

- Customers may also request to have you water tested by contacting S&WB's Water Quality Lab at (504) 865-0420 or WaterInfo@swbno.org

- Consider obtaining an NSF-certified water filter that is rated to remove lead. These can be purchased at local retail outlets or hardware stores.

For more tips on reducing lead in drinking water visit www.swbno.org or www.epa.gov/safewater/lead.

Any other questions may be directed to 52-WATER. That's (504) 529-2837.

ATTACHMENT 3

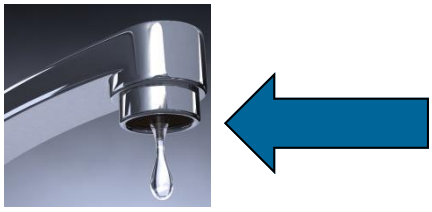
Notice of Lead Service Replacement

Sewerage and Water Board of New Orleans

Customer Information on Lead Service Line Replacement

S&WB replaced a lead service between the water main and your meter:

- As a result, the lead levels in your drinking water may increase temporarily (this could last several weeks to several months).
- You should run the cold water at a high flow at all of your faucets for at least 5 minutes each, one at a time, starting with the faucet closest to your water meter, to remove any lead particles that may have gotten into your plumbing when we were working on your service line.
- After flushing your faucets, clean your faucets' aerators. Lead particles can be trapped in aerators. Simply unscrew the aerator from the tip of the faucet, wash and replace it. We recommend continued flushing for at least a month before using the water for drinking and cooking after the repair has been completed.



- You may want to have a Licensed Master Plumber inspect your service line from the meter to your home. If it is a lead line, we suggest you have it replaced.
- Customers may also call our Water Quality Laboratory at 865-0420 to request to have your water tested for lead.
- You may also want to obtain NSF-certified filters that have been rated to remove lead. For more tips on reducing lead in drinking water visit our website at www.swbno.org/waterfacts the Environmental Protection Agency's website at www.epa.gov/safewater/lead. For more information call 52-WATER (504-529-2837).

SECTION 013119 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Project Meetings.
2. Pre-bid Conference.
3. Preconstruction Conference.
4. Project Closeout Conference.
5. Progress Meetings.

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.

C. Related Requirements:

1. Section 013100 “Project Management and Coordination” for general coordination requirements.

2. Section 017300 “Execution”

1.3 PROJECT MEETINGS

A. General: Construction Manager will schedule and conduct meetings and conferences at the Owner’s office unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.

1.4 PRE-BID CONFERENCE

A. A <u>MANDATORY</u> Pre-Bid Conference will be held in accordance with Section 002113 Instructions to Bidders, paragraph 6.1.

1.5 PRECONSTRUCTION CONFERENCE

A. Preconstruction Conference: Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, but no later than **15** days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner, Construction Manager, Design Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:

    a. Responsibilities and personnel assignments.
    b. Tentative construction schedule.
    c. Phasing.
    d. Critical work sequencing and long lead items.
    e. Designation of key personnel and their duties.
    f. Lines of communications.
    g. Use of web-based Project software.
    h. Procedures for processing field decisions and Change Orders.
    i. Procedures for RFIs.
    j. Procedures for testing and inspecting.
    k. Procedures for processing Applications for Payment.
    l. Distribution of the Contract Documents.
    m. Submittal procedures.
    n. Preparation of Record Documents.
    o. Use of the premises.
    p. Work restrictions.
    q. Working hours.
    r. Responsibility for temporary facilities and controls.
    s. Procedures for disruptions and shutdowns.
    t. Construction waste management and recycling.
    u. Parking availability.
    v. Office, work, and storage areas.
    w. Equipment deliveries and priorities.
    x. First aid.
    y. Security.
    z. Progress cleaning.

3. Summary: Entity responsible for conducting meeting will record and distribute meeting summary.

1.6 PROJECT CLOSEOUT CONFERENCE

A. Project Closeout Conference: Construction Manager may schedule and conduct a project closeout conference, at a time convenient to Owner and Engineer, but no later than **30** days prior to the scheduled date of Substantial Completion.

1. Conduct the conference to review requirements and responsibilities related to Project closeout.

2. Attendees: Authorized representatives of Owner, Construction Manager, Engineer, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.

3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:

    a. Preparation of Record Documents.
    b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
    c. Procedures for completing and archiving web-based Project software site data files.
    d. Submittal of written warranties.
    e. Requirements for completing sustainable design documentation.
    f. Requirements for preparing operations and maintenance data.
    g. Requirements for delivery of material samples, and spare parts.
    h. Preparation of Contractor's punch list.
    i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
    j. Submittal procedures.
    k. Coordination of separate contracts.
    l. Responsibility for removing temporary facilities and controls.

4. Summary: Entity conducting meeting will record and distribute meeting summary.

1.7 PROGRESS MEETINGS

A. Progress Meetings: Construction Manager will conduct progress meetings at monthly intervals.

1. Coordinate dates of meetings with preparation of payment requests.
2. Attendees: In addition to representatives of Owner**,** Construction Manager**,** and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
3. Agenda: Review and correct or approve summary of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

        1) Review schedule for next period.

    b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Status of sustainable design documentation.
5) Deliveries.
6) Off-site fabrication.
7) Access.
8) Site use.
9) Temporary facilities and controls.
10) Progress cleaning.
11) Quality and work standards.
12) Status of correction of deficient items.
13) Field observations.
14) Status of RFIs.
15) Status of Proposal Requests.
16) Pending changes.
17) Status of Change Orders.
18) Pending claims and disputes.
19) Documentation of information for payment requests.

4. Summary: Entity responsible for conducting the meeting will record and distribute the meeting summary to each party present and to parties requiring information.

    a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013119

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Project Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

B. Related Requirements:

1. Section 013300 Submittal Procedures.
2. Section 013513 Special Project Procedures for Consent Decree

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

B. Cost Loading: The allocation of the schedule of values for completing an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum.

C. Critical path method (CPM): A method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.
1. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.

2. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Resource Loading: The allocation of manpower and equipment necessary for completing an activity as scheduled.

1.4 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file, where indicated.
2. PDF file.
3. **Two** paper copies of sufficient size to display entire period or schedule, as required.

B. Prefaced schedule with the following summary data:

1. Contract name and number
2. Contractor’s name.
3. Contract duration.
4. The effective or starting date of the schedule (the date indicated in the Notice to Proceed).

C. Startup construction schedule.

1. Submittal of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals.

E. Reports: Concurrent with schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.

F. Construction Schedule Updating Reports: Submit with Applications for Payment.

G. Daily Construction Reports: Submit at **weekly** intervals.

H. Material Location Reports: Submit at **bi-weekly** intervals.

I. Site Condition Reports: Submit at time of discovery of differing conditions.

J. Unusual Event Reports: Submit at time of unusual event.

1.5 QUALITY ASSURANCE

A. Prescheduling Conference: Contractor shall meet with Construction Manager to discuss the requirements in Section 013100 "Project Management and Coordination" and to review methods and procedures related to pre-construction project activities and Contractor's Project Construction Schedule, including, but not limited to, the following:

1. Review content and format for Contractor’s required reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Review and finalize list of construction activities to be included in schedule.
4. Review procedures for updating schedule.
5. Discuss constraints, including phasing, work stages, and (SSERP) milestones.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout.

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Upon receipt of the "Notice to Proceed" and prior to commencement of any work on the contract, the Contractor shall be required to furnish a draft Project Schedule that assigns completion dates and milestone dollar amounts to specific repairs. The total value of the repairs scheduled to be completed within a given date range must be sufficient to achieve the various milestones.

B. Computer Scheduling Software: Prepare schedules using current, or Construction Manager approved, version of a program that has been developed specifically to manage construction schedules.

1. Use Microsoft Project or Primavera, for current Windows operating system.

C. Time Frame: Extend schedule from date established the Notice to Proceed to date of contract completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

D. Activities: Treat each repair as a separate numbered activity for each main element of the Work. Create a separate numbered activity for restoration associated with the repair. Comply with the following:

1. Activity Duration: Define repair activities so that no activity is longer than **10 calendar** days, unless specifically allowed by Construction Manager. Define restoration activities so that no activity is longer than **15 calendar** days.
2. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 Submittal Procedures in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
3. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow **30** calendar for Owner's and Construction Manager's administrative procedures necessary for certification of Substantial Completion.
4. Punch List and Final Completion: Include not more than **30** days for completion of punch list items and final completion.

E. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by ~~phase~~ Plan Sheet Numbers.
2. Work Restrictions: Show the effect of the following items on the schedule:
   a. Coordination with other construction projects.
   b. Utility Conflicts.
   c. Private Property Conflicts.
   d. Work on high traffic roadways.
   e. Extreme weather events.
   f. Other

3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Submittals Review Process
   b. Pre-construction site inspection videos.
   c. Excavated Point Repairs including CCTV inspection.
   d. Main line replacement including testing and CCTV inspection.
   e. Site Restoration and Cleanup.
   f. Main line CIPP including CCTV inspection.
   g. Manhole Frame Replacement/Adjustment.
      Manhole Lining including vacuum testing.
   h. Completion of Punch List Items

4. Construction Areas: Identify where construction activity within an area must be sequenced or integrated with other construction activities.

F. Milestones: The Project Schedule must show the milestone dates identified in the Contract Documents, and the value of completed milestone work needed to achieve each milestone.

1. The Schedule shall indicate the dates for SSERP 25%, 50%, and 75% milestones in accordance with Section 013513 "Special Project Procedures for Consent Decree."

2. The Schedule shall also include the dates for the Notice to Proceed, Substantial Completion and Final Completion.

G. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

H. Contractor's Construction Schedule Updating: At **monthly** intervals, update schedule to reflect actual construction progress and activities. Issue schedule **one week** before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

I. Recovery Schedule: Whenever a periodic schedule update shows the Work to be more than **10** calendar days behind the current approved schedule, Contractor shall submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

1. The Contractor may take some or all of the following actions at no additional cost to the Board:
    a. Increase construction manpower in such quantities and crafts as will substantially eliminate the backlog of work.
    b. Increase the number of working hours, working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate the backlog of work.
    c. Reschedule activities to achieve maximum practical concurrence of accomplishment of activities and comply with the revised schedule.

2. The contract completion time may be adjusted only for causes specified in this Contract. In the event the Contractor requests an extension of any contract completion date, the Contractor shall furnish such justification and supporting evidence as the Construction Manager may deem necessary to determine whether the Contractor is entitled to an extension of time under the provisions of this Contract. The Construction Manager will, after receipt of such justification and supporting evidence, make findings of fact and will advise the Contractor in writing thereof. All changes shall comply with Section 012600 Contract Modification Procedures.

1.8 STARTUP CONSTRUCTION SCHEDULE

A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within **5** days of date established for the Notice to Proceed. Construction will not be permitted until the Project Schedule is approved by the Engineer.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first **90** days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. This proposed progress/schedule bar graph shall be divided into monthly increments beginning from the date of the "Notice to Proceed" and extending to the contract completion date. At the end of each monthly increment, the Contractor shall indicate by a percentage figure directly on the bar graph space the percent completion he expects to attain for that interval.

D. Shown directly below the scheduled progress bar graph shall be an actual progress bar graph with a percentage completion indicated at monthly intervals intended to represent the actual progress toward completion for that interval.

E. The actual monthly progress percentage multiplied by the construction stage dollar value will result in a figure which when added to the other monthly construction stage dollar values and their respective percentage multipliers will give a total to be used for a progress payment to be made to the Contractor.

F. Since the combined cost-progress schedule to be submitted monthly is to be used in the preparation of the progress payment, it is imperative that the Contractor exercise careful consideration in assigning the percent complete expected on his proposed graph and it is expected that the actual percent complete shall rarely exceed the proposed percent. The Contractor shall re-examine his proposed schedule monthly and alter it accordingly to insure this does not occur.

1.9 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule at least **3** days prior to the date established for commencement of the Work.

1. Base schedule on the startup construction schedule and additional information received since the start of Project.
2. The Contractor should show SSERP 25%, 50%, and 75% milestones on Gantt-chart.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

C. Submit electronic files for the initial Project Schedule and all subsequent schedule update submittals.

D. Updated schedules shall clearly identify items modified since previous submittals, major changes in scope of work, and other identifiable changes.

1.10 REPORTS

A. Monthly Narrative Report: At **monthly** intervals, based on the updated schedule, the contractor shall submit a description of the progress during the previous period in terms of completed activities, an explanation of each activity which is showing a delay, a description of areas of concern, current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates and an explanation of corrective action taken or planned.

B. Unusual Event Reports: When an event of an unusual and significant nature occurs at a work site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, people involved, workers or others who witness the event, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information.

1. Submit unusual event reports directly to Construction Manager within **one (1)** day of an occurrence. Distribute copies of report to parties affected by the occurrence.

C. Restoration Status for Repairs Completed Report: All Contractor Invoices shall be submitted with an accompanying restoration status report that includes all line segment work and its current status, as shown in the sample in Section 012900 Payment Procedures 1.5.G.

1.11 PROGRESS PAYMENTS (refer to Section 01 29 00)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013200

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SECTION 013233 - VIDEOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction audio/video recordings (Surface Videos) of project area.
2. Pre-Rehabilitation & Post-Rehabilitation CCTV Inspections

B. Related Requirements:

1. Section 013300 “Submittal Procedures” procedures and format for submitting video and photographic documentation.

1.3 SUBMITTALS

A. Recordings: Submit audio/video recordings within seven days of recording and in accordance with 013300 Submittal Procedures,

1. **Prepare and submit one (1) DVD for format and content approval prior to the start of work.** Thereafter, submit two copies of each audio-video survey to Engineer for review and approval. All surveys must be submitted and approved prior to the start of work on this contract.

2. Submit preconstruction video recordings on sequentially numbered DVDs. Include on a separate DVD an index in Excel format that lists the DVD numbers, the Plan Sheet numbers, the line segment or manhole ID numbers, and the streets (with hundred blocks and cross streets) and compass orientation, per the example below:

CONTRACT NO. 30213
SOUTH SHORE SEWER REHABILITATION, SEWER REHABILITATION NO. 1

PRE-CONSTRUCTION VIDEO INDEX

DVD #	VIDEO #	DATE RECORDED	PLAN SHEET #	UPSTREAM MH ID	DOWNSTREAM MH ID	STREET	HUNDRED BLOCK	FROM (CROSS STREET)	TO (CROSS STREET)	DIRECTION	OTHER INFORMATION
35	56	3/23/2017	04	488-079	488-078	LACOMBE	8100	HAYNE	WALES	SOUTHBOUND	PATH ALONG CANAL

3. With each submittal, provide a transmittal with the following information:
    a. Transmittal Date
    b. Contract Number and Description
    c. Name of Contractor
    d. Submittal Number
    e. Submittal Description (Pre-construction Surface Videos)
    f. Index (paper copy) for the DVDs in the current submittal sorted by DVD number with a complete listing of the videos on each DVD.

1.4 QUALITY ASSURANCE

A. Videographer Qualifications: An individual who has been regularly engaged as a professional videographer of construction projects for not less than three years.

1.5 FORMATS AND MEDIA

A. Digital Audio/Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full high-definition mode with vibration-reduction technology. Provide supplemental lighting in low light levels or backlit conditions.

B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

C. Each line segment is to be recorded without interruption and submitted as a separate video file. Each DVD shall have videos for no more than seven files (seven complete line segments).

File names are to be uniform and are to include the upstream manhole number followed by the downstream manhole number, hundred block and street name. (EX: 488-079/488-078~8100 Lacombe St.)

D. Metadata: Record accurate date and time and GPS location data from camera.

E. File Names: Name media files with, date, Project area and sequential numbering suffix.

1.6 PROCEDURE

A. Videographer: Engage a qualified videographer to record construction video recordings.

B. Include audio description of item(s) being viewed, particularly for all visible defects. At each change in location, describe vantage point, location, direction (by compass point).

1. Confirm date and time at beginning and end of recording.
2. Begin each A/V recording with Project identification (contract number and description), Contractor's name, videographer's name, and location information.

3. Show existing conditions of all public and private property adjacent to Project site before starting the Work, i.e. streets, curbs, sidewalks, driveways, trees, shrubbery, grass areas, fences, building foundations, exterior stairs, walls, doors and windows, etc.)

4. If requested in writing by the Engineer, the Contractor will provide A/V recordings of other areas that may be impacted by the Work or disturbed by the Contractor's operations.

C. DVD's: Two (2) copies; color, labeled on DVD as follows:

DVD Case

PRECONSTRUCTION AUDIO-VIDEO SURVEY

Contract No. _____ DVD No.

Face of DVD

Project Title: _____Contractor: _____

Date Televised (MM/YY): _____ Date Submitted _____

Plan Sheet No.	Line Segment ID	Hundred Block	Street	Starting Counter No.

Note: Contractor may record up to seven (7) whole line segments on a single DVD. Video of any line segment shall not divided between DVDs.

D. A cumulative index shall be submitted to the Engineer, which correlates the various segments of video coverage to the corresponding DVDs. This index is to be organized by DVD number in ascending order and must identify every video on each DVD by Plan Sheet Number, Sewer Line ID (upstream MH ID/downstream MH ID), Street & Hundred Block, and Video Counter Number. Written documentation must coincide with the information on the tape so as to make easy retrieval of locations sought for at a later date.

E. The video portion of the recording shall produce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls, or any other form of picture imperfection. The audio portion of the recording shall reproduce precise and concise explanatory notes by the camera operator with proper volume, clarity and freedom from distortion.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013233

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SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Contractor shall manage all Contract Submittals using Procore as per Section 013000.

B. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

C. Related Requirements:

1. Section 012900 Payment Procedures.
2. Section 013000 Administrative Requirements.
3. Section 013100 Project Management and Coordination.
4. Section 013200 Construction Progress Documentation.
5. Section 013233 Videographic Documentation.
6. Section 014000 Quality Requirements.
7. Section 017700 Closeout Procedures.
8. Section 017839 Project Record Documents.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Owner’s Representative and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements.

B. Informational Submittals: Written and graphic information and physical samples that do not require Engineer’s and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Owner’s Representative and

Construction Manager and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.
    b. Specification Section number and title.
    c. Submittal Category: Action; informational.
    d. Name of subcontractor.
    e. Description of the Work covered.
    f. Scheduled approval date by Engineer or Construction Manager.
    g. Scheduled dates for purchasing.
    h. Scheduled date of fabrication.
    i. Scheduled dates for installation.
    j. Activity or event number.

1.5 SUBMITTAL FORMATS

A. Transmittal Document must include the following information in each submittal:

B. Submittal Information:

1. Project name.
2. Date.
3. Name of Engineer.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
9. Category and type of submittal.
10. Submittal purpose and description.
11. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
12. Drawing number and detail references, as appropriate.
13. Indication of full or partial submittal.
14. Location(s) where product is to be installed, as appropriate.

15. Other necessary identification.
16. Remarks.
17. Signature of transmitter.

C. Options: Identify options requiring selection by Engineer.

D. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Engineer or Construction Manager on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

E. Paper Submittals:

1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
3. Action Submittals: Submit three (3) paper copies of each submittal unless otherwise indicated. Engineer will return one (1) copy if approved.
4. Informational Submittals: Submit three (3) paper copies of each submittal unless otherwise indicated. Engineer will not return copies.
5. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
6. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form that has been approved in writing by the Construction Manager.

F. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

G. Video Submittals:

Preconstruction audio-video surveys – refer to Section 013233 Videographic Documentation. **Prepare and submit prior to the start of work and include a video log and transmittal.** Thereafter, submit each preconstruction audio-video survey of existing site conditions to Engineer for review. Each subsequent submittal must include an updated video log and a detailed transmittal document. Refer to section 013233 for additional formatting and submittal requirements.

Sanitary Sewer CCTV inspection surveys - the Contractor shall submit the Sanitary Sewer CCTV inspection as well as a PDF of the CCTV inspection report. Each submittal must include an updated video log and a detailed transmittal document.

a. For all completed work, approval of the post-rehabilitation video is required before the work can be invoiced.

b. Refer to section 013233 for additional formatting and submittal requirements.

1.6 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Procore: Prepare submittals as PDF package and transmit to Engineer via Procore. Include information in email subject line as requested by Engineer.
    a. Engineer will return via Procore.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections so processing will not be delayed because of need to review submittals concurrently for coordination.

    a. Engineer and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Construction Manager's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow **14** days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Construction Manager will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow **14** days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Engineer’s consultants, Owner, or other parties is indicated, allow **21** days for initial review of each submittal.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Owner’s Representative action stamp.

E. Distribution: Furnish copies of final submittals to subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from the Owner's Representative action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. Statement of compliance with specified referenced standards.
    e. Testing by recognized testing agency.
    f. Application of testing agency labels and seals.
    g. Notation of coordination requirements.
    h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.
    e. Notation of dimensions established by field measurement.
    f. Relationship and attachment to adjoining construction clearly indicated.
    g. Seal and signature of professional engineer if specified.

2. Paper Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

    a. Project name and submittal number.
    b. Generic description of Sample.
    c. Product name and name of manufacturer.
    d. Sample source.
    e. Number and title of applicable Specification Section.
    f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics, and identification information for record.
4. Paper Transmittal: Include paper transmittal including complete submittal information indicated.
5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

    a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineer’s and Owners, and other information as specified in Section 014200 References.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.

f. Test procedures and results.
g. Limitations of use.

1.8 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Owner’s Representative and Construction Manager.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Owner’s Representative and Construction Manager will not review submittals received from Contractor that do not have Contractor's review and approval.

1.9 OWNER’S REPRESENTATIVE AND CONSTRUCTION MANAGER'S REVIEW

A. Action Submittals: Owner’s Representative and Construction Manager will review each submittal, indicate corrections or revisions required, and return it.

1. PDF Submittals: Owner’s Representative and Construction Manager will indicate, via markup on each submittal, the appropriate action.

2. Paper Submittals: Owner’s Representative and Construction Manager will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Informational Submittals: Owner’s Representative and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements. Construction Manager will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Owner’s Representative.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Owner’s Representative and Construction Manager will discard submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Owner’s Representative and Construction Manager without action.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013300

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SECTION 013543 – ENVIRONMENTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes environmental procedures for work and unforeseen events that could occur on the Project including, but not limited to, the following:

1. Archaeological and Historical Advisement.
2. Endangered Species Advisement.
3. Environmental Requirements.
4. Horticultural Requirements.
5. Sanitary Sewer Spills.
6. Sewage Debris Disposal.
7. Stormwater Pollution Prevention Plan.
8. Excavation Requirements.
9. Stored Material Requirements.
10. Open Sewer Pipelines.
11. Mosquito And Disease Vector Control.

B. Related Requirements:

1. Section 015639 Temporary Tree and Plant Protection
2. Section 017419 Construction Waste Management and Disposal
3. Division 31 Specifications for Earthwork Requirements
4. Section 312316 Excavation and Trenching
5. Section 312323 Fill, Backfill and Compaction
6. Section 329219 Seeding
7. Section 329223 Sodding
8. Section 330110.73 Excavated Rehabilitation of Water Piping Utilities
9. Section 330130.73 Excavated Rehabilitation of Water Piping Utilities

C. MEASUREMENT AND PAYMENT

1. There is no measurement or payment for the requirements and/or products required in this section of the specifications.

1.3 DEFINITIONS

A. Archaeological Site: An area within the Project Site where preexisting archaeological artifacts are discovered during construction and work must stop.

B. Environmental Pollution: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

C. Sanitary Sewer Spill: The release of sanitary sewerage into the environment no longer contained by the sanitary sewer piping network shall constitute a sanitary sewer spill.

1.4 REGULATORY REQUIREMENTS

A. Advisory Council on Historic Preservation (ACHP)
   1. 36 CFR Part 800: Protection of Historic Properties

B. Endangered Species Act of 1973 (ESA)

1.5 ARCHAEOLOGICAL AND HISTORICAL ADVISEMENT

A. If any historical or archaeological sites are discovered during construction, work will cease in that area and the Contractor shall notify the Engineer, Construction Manager, and EPA of the discovery. This shall conclude the Contractor's responsibility. The Engineer and EPA shall then proceed in accordance with the Advisory Council on Historic Preservation's regulatory provisions in 36 CFR Part 800.

B. Notwithstanding anything to the contrary herein, in the event any archaeological artifacts within the project are discovered during the course of the Work, the Board shall have and retain all right, title, and interest to such artifacts and shall have the further right, during the course of the Contract to examine, or cause to have examined, the site of work for any such artifacts in accordance with the 36 CFR Part 800. In the event the archaeological examination and related work delays the Contractor's work, he shall be entitled to an extension of time to complete the work equal to the number of days he is thus delayed.

1.6 ENDANGERED SPECIES ADVISEMENT

A. Should either endangered or threatened plant or animal species be discovered during construction, work will cease in that area and the Contractor shall notify the Engineer and EPA of the discovery. This shall conclude the Contractor's responsibility. The Owner and EPA shall then proceed in accordance with the Endangered Species Act of 1973, as amended.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Furnish all labor, materials and equipment and perform all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract.

B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants. It is the intent to ensure that the work is achieved with a minimum disturbance to the existing ecological balance between a water resource and its surroundings.

1. Protection of Surface Waters: Take all precautions to prevent, or reduce to a minimum, any damage to surface waters from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such drainage system that flows to surface waters. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the stream, shall not be returned to the surface waters. Take all preventative measures to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken. Water being flushed from sewer lines shall be discharged into the sewage system, in a method approved by the Construction Manager, prior to discharge.
2. Protection of Land Resources: Restore land resources within the sites and outside the limits of work to its original or better conditions. The Contractor shall not deface, injure, or destroy any fixture or landscape feature, nor remove or cut them without prior approval. No ropes or cables shall be attached to any tree or shrub for anchorage. Monuments and markers shall be protected similarly. Any fixtures, trees or other landscape features scarred or damaged by the Contractor's equipment or operations shall be restored to their original condition. The Contractor shall restore to the satisfaction of the Construction Manager. Remove all signs of temporary construction facilities such as stockpiles of excess waste materials, or any other vestiges of construction, as directed by the Construction Manager. It is anticipated that excavation, filling with topsoil, raking and fertilizing of the ground surface will be required to restore grass areas to original conditions, which will permit the growth of vegetation thereon. All debris and excess material will be disposed of by the Contractor in an environmentally sound manner at a permitted facility.
3. Protection of Air Quality: The use of burning at the project site for the disposal of refuse and debris will not be permitted. Maintain all excavations, embankment, stockpiles, roads, sites, waste areas, and all other work areas within or without the sites boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor shall have sufficient competent equipment on the job to accomplish this. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Construction Manager.
4. Noise Control: Make every effort to minimize noises caused by the operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with Federal and State regulations, and current City of New Orleans noise ordinances.

C. Applicable Regulations: Comply with all applicable Federal, State and local laws and regulations concerning environmental pollution control and abatement.

D. Notifications: The Construction Manager will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. The Contractor shall take corrective measures as required therein. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Construction Manager, of any non-compliance with State or local requirements. After receipt of such notice from the Construction Manager or from the regulatory agency, the Contractor shall immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Construction Manager may issue an order stopping all or part of the work

until satisfactory corrective action has been taken. No part of the time due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance

1.8 HORTICULTURE REQUIREMENTS

A. Contractor to comply with the City of New Orleans Parks & Parkways requirements and Section 015639 Temporary Tree and Plant Protection, Section 329219 Seeding, and Section 329223 Sodding.

1.9 SANITARY SEWER SPILLS

A. Contractor shall immediately notify the Sewerage & Water Board Department of Environmental Affairs at 504-942-3855 in the event of sanitary sewer spill or overflow. The Contractor shall subsequently notify the Engineer.

B. Sanitary Sewer Spills located within an excavated trench will be treated as a Sanitary Sewer Spill and must be reported.

C. The Contractor may be directed by the Engineer or the Owner on how to respond, cleanup and disinfect the area impacted by the Sanitary Sewer Spill

D. The S&WB may respond, cleanup, disinfect the impacted area, and take corrective action to mitigate the sanitary sewer spills at the Contractor's expense. The Contractor taking post-corrective action will not mitigate the Contractor's financial obligations to the S&WB in compensation for their actions.

1.10 SEWAGE DEBRIS DISPOSAL

A. The Contractor can dispose of, at no charge, the sludge, sand, debris, grit, and liquid wastes resulting from performance of operations in this contract. The disposal site is the East Bank Sewage Treatment Plant at 6501 Florida Avenue. The Contractor may utilize other permitted disposal sites at his cost and coordination, with approval from the Owner's Representative. If the disposal site is different than the site listed above it shall be submitted to the Owner's Representative for approval.

B. All disposal shall also comply with Section 017419 Construction Waste Management and Disposal.

1.11 STORMWATER POLLUTION PREVENTION PLAN

A. The S&WB requires the Contractor maintain, on-stie, hard copies of the S&WB Storm Water Pollution Prevention Plan as required in Attachment No. 4 to Section 00 73 00 Supplementary Conditions.

B. Contractors will be subject to periodic inspections by S&WB, Louisiana DEQ and other local, state and federal agencies with jurisdiction over the US Clean Water Act. Contractors will be subject to fines for failing to comply with the requirements of the document.

1.12 EXCAVATIONS REQUIREMENTS

A. Open excavations left unattended are not permitted unless protected.
   1. Protection of the excavation shall include an engineering trench box or full surface sheathing with bracing. Intermediate sheathing will not be sufficient leaving excavated unattended. Portions of the trench not sheathed shall be filled.
   2. Uncompacted temporary fill is acceptable but must be removed upon continuation of work.
   3. Protection of the public shall include high visibility, temporary security fencing with sufficient supports to not fall down. Caution tape is not considered sufficient protection for unattended open excavations.
   4. Protection from traffic shall include road closure signs and barricades for the full width of the roadway, on both sides of the excavation, setback at least 50-ft on both sides.
   5. Protection from traffic in multi-lane roadways where adjacent lanes will remain open to traffic shall include temporary concrete barricades, or equal.

B. Excavated materials shall not be stored or staged on site and shall be loaded into haul trucks and removed from the site by the end of the work day.

1.13 STORED MATERIALS REQUIREMENTS

A. Stored Earthwork Materials shall be placed be underlain with geotextile separator fabric.

B. Stored Earthwork Materials shall be protected with heavy plastic covering, such as a 6-mill polypropylene plastic sheeting, to prevent windblown dust or contamination of rainwater runoff with sediment.

C. Where required Earthwork Materials must be stored within a drainage path, such as a street drain gutter, the Contractor shall lay temporary 6” PVC piping in the drainage way prior to laying the temporary geotextile separator fabric.

D. Material required in this sub-section may be re-used by the Contractor as long as the products remain functional and are not damaged.

1.14 OPEN SEWER PIPELINES

A. Open sewer lines on unattended sites are NEVER permissible under any circumstance.

B. Where sewer lines must be opened during construction on an attended site, the Contractor shall provide temporary plugging of the open ends of the pipes, both upstream and downstream until the Contractor is ready for tie-in.

C. Where sewer lines must be opened and the site will become unattended, the Contractor must provide temporary tie-in of all piping using PVC piping and Fernco couplers, or equal, at all connections to both new work and old work.

1.15 MOSQUITO AND DISEASE VECTOR CONTROL

A. All work impacted sites must be graded for drainage at all times to promote positive drainage to protected drainage features. The ponding of water is not acceptable. Contractor’s work sites left

unattended and allowed to pond water may be subject to mosquito or other disease vector abatement controls. The City of New Orleans may fine or seek reimbursement from the Contractor for the costs to provide this mitigation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 013543

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.
4. Specific test and inspection requirements are not specified in this Section.
5. The Owner reserves the right to test any samples recovered for quality assurance purposes through a qualified testing agency.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Engineer or Construction Manager.

1.4 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Construction Manager.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Construction Manager for direction before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

1.6 ACTION SUBMITTALS

A. Delegated-Design Services Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Contractor's quality-control personnel.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

D. Reports: Prepare and submit certified written reports and documents as specified.

E. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.8 CONTRACTOR'S QUALITY-CONTROL PLAN

A. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.

1. Project superintendent shall serve as the Project quality-control manager.

B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.

C. Testing and Inspection: Include a comprehensive schedule of Work requiring testing or inspection, including the following:

1. Contractor-performed tests and inspections including Subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
3. Owner Representative-performed tests and inspections indicated in the Contract Documents.

D. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring work into compliance with standards of workmanship established by Contract requirements.

E. Monitoring and Documentation: Maintain testing and inspection reports including log of approved and rejected results. Include work Construction Manager has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.9 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and re-inspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.

3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.10 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:

a. Provide test specimens representative of proposed products and construction.
b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
c. Provide sizes and configurations of test assemblies to adequately demonstrate capability of products to comply with performance requirements.
d. Build site-assembled test assemblies using installers who will perform same tasks for Project.
e. When testing is complete, remove test specimens and test assemblies, [; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Construction Manager, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.11 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Payment for these services will be made by the Owner.
3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

    a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least **24** hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Associated Contractor Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update as the Work progresses.

1. Distribution: Distribute schedule to Owner, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.12 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency and special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Construction Manager and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Construction Manager, with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and re-inspecting corrected work.

B. Special Tests and Inspections: Conducted by a qualified testing agency and special inspector as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Construction Manager and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Construction Manager, with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and re-inspecting corrected work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 ACCEPTABLE TESTING AGENCIES

A. The Engineer will provide the Contractor with name of designated testing laboratory at the preconstruction meeting.

3.2 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Engineer.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Engineer's and Construction Manager's reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.3 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014126 - PERMIT REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes additional permitting requirements imposed by authorized stakeholders:

1. Traffic Control Requirements
2. Street Cut Requirements.
3. Louisiana Department of Transportation & Development Permit Requirements.
4. Excavation Requirements.

B. Related Requirements:

1. Section 013113 “Project Coordination” for general stakeholder coordination requirements.
2. Section 015526 “Traffic Control” for general traffic control requirements.

1.3 GENERAL PERMIT REQUIREMENTS

A. Contractor is responsible to comply with all permit requirements in his performance of work.

B. No construction work within the permitting limits shall begin until accepted permits are received from appropriate permitting authorities. Additional compensation or time will not be provided due to permit requirements for work included in the original scope of work as per these bid documents

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 TRAFFIC CONTROL REQUIREMENTS

A. The Contractor will submit traffic control plans to the respective roadway authority for review and acceptance prior to the start of work for each site.

B. Traffic control signage and barricades will be installed, maintained and then removed in accordance with the requirements of the authorized authority at no additional cost to the contract.

3.2 STREET CUT REQUIREMENTS

A. The Contractor shall perform street cuts as and pavement restoration to the limits shown in the drawings. The location of street cuts shall be field adjusted to match existing concrete panel joints where applicable and as directed by the Construction Manager.

B. Where the scope of the sewer rehabilitation is field adjusted and subsequently requires pavement cutting and removal for an area larger than what is shown in the plans, the Contractor shall notify the Construction Manager in advanced for clarification.

3.3 LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT PERMIT REQUIREMENTS

A. The project engineer has applied for LA DOTD permits for sewer rehabilitation work located within state highway right-of-ways. The Contactor may NOT proceed with work located within the state highway right-of-ways until these permits are secure. Work this restriction is applicable to includes all work located within the apparent right-of-ways of:

1. North Claiborne Ave (LA-39)
2. St. Claude Ave (LA-46)
3. Elysian Fields (LA-3021)
4. Tulane Ave (US-61)
5. North Broad St & South Broad St (US-90)

3.4 EXCAVATION REQUIREMENTS (NOT APPLICABLE TO CONTRACT 30227)

A. Excavations located within the jurisdiction of the Orleans Levee Board (OLD) are subject to additional requirements. Contractor will limit excavation activities to within the limits shown on the permit. Any additional excavation outside of these limits will require an amendment to the permit.

B. A representative of the OLD is required to be onsite to witness excavation, work and backfill procedures as well as to perform a final inspection of the site. The Contractor shall allow for fourteen (14) days for the Construction Manager to coordinate for this inspector.

C. All subsurface work located within 1500 feet of the Mississippi River and Tributaries (MR&T) centerline shall be immediately backfilled as per the plans, unless otherwise directed by the OLD, immediately upon direction by OLD.

1. This direction will generally occur when the Mississippi River is forecasted to reach stage +11.0 at the Carrollton Gage in New Orleans within 7 days.
2. Work will not be permitted to resume at the site until the river has receded to below elevation +11.0 at the Carrollton gage.

D. All subsurface work located within 300 feet of the Hurricane & Storm Damage Risk Reduction System (HSDRRS) levee centerline or 250 feet from the visible levee or berm toe shall be

immediately backfilled as per the plans, unless otherwise directed by the OLD, immediately upon direction by OLD.

1. This direction will generally occur when a named storm is projected to hit the Southeast Louisiana area and/or vicinity within 36 hours.
2. Work will not be permitted to resume at the site until direction has been provided by OLD.

E. Where excavation, trenching, or backfill are required within a "Theoretical Levee Section," the Contractor shall backfill and compact in accordance with the permit requirements (see "Impervious Fill," Section 312323) and under the supervision of an OLD inspector.

END OF SECTION 014126

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SECTION 014200 – REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. It shall be understood that the most current issues of the standards or requirements are intended and shall apply, except where specific dates are specified and except to the extent that the standards or requirements may be in conflict with applicable laws, regulations, ordinances, etc., of the State of Louisiana or the City of New Orleans

D. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
2. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org
3. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
4. ACHP – Advisory Council on Historic Preservation
5. AI - Asphalt Institute; www.asphaltinstitute.org.
6. AIA - American Institute of Architects (The); www.aia.org.
7. AISC - American Institute of Steel Construction; www.aisc.org.
8. AISI - American Iron and Steel Institute; www.steel.org.
9. ANSI - American National Standards Institute; www.ansi.org.
10. APA - Architectural Precast Association; www.archprecast.org.
11. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
12. ASTM - ASTM International; www.astm.org.
13. ATSSA – American Traffic Safety Services Association; www.atssa.com
14. AWS - American Welding Society; www.aws.org.
15. AWWA - American Water Works Association; www.awwa.org.
16. CSI - Construction Specifications Institute (The); www.csinet.org.
17. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
18. ISO - International Organization for Standardization; www.iso.org.
19. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.

20. NRTL – Nationally Recognized Test Laboratory
21. NCMA - National Concrete Masonry Association; www.ncma.org.
22. NVLAP – National Voluntary Laboratory Accreditation Program
23. PDI - Plumbing & Drainage Institute; www.pdionline.org.
24. SAE - SAE International; www.sae.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. EPA - Environmental Protection Agency; www.epa.gov.
2. MUTCD – Manual on Uniform Traffic Control Devices; www.mutcd.fhwa.dot.gov
3. OSHA - Occupational Safety & Health Administration; www.osha.gov.
4. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
5. UDOT – Department of Transportation, Federal Highway Administration; www.transportation.gov

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. ESA – Endangered Species Act of 1973

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. LADOTD; Louisiana Department of Transportation and Development.
2. LSSRB; Louisiana Standard Specifications for Roads and Bridges.
3. LADHH; Louisiana Department of Health and Hospitals.
4. DPW; City of New Orleans Department of Public Works.
5. DPWGS; Department of Public Works, City of New Orleans, General Specifications for Street Paving.
6. EPA; Environmental Protection Agency.
7. S&WB; Sewerage and Water Board of New Orleans.
8. QPL; Qualified Products List; issued by the Louisiana DOTD.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 014200

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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 Summary.
2. Section 015136 Temporary Water.
3. Section 015526 Traffic Control.
4. Section 017300 Execution.
5. Section 017419 Construction Waste Management and Disposal."
6. Section 312323 Fill, Backfill, and Compaction.
7. Section 321216 Asphalt Paving.
8. Section 321313 Concrete Paving.

1.3 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Engineer, testing agencies, and authorities having jurisdiction.

B. Sewer Service: Contractor to pay sewer-service use charges for sewer usage by all entities for construction operations.

C. Water Service: Contractor to pay water-service use charges for water used by all entities for construction operations.

D. Electric Power Service: Contractor to pay electric-power-service use charges for electricity used by all entities for construction operations.

E. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use with a required Sewerage & Water Board meter, procured in accordance with Section 015136 Temporary Water.

F. Sewer, Water, and Electric Power Service: Use charges are dictated by current Sewerage and Water Board and Entergy usage rates.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top rails , with galvanized barbed-wire top strand.

B. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch OD line posts and 2-7/8-inch OD corner and pull posts, with 1-5/8-inch OD top and bottom rails. Provide galvanized-steel bases for supporting posts.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units are not required. Units shall be provided by the Contractor, at no additional cost to the Owner, with written approval from the Engineer.

B. Should the Contractor utilize a field trailer and/or staging/storage area within the City of New Orleans limits, the proposed site location shall be submitted to the Engineer for approval, prior to obtaining a permit from the City of New Orleans Planning and Zoning Commission.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required for safe construction operations throughout the construction area.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. No materials or equipment may be placed over underground structures whenever such storage or use may impair effectiveness or limit maintenance, or impose excessive loadings.

D. The Sewerage and Water Board assumes no responsibility for any loss of or damage to the Contractor's material, tools, or supplies.

3.3 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction and in accordance with Section 330130.03 Sewer flow Control.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Water Service: Contractor shall use the Owner’s water service in accordance with Section 015136 Temporary Water.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

3.4 SUPPORT FACILITIES

A. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings. Temporary roads shall be constructed in accordance with Section 015526 Traffic Control.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

B. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Sections 321123 Aggregate Base Course, 312323 Fill, Backfill, and Compaction, 321216 Asphalt Paving, and 321313 Concrete Paving.
3. Recondition base after temporary use, including removing contaminated material, re-grading, proof rolling, compacting, and testing.

4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course according to Section 321216 Asphalt Paving.
5. Traffic Controls: Comply with requirements of authorities having jurisdiction and in accordance with Section 015526 Traffic Control.
6. Protect existing site improvements to remain including curbs, pavement, and utilities.
7. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Material Storage Area: Any area of the Owner's property can be used by the Contractor for storage, work operations, etc., contingent upon the Engineer's written approval. At the time approval is granted, the Engineer will outline the particular qualifications to be imposed in the use of that area.
1. If materials are stored anywhere within the area without this approval, the Engineer, at his discretion, can order them moved to a more suitable location.
2. The Contractor shall hold and save the Sewerage and Water Board harmless from liability of any nature occasioned by his operations.

D. Parking: Provide temporary parking areas for construction personnel.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.

F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.

a. Provide temporary, directional signs for construction personnel and visitors.

3. Maintain signs so they are legible at all times.

G. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

H. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

1. Comply with Work Restrictions specified in Section 011400 Work Restriction.

C. Temporary Erosion and Sedimentation Control: Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Sections 013543 Environmental Procedures.

D. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
4. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

E. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

F. Tree and Plant Protection: Comply with requirements specified in Section 015639 Temporary Tree and Plant Protection.

G. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

H. Barricades, Warning Signs, and Lights: Comply with requirements in Section 015526 Traffic Control.

I. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses.

1. Smoking prohibited in construction areas not designated for smoking. Comply with additional limits on smoking specified in other Sections.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Termination and Removal: Remove temporary facility when need for its service has ended, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 Closeout Procedures.

END OF SECTION 015000

SECTION 015136 – TEMPORARY WATER

PART 1 - GENERAL

1.1 SUMMARY

A. The section provides terms for the Contractor to obtain temporary water from the Owner when water is needed to perform sewer cleaning or other tasks related to this project.

1.2 SECTION INCLUDES

A. Temporary Water

1.3 RELATED REQUIREMENTS (NOT USED)

1.4 PRICE AND PAYMENT PROCEDURES

A. There is no measurement or payment for temporary water

B. The Contractor shall pay the Sewerage and Water Board of New Orleans directly for the water usage as recorded on the fire hydrant meter.

1.5 DEFINITIONS (NOT USED)

1.6 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Water Meter Reports: The Contractor shall submit a report detailing the water meter ID, date and meter reading to the Engineer on a monthly basis.

1.7 COORDINATION

A. Refer to Section 013113, Project Coordination.

B. The Contractor shall coordinate temporary water with the Sewerage & Water Board Meter Shop located at 8800 South Claiborne Ave. to obtain the fire hydrant water meter and keys.

C. Contractor shall complete a hydrant meter application for his construction project for each location, if more than one is needed. The hydrant meter(s) shall be turned over to the Sewerage and Water Board every six (6) months for recalibration by the Board's Meter Shop. Each Hydrant Meter shall be returned to the Meter Shop at the end of the construction project otherwise forfeit the deposit(s).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

3.1 EXAMINATION

A. The Contractor shall ensure the fire hydrant is not damaged and in good working order prior to the installation of the water meter.

3.2 PREPARATION

A. Contractor shall familiarize himself with "Sewerage and Water Board of New Orleans Hydrant Meter Installation Non-potable (Standard) and Potable (Special Festival) Water Use" Policy and Procedure. These documents are available on the Sewerage and Water Board's Web site: http://www.swbno.org/custserv_information_docs.asp. The Contractor shall install the water meter as per the instructions provided.

3.3 PUBLIC WATER SUPPLY

A. When water from the public water supply is needed the Contractor shall obtain hydrant water meters from the Board.

1. Application for the meter requires a $1,500.00 deposit that is refundable upon return of the meter in undamaged and operable condition.

2. Fire hydrant keys are required and are available from the Sewerage and Water Board's Networks Department with payment of a deposit.

3. The Contractor will be responsible for payment of deposit and payment of a monetary fine should the hydrant key(s) not be returned.

4. The Contractor shall be billed monthly by the Board for water usage.

B. All cleaning equipment must be equipped with a backflow preventer to prevent any contamination to the public water supply.

C. Connections to fire hydrants shall only be made with meters obtained from the Sewerage and Water Board Customer Service Department, 585-2097, which shall record water usage for record purposes and which shall be returned to the Board as a condition of acceptance of the Contract.

3.4 PROTECTION

A. The Contractor is responsible to protect the fire hydrant and water meter from damage and theft.

1. Fire hydrants damaged during their use will be replaced at the Contractor's expense.

2. Water meters damaged and/or stolen will be replaced at the Contractor's expense.

B. The Contractor shall not waste water from public water supplies due to poor connections to hydrants.

3.5 CLEAN UP AND REMOVAL

A. The Contractor shall remove from the fire hydrant, any connecting water meters, fittings, piping and hoses at the end of each day and ensure the fire hydrant is fully shut off with no leakage.

B. Upon the completion of the work, the Contractor shall return the water meter to the Board Meter Shop in an undamaged condition otherwise forfeit the deposit(s).

END OF SECTION 015136

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SECTION 015526 - TRAFFIC CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. AASHTO Guide for the Design of Bicycle Facilities (latest revision).
2. AASHTO Roadside Design Guide (latest revision).
3. American Traffic Safety Services Association (ATSSA).
4. Federal Highway Administration. Standard Highway Signs.
5. U.S. Department of Transportation, Federal Highway Administration (USDOT): Manual of Uniform Traffic Control Devices (MUTCD).
6. U.S. Department of Transportation, Federal Highway Administration: Design Guidance: Accommodating Bicycle and Pedestrian Travel: A Recommended Approach.
7. Louisiana Department of Transportation and Development (LADOTD) Standard Specifications for Roads and Bridges, Latest Edition

1.3 SUBMITTALS

A. Traffic Control Plan developed by Contractor in accordance with guidance provided in Contract Documents.

1. Meet with Local Jurisdictions and other affected agencies having jurisdiction to review the Traffic Control Plans for each phase of construction. Do not begin construction on any given phase before receiving written acceptance.
2. Plans for future phases of construction should be submitted with proper lead time to allow for review and resubmittal, if necessary, and public notification.
3. Failure to submit the Traffic Control Plans within the specified time frames will not be justification for additional working days. Failure to adequately address comments in any required resubmittal also will not justify additional working days.
4. The Contractor should submit the Traffic Control Plan to the Engineer and Construction Manager when approved by the agency having jurisdiction (LADOTD and New Orleans DPW).

B. Administrative Submittals: Copies of permits, licenses, and approvals for construction as required by Laws and Regulations and governing agencies.

1. Contractor shall be responsible for securing any necessary permits or approvals related to Traffic Control activities, as per Section 013116 Project Coordination. Application for permits and governing agency approvals shall only be made after acceptance of plan by Engineer.

C. Parking area plans.

D. Product Data: Warning signs and barricades.

1.4 PRICE AND PAYMENT PROCEDURES

A. Measurement:

1. Traffic Maintenance Aggregate: Traffic maintenance aggregate for access to driveways and temporary surfacing of utility trenches will be provided and placed at no direct measurement or pay. The cost for traffic maintenance aggregate should be included in accompanying point repairs.

B. Payment:

1. Traffic Control is a non-direct pay item. There is no direct cost for items included within Traffic Control.

1.5 VEHICULAR TRAFFIC

A. Traffic Control Plan:

1. If a Traffic Control Plan is provided in the drawings and specifications it shall be used by the Contractor as guideline only. The Contractor shall be responsible for the development and implementation of the Traffic Control Plan as determined by the jurisdiction having authority.
2. Contractor shall submit a Traffic Control Plan for approval by the jurisdictions having authority in accordance with their requirements and as defined in these specifications. Adjustments to the approved plan may be required based on actual traffic operations. Changes to the plan shall only be made with the written approval of the jurisdiction having authority.

PART 2 - PRODUCTS

2.1 TRAFFIC MAINTENANCE AGGREGATE

A. All traffic maintenance aggregate shall be No. 57 grade crushed limestone or approved equal. Crushed recycled concrete is not allowed at any time.

B. Sand is not permitted as a substitute for traffic maintenance aggregate.

2.2 SAFETY DEVICES AND SYSTEMS

A. Contractor shall use devices and systems which meet NCHRP-350 Report crash test requirements as defined by the Federal Highway Administration unless exceptions are granted by the Engineer.

2.3 TRAFFIC CONTROL SIGNING AND DEVICES

A. All Traffic Control Devices shall comply with the standard sizes and dimensions specified in the MUTCD.

B. Signs:

1. Comply with the requirements of the Traffic Control Plan, other requirements defined in this section and any applicable requirements defined in the reference documents.

C. Channelizing Devices:

1. Use construction orange tubular markers and cones during daylight hours only.
2. Comply with the requirements of the Traffic Control Plan, other requirements defined in this section and any applicable requirements defined in the reference document.

D. Barricades:

1. Do not use rocks, asphalt, or concrete pieces, construction materials, and other debris as weighting devices for barricades. Sand bags will be permitted as long as a low center of gravity is maintained as approved.
2. Comply with the requirements of the Traffic Control Plan, other requirements defined in this section and any applicable requirements defined in the reference documents.

E. Precast Concrete Barrier:

1. Use an approved construction zone attenuator or permanent style end sections, as listed in LADOTD Guidelines for Attenuators and End Section.

    a. Use a construction zone attenuator when approach ends of temporary precast barrier are within AASHTO clear zone.
    b. Use AASHTO Roadside Design Guide to determine proper clear zone distance requirements.

2. Comply with the requirements of the Traffic Control Plan, other requirements defined in this section and any applicable requirements defined in the reference documents.

PART 3 - EXECUTION

3.1 TRAFFIC MAINTENANCE AGGREGATE

A. This work consists of furnishing and constructing aggregate surfacing for maintenance of traffic detour as directed and in accordance with the following requirements.

B. Equipment necessary to produce a finished product meeting the specification requirements shall be furnished and maintained by the Contractor.
C. When directed, the Contractor shall satisfactorily place, shape, compact and maintain areas requiring traffic maintenance aggregate. When directed, the aggregate material shall be reused on the project at designated locations for traffic maintenance at no direct pay. When aggregate surfacing is no longer necessary for maintenance of traffic, the Contractor shall, unless otherwise directed, remove the aggregate surfacing and dispose of the removed materials.

3.2 VEHICULAR TRAFFIC

A. Contractor shall:

1. Conform to the USDOT MUTCD or applicable statutory requirements of authority having jurisdiction and the accepted Traffic Control Plan.
2. Allow emergency vehicles immediate passage.
3. Recognize that Local Government requirements take precedence over the MUTCD. Operations on or about traffic areas and provisions for regulating traffic shall additionally be subject to the regulation of other governmental agencies having jurisdiction over the affected areas.
4. Keep traffic areas free of excavated material, construction equipment, pipe, and other materials and equipment.
5. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
6. Conduct operations in a manner to avoid unnecessary interference with public and private roads and drives and provide and maintain temporary access for businesses and residences. Provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel. When access to private driveways must be temporarily denied due to construction operations, notify the property owner or responsible party of such closure not less than 24 hours in advance of closure. Give notification in writing and include the estimated duration of the closure.
7. Minimum lane width shall be 10 feet, unless noted otherwise. Where cones are used to separate traffic lane from construction zone, do not use traffic lane for accessing construction zone, and do not store materials or equipment on or near shoulder of traffic lane side of roadway.
8. In making street crossings, do not block more than one-half the street at a time. Maintain one lane of traffic at all times. Ensure access for traffic in both directions.
9. Notify the fire department, police/sheriff department, ambulance/emergency services, and local school district 14 days before closing roadway or portion thereof. Notify said departments or agencies when streets are again passable for vehicles. Conduct operations with the least interference to fire equipment access, and at no time prevent such access. Furnish Contractor’s night emergency telephone numbers to the police or sheriff’s department.
10. The Contractor shall leave a night emergency telephone number or numbers with the police department, the Engineer, and the Owner, so that contact may be made easily at all times in case of barricade trouble or other emergencies.

11. Pedestrian and bicycle access along sidewalks and streets will be kept open and safe from construction activities and traffic lanes.

B. Flaggers: May be required to provide for public safety or the regulation of traffic, or by jurisdictional authorities; and if used, shall be properly equipped and certified by ATSSA.

3.3 PROTECTION OF WORK AND PROPERTY

A. Warning Signs and Barricades:

1. Be responsible for installation and maintenance of all devices for the duration of the construction period.
2. Provide warning signs and barricades for the following:
    a. Open trenches and other excavations.
    b. Obstructions, such as material piles, equipment (moving or parked), and piled embankment.
    c. Protection of roads and driveways.
3. Warning signs and barricades shall be illuminated by means of warning lights from sunset to sunrise.

B. The contractor shall be responsible for the removal, relocation, or replacement, of any traffic control devices in the construction area, which exist as part of the normal pre-construction traffic control scheme. Any such actions shall be performed by the Contractor under the supervision, and in accordance with the Specifications, unless otherwise specified.

C. All traffic control devices destroyed as a result of construction shall be replaced per City of New Orleans specifications at no cost to the Sewerage and Water Board.

3.4 PARKING

A. Contractor, with the approval of the Construction Manager, shall designate parking areas for the use of all construction workers and others performing work or furnishing services in connection with the project so as avoid interference with public traffic, Owner’s operations, or construction activities.

B. The Contractor will be allowed to bring construction equipment and construction vehicles only into the site as necessary in the execution of this contract but may be required to remove them if their presence interferes with the operation of the Owner, at the discretion of the Owner’s Representative.

3.5 ROADWAY USAGE

A. Traffic Maintenance:

1. The Contractor shall maintain 50% of roadway to traffic at all times. Major streets shall maintain 100% of traffic of roadway access between the hours of 7:00 - 9:00 A.M. and 4:00 - 6:00 P.M.

B. At all times when work is not in progress, the Contractor shall make passable and shall open to traffic such portions of the project and temporary roadways or portions thereof as may be agreed upon between contractor and owner and all authorities having jurisdiction over any properties involved.

END OF SECTION 015526

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. The work consists of tree and plant protection in and around the construction zone as determined by New Orleans Department of Parks and Parkways. Work may also include rehabilitation/replacement of any contractor damaged vegetation outside of the construction zone.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with temporary tree and plant protection.

C. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. General protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

B. Tree repair and replacement.

C. Excavation around trees.

1.3 RELATED REQUIREMENT

A. Section 013200 Construction Progress Documentation
B. Section 013233 Photographic Documentation
C. Section 015000 Temporary Facilities and Controls
D. Section 312316 Excavation and Trenching
E. Section 329219 Seeding
F. Section 329223 Sodding

1.4 PRICE AND PAYMENT PROCEDURES

A. No separate measurement and payment shall be made for Temporary Tree and Plant Protection.

B. The Contractor is responsible for any costs incurred from a licensed arborist at no direct cost to the Owner.

C. The Contractor shall be responsible for damage to any City vegetation within the limits of construction and liable to the City for compensation of damage.

D. Any damaged vegetation outside the limits of construction shall be replaced, as directed by the Department of Parks and Parkways Landscape Architect at no additional cost to the Owner.

1.5 DEFINITIONS

A. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

B. Critical Root Zone (CRZ): Circular area which extends from the trunk in a radius of 12 inches to every inch diameter of trunk taken at 4.5 feet above grade, or to the outer edge of the dripline, whichever distance is furthest.

C. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

D. Tree trimming: The cutting of tree branches.

E. Root pruning: The cutting or grinding of roots.

F. Root trenching: The cutting of roots using a trenching machine

1.6 SUBMITTALS

A. Include plans, elevations, sections, and locations of protection-zone fencing and signage, showing relation of equipment-movement routes and material storage locations with protection zones.

B. Detail fabrication and assembly of protection-zone fencing and signage.

C. Tree Pruning Schedule: Written schedule detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

1. Species and size of tree.
2. Location on site plan. Include unique identifier for each.
3. Reason for pruning.
4. Description of pruning to be performed.
5. Description of maintenance following pruning.

D. Qualification Data: For Louisiana Licensed Arborist and tree service firm.

E. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

F. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

G. Arborist must submit any proposed product specifications and rates of application to the Department of Parks and Parkways Urban Forester for approval a minimum of two (2) weeks prior to application

H. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1. Use sufficiently detailed photographs or video recordings.

2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

I. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

1.7 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition

B. City of New Orleans, Department of Parks and Parkways Section 02480: Landscape Protection During Construction

C. United States Department of Agriculture (USDA)

D. American National Standards Institute: American National Standards for Tree Care Operations, ANSI A300.

E. International Society of Arboriculture (ISA)

1.8 QUALITY ASSURANCE

A. Arborist Qualifications: Louisiana Horticulture Commission Licensed Arborist as specified in the Reference Standards above.

B. Any construction work which occurs within the critical root zone of a City tree requires the presence of a Louisiana licensed Arborist to ensure that correct arboreal practices are followed. The Contractor shall be responsible for retaining a Subcontractor who is a licensed and insured Arborist to trim any trees or tree roots and perform any other tree related work within the limits of construction.

C. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

D. The Arborist must apply for a permit through the Department of Parks and Parkways prior to working on any City trees. The work will be supervised by the Department of Parks and Parkways Forestry Department.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Protection-Zone Fencing: Wooden or chain link barricade shall be fixed in position and be of at least five (5) feet in height. (Previously used materials may be used when approved by Engineer).

B. Protection-Zone Signage: Shop-fabricated, rigid plastic or metal sheet with attachment holes prepunched and reinforced; legibly printed with nonfading lettering (3 inch minimum).

2.2 MYCORRHIZAL FUNGAL INOCULATE

A. Mycor Tree Saver, or approved equivalent, shall be used as per the manufacturer's instructions.

2.3 TERMITE TREATMENT

A. The termiticide Premise manufactured by Bayer Corporation, or approved equivalent, shall be used as per the manufacturer's instructions.

2.4 MULCH

A. Shall be pine bark or pine needle. Material shall be organic, mulching grade, uniform in size, and free of foreign matter, cypress mulch is prohibited.

2.5 GROWTH REGULATOR

A. Shall contain the same active ingredient as the active ingredient in Cambistat.

PART 3 - EXECUTION

3.1 TREE PROTECTION

A. The Contractor shall be responsible for damage to all vegetation on City owned property and liable to the Department of Parks and Parkways and the City of New Orleans, for compensation or replacements as determined by the Department of Parks and Parkways Urban Forester or the Landscape Architect.

B. The Contractor must identify those City owned trees which will require trimming to clear for construction and have the trees trimmed, by a licensed Arborist, prior to beginning construction.

C. Injury to City owned trees, including the misuse or removal of any device placed to protect any tree, is prohibited.

D. Wooden or chain link barricade shall be fixed in position and of at least five (5) feet in height along the critical root zone of City trees to avoid damaging trees and plant materials.

E. Cutting, disturbing or interfering in any way with the roots of any City tree is prohibited.

F. Dumping, pouring or spilling of oil, concrete mix, salt or salt water or other substances upon any City tree, including root system, is prohibited.

G. No track vehicle or heavy equipment will be allowed to work within the critical root zones of City trees or plant materials.

H. No materials, debris or equipment shall be stored within the critical root zones of City trees or plant materials.

I. No equipment may be cleaned or repaired within the critical root zones of City trees or plant material.

J. Grade changes, either excavating or filling shall not exceed two (2) inches within the critical root zones of City trees and may only occur with the written consent of the Department of Parks and Parkways.

K. Do not direct vehicle or equipment exhaust toward protection zones.

L. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

M. Contractors may not attach signs, barricades, equipment or materials to City trees or plant materials.

N. All trees shall be irrigated at least two times per week for the period of April through October over the duration of the project. Irrigation must wet the soil within the tree protection zone to a depth of 24 inches.

O. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

3.2 PREPARATION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain or be relocated. Flag each tree trunk at 54 inches above the ground.

B. Prior to beginning construction, the Contractor must complete tree trimming required for all new construction.

C. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

D. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.

1. Apply 2 inch uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within 6 inches of tree trunks.

3.3 PROTECTION ZONES

A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent access to protected areas except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
   1. Posts: Set or drive posts into ground one-third the total height of the fence without concrete footings. Where a post is located on existing paving or concrete to remain, provide appropriate means of post support acceptable to Engineer.
   2. Access Gates: Install where indicated.

B. Protection-Zone Signage: Install protection-zone signage in visibly prominent locations in a manner approved by Engineer. Install one sign spaced approximately every 20 feet on protection-zone fencing, but no fewer than four signs with each facing a different direction.

C. Maintain protection zones free of weeds and trash.

D. Maintain protection-zone fencing and signage in good condition as acceptable to Engineer and remove when construction operations are complete and equipment has been removed from the site.

   1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
   2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Section 312316 "Excavation and Trenching" unless otherwise indicated.

B. Excavation within the CRZ of any City tree is permitted only under existing roadbeds. All other excavation (i.e. street widening, neutral grounds, or sidewalks) within the dripline of any City trees need approval by the (Engineer) Department of Parks and Parkways, Tree Department prior to beginning construction.

C. Trenching within the critical root zone of City trees is not permitted. Only boring is permitted within the critical root zone; only under the center of the tree beginning one (1) foot out of the critical root zone and at a minimum depth of thirty (30) inches. No roots two (2) inches or over shall be cut. Roots under two (2) inches can be cut with a chainsaw or shears.
   1. Only hydraulic jacking (boring), air spading or hand digging is allowed within the plant materials critical root zones.
   2. When necessary to pass close to a tree, corridors must be tunneled under major roots rather than using trenches. Corridors or tunnels must be bored or air spaded under the center of the tree. Boring or air spading may not begin closer than ten (10) feet from the trunk of the tree. Boring or air spading this close to a tree, within a tree’s critical root zone, shall only

be permitted under extremely confined urban situations for distances and depths of boring as may be permitted. All final decisions on distances and depths shall be made by the Department of Parks and Parkways Urban Forester. In all locations where it is obvious and possible, air spading or boring shall begin one (1) foot outside of the tree's critical root zone and end on the opposite side of the tree one (1) foot outside of the tree's critical root zone or canopy. The depth of all air spading or boring shall be minimum of thirty (30″) inches.

3. The Department of Parks and Parkways tree Division must be contacted at least three (3) working days prior to boring or air spading under any City tree.

D. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.

E. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

3.5 FIELD QUALITY CONTROL

A. Inspections: Engage a qualified arborist to direct plant-protection measures in the vicinity of trees, shrubs, and other vegetation indicated to remain and to prepare inspection reports.

B. The Department of Parks and Parkways Urban Forester or Landscape Architect must be notified three (3) working days in advance of the beginning of any work on the jobsite, and for meeting to resolve problems unforeseen on the jobsite.

C. Topping of City trees is prohibited.

D. Cutting, trimming, removing, spraying, treating or planting any tree, shrub or groundcover on City property without prior approval by the Department of Parks and Parkways Urban Forester is prohibited.

E. The contractor shall promptly notify the Engineer and Department of Parks and Parkways Landscape Architect of any damage to City trees and other plant materials and shall, within such reasonable time as specified by the Department of Parks and Parkways, repair or replace the damaged plant materials to the satisfaction of the Department of Parks and Parkways Landscape Architect.

3.6 REPAIR AND REPLACEMENT

A. General: In the event that City trees are damaged as the result of a construction project, the Contractor will be required to hire a licensed Arborist to perform the following work at the discretion of the Department of Parks and Parkways Urban Forester.

B. Pruning: All pruning to be done in accordance with ANSI A300

1. Prune branches that are affected by temporary and permanent construction. Prune branches under direction of arborist.
2. Prune to remove only injured, broken, dying, or dead branches unless otherwise indicated. Do not prune for shape.
3. Do not remove or reduce living branches to compensate for root loss caused by damaging or cutting root system.
4. All roots of City owned trees damaged during removal of curbs, sidewalks and driveways shall be root pruned. All trees roots damaged during any excavation operation; including yard drains, collector lines, etc., shall be root pruned.
    a. Cut roots manually by digging a trench and cutting exposed roots with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
5. The Contractor shall notify the Urban Forester's office whenever trees or roots need to be pruned prior to beginning construction. All pruning is to be done under the supervision of the Department of Parks and Parkways Urban Forester.
6. Excavation of roots that need to be pruned must be done by hand within the critical root zone of the tree.
    a. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil
    b. Cover exposed roots with burlap and water regularly
    c. Backfill as soon as possible according to requirements in Section 312323 Fill, Backfill and Compaction.
7. Do not paint or apply sealants to wounds.
8. Provide subsequent maintenance pruning during Contract period as recommended by arborist and approved by Department of Parks and Parkways.

C. Termite Treatment:

1. All trees root pruned due to construction shall be treated for termites.

D. Mulching:

1. A two (2) inch layer of mulch shall be applied over all construction damaged tree root zones. The mulch shall extend out as far as determined practical by the Department of Parks and Parkways Urban Forester overseeing the project.
2. No mulch shall directly contact the tree trunk.

E. Irrigation and Drainage:

1. An adequate, but not excessive, supply of water shall be supplied to the root zone of all construction damaged trees for a minimum period of two (2) years from the time of the damage.
2. Irrigation shall consist of a long, slow soak over the entire root zone as often as is necessary in order to keep the top twelve (12) inches of the soil moist.
3. Overwatering and frequent shallow watering are prohibited.

F. Vertical Mulching:

1. In instances where soil compaction or grade increases of over two (2) inches have occurred, the root zone of the affected tree shall be aerated through the drilling of two (2) to four (4) inch diameter holes utilizing a coring drill or auger. The holes shall be made three (3) feet

on center throughout the root zone of the tree to a depth of at least twelve (12) inches. The holes shall be filled with peat moss or organic mulch such as wood chips, shredded bark or pine needles.

G. Radial Aeration:

1. Radial aeration may be performed as an alternative to vertical mulching in instances where soil has been compacted or grade increases of over two (2) inches have occurred. Utilizing a compressed air gun, trenches approximately four (4) inches wide shall be cut in a radial pattern throughout the root zone. The trenches shall begin no closer than four (4) to eight (8) feet from the trunk of the tree to avoid cutting any major support roots. The trenches must extend at least as far as the critical root zone of the tree. The trenches shall be eight (8) to twelve (12) inches in depth and backfilled with organic compost.

H. Mycorrhizal Fungal Inoculate:

1. Mycorrhizal Fungal Inoculate treatment shall be applied to all construction damaged tree root zones per manufacturer’s directions, and as approved by the Urban Forester from the Parks and Parkways Department.

I. Growth Regulator:

1. Cambistat or approved equal shall be applied by a licensed arborist as per the manufacturer’s instructions, and as approved by the Urban Forester from the Parks and Parkways Department.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION 015639

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 012500 Substitution Procedures.
2. Section 014200 References.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved by Engineer through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

1.4 ACTION SUBMITTALS

A. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify basis-of-design product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
2. Construction Manager’s Action: If necessary, Construction Manager will request additional information or documentation for evaluation within seven (7) days of receipt of a comparable product request. Construction Manager will notify Contractor of approval or

rejection of proposed comparable product request within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.

a. Form of Construction Manager's Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
b. Use product specified if Construction Manager does not issue a decision on use of a comparable product request within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
2. If a dispute arises between contractors over concurrently selectable but incompatible products, Engineer will determine which products shall be used.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project area.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

6. Protect stored products from damage and liquids from freezing.
7. Provide a secure location and enclosure at Project site for storage of materials and equipment by construction forces. Coordinate location with Construction Manager.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
2. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
3. Where products are accompanied by the term "as selected," Designer will make selection.
4. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
5. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

    a. Submit additional documentation required by Owner’s Representative through Construction Manager in order to establish equivalency of proposed products. Evaluation of "or equal" product status is by the Owner’s Representative , whose determination is final.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.

3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.

7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Construction Manager will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Construction Manager may return requests without action, except to record noncompliance with these requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant product qualities include attributes such as type, function, in-service performance and physical properties,

weight, dimension, durability, visual characteristics, and other specific features and requirements.

2. Evidence that proposed product provides specified warranty.
3. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and Owner’s, if requested.
4. Samples, if requested.

B. Submittal Requirements: Approval by the Construction Manager of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (NOT USED)

END OF SECTION 016000

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SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. Mobilization
4. Installation of the Work.
5. Cutting and patching.
6. Progress cleaning.
7. Starting and adjusting.
8. Protection of installed construction.

B. Related Requirements:

1. Section 011000 Summary.
2. Section 013300 Submittal Procedures.
3. Section 011400 Work Restrictions.
4. Section 014126 Permitting Requirements.
5. Section 017700 Closeout Procedures.

1.3 DEFINITIONS

A. Cutting: Removal of in-place pavement necessary to permit installation or performance of subsequent work.

B. Patching: Work required to restore pavement to original conditions, as required by City Ordinance.

1.4 PREINSTALLATION MEETINGS

A. All meetings shall be conducted in accordance with Section 013119 “Project Meetings.”

1.5 SUBMITTALS

A. All submittals shall conform to Section 013300 “Submittal Procedures.”

1.6 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
   1. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.

   2. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, and other construction affecting the Work.

   1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; underground electrical services; and other utilities.
   2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction, not in contract scope.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a request for information to Engineer according to requirements in Section 013100 "Project Management and Coordination."

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the topographic survey and existing benchmarks. If discrepancies are discovered, notify Construction Manager promptly.

B. General: The Contractor will engage a Louisiana professionally licensed surveyor, using accepted surveying practices, to perform the following Work:

1. Establish benchmarks and control points to set lines and levels for construction and elsewhere as needed to locate each element of Project.

C. Notify Construction Manager when deviations from required lines and levels exceed allowable tolerances.

D. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Engineer and Construction Manager.

1. All field books, notes, and other data developed by the Contractor in performing surveys required as part of the work shall be submitted to the engineer with the other documentation required for final acceptance of the work.

3.4 FIELD ENGINEERING

A. Identification: Where a survey is provided, the Owner will be identify existing benchmarks, control points, and property corners.

B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points without prior written approval of Engineer or Construction Manager. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Engineer and Construction Manager before proceeding.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

C. Benchmarks: Establish and maintain a minimum of **two (2)** permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

D. Certified Survey: On completion of work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

3.5 MOBILIZATION

A. Mobilization consists of preparation work and operations, including, but not limited to, those necessary for movement of personnel, equipment, supplies, and incidentals to the project site: the establishment of all offices, buildings, and other facilities necessary for work on the project and the costs of bonding, insurance and all other preconstruction expenses necessary for the start of work, excluding the cost of construction materials.

B. This contract does not include a separate pay item for mobilization.

3.6 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Where possible, select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Repair or remove and replace damaged, defective, or nonconforming Work.

1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.7 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.

1. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls." Section 017419 "Construction Waste Management and Disposal."

F. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

G. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

H. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 TESTING AND REINSTATING

A. Test rehabilitated and newly installed line and reinstate in accordance with Sections 330500 Common Work Results for Utilities and 330505 Sewer Utilities Testing.

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

3.10 VIBRATION MONITORING

A. Contractor shall furnish any vibration monitoring at his own expense at his own discretion. The Contractor shall procure their own independent testing laboratory for vibration monitoring and shall furnish copies of the vibration monitoring report to the engineer as a “Field Test Report” as per Section 013300 Sub-Paragraph 1.7.H.2. The limiting particle velocities shall be designated by the Contractor, but shall not exceed 0.5-in/sec for residential structures, 0.1-in/sec for historical structures and/or sensitive features and 2.0-in/sec for all other commercial and industrial structures and public infrastructure.

END OF SECTION 017300

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Disposing of nonhazardous demolition and construction waste.

B. Related Requirements:

1. Section 013113 Project Coordination
2. Section 024113 Selective Site Demolition

1.3 DEFINITIONS

A. Construction Waste: Materials and other solid waste resulting from construction operations. Construction waste includes packaging.

B. Demolition Waste: Materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill acceptable to authorities having jurisdiction, or designated spoil areas on Owner’s property.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

B. All items as stated in paragraph D shall be retained by the New Orleans DPW and returned to the DPW Maintenance yard in accordance with Section 013113 “Project Coordination.”

C. All valves and manhole castings are to be retained by the S&WB and are to be returned to the S&WB, Maintenance yard in accordance with Section 013113 “Project Coordination.”

D. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, brick and banquette pavers and pavement, granite curbing, and other items of interest or value to DPW that may be uncovered during demolition remain the property of DPW.

1. Carefully salvage in a manner to prevent damage and promptly return to DPW.

1.5 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan at least 10 calendar days prior to commencement of the Work.

1.6 INFORMATIONAL SUBMITTALS

A. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

B. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

C. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

D. Landfill Disposal Records: Indicate receipt and acceptance of waste by landfills licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

E. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Comply with requirements in Section 024113 "Selective Site Demolition" for salvaging demolition waste.

B. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until installation.
4. Protect items from damage during transport and storage.
5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

C. Salvaged Items for Sale and Donation: Not permitted on Project site.

D. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Coordinate and schedule delivery of items in advance.
5. Transport items to Owner's storage area designated by Owner.
6. Protect items from damage during transport and storage.

E. Equipment: Piping. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Electrical Devices: Separate switchgear, transformers, and other devices by type.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner's property.

C. Burning: Burning of any material is prohibited. Do not burn waste materials.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:

1. Section 013233 "Videographic Documentation" for submitting final completion construction videographic documentation.
2. Section 017419 “Construction Waste Management and Disposal” for cleaning and disposal of material before project completion.
3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

1.3 SUBMITTALS

A. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
B. Certified List of Incomplete Items: Final submittal at final completion.
C. Certificates of Release: From authorities having jurisdiction.
D. Certificate of Insurance: For continuing coverage.

1.4 SUBSTANTIAL COMPLETION PROCEDURES

A. Substantial Completion is defined as completion of all work, including all required Deliverables, which includes all warranties, submittals, record documents and drawings, certifications and other documents in accordance with these Contract Documents, with the exception of final clean-up.

B. Submittals Prior to Substantial Completion: Submit the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, as-built drawings, survey log books and similar final record information.
2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

    a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain Construction Manager's signature for receipt of submittals.

3. Submit testing, adjusting, and balancing records.
4. Submit changeover information related to Owner's use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of **10** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Complete startup and testing of systems and equipment.
3. Perform preventive maintenance on equipment used prior to Substantial Completion.
4. Terminate and remove temporary facilities from Project site, along with construction tools, and similar elements.
5. Complete final cleaning requirements.

D. Inspection: At least **10** days prior to date the Work will be completed and ready for final inspection, the Contractor must submit to the Construction Manager a written request for inspection to determine Substantial Completion. Upon receipt of the Contractor’s request, the Construction Manager will either proceed with the inspection or will notify Contractor of unfulfilled requirements. When all requirements for Substantial Completion have been met, the Engineer will prepare the Certificate of Substantial Completion and will notify the Contractor accordingly.

E. If additional work is required to achieve Substantial Completion:

1. The Contractor must request re-inspection when Work that was identified in previous inspections as incomplete or unacceptable, has been completed or corrected.
    a. The request for re-inspection must include a site specific listing of the work to be inspected, which includes the plan sheet, line segment, repair distance, street and hundred block.
2. Results of completed inspection will form the basis of requirements for final completion.

1.5 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Section 012900 "Payment Procedures."

2. Request re-inspection when Work that was identified in previous inspections as incomplete or unacceptable, has been completed or corrected.
    a. The request for re-inspection must include a site specific listing of the work to be inspected, which includes the plan sheet, line segment, repair distance, street and hundred block.

1.6 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Use: Submit properly executed warranties at least **15** days prior to the request for Final Completion.

C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit on digital media acceptable to Engineer or by email to Engineer.

E. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

F. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations in accordance with Section 017419 “Construction Waste Management and Disposal” and to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove labels that are not permanent.
f. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication and other foreign substances.
g. Leave Project clean and ready for use.

C. Construction Waste Disposal: Comply with waste disposal requirements in Section 015000 "Temporary Facilities and Controls" and Section 017419 "Construction Waste Management and Disposal."

3.2 REPAIR OF THE WORK

A. Repair, or remove and replace, defective construction. Repairing includes replacing defective Work, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

B. Complete all repair and restoration operations, including submittal of post construction CCTV inspection videos and As-Built Drawings, before requesting inspection for determination of Substantial Completion.

END OF SECTION 017700

SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Contractor's As-Built Drawings.
2. Record Specifications.
3. Record Product Data.
4. Miscellaneous record submittals.

B. Related Requirements:

1. Section 017300 Execution.
2. Section 017700 Closeout Procedures.

1.3 CLOSEOUT SUBMITTALS

A. As-Built Drawings must comply with the following:

1. Initial Submittal:

a. Submit for review, one (1) complete DRAFT SET of red line As-Built Drawings (11" x 17" or full size drawings, as required by the Engineer),
b. Engineer will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
c. Include each plan sheet, whether or not changes and additional information were recorded. If no changes were made, stamp or note "Constructed per Plan" on the sheet

2. Final Submittal:

a. Submit three (3) complete paper-copy sets of the approved red line As-Built Drawings.
b. Submit PDF scanned image of approved of red line As-Built Drawings.

B. Record Product Data: Submit copies of each submittal as required by the Engineer.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

C. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit copies of each submittal as required by the Engineer.

D. Reports: Submit written report indicating items incorporated into project documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

    a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
    b. Accurately record information in an acceptable drawing technique.
    c. Record data as soon as possible after obtaining it.
    d. Record and check the markup before enclosing concealed installations.
    e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

    a. Dimensional changes to Drawings.
    b. Revisions to details shown on Drawings.
    c. Locations and depths of underground utilities.
    d. Revisions to routing of piping and conduits.
    e. Actual equipment locations.
    f. Changes made by Change Order and Construction or Work Change Directive.
    g. Changes made following Engineer's written orders.
    h. Details not on the original Contract Drawings.
    i. Field records for variable and concealed conditions.
    j. Record information on the Work that is shown only schematically.

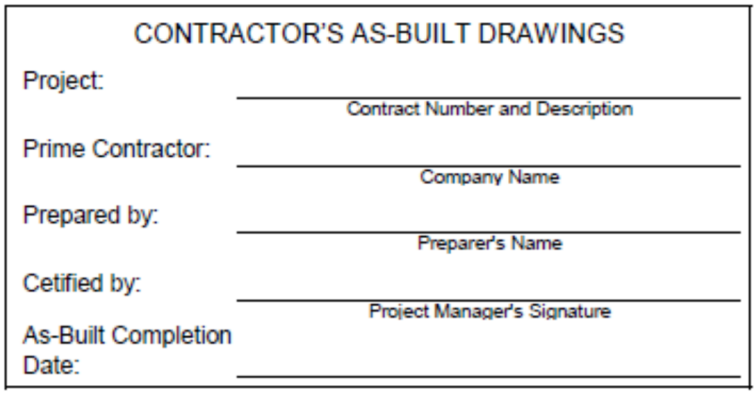
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Construction Manager. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

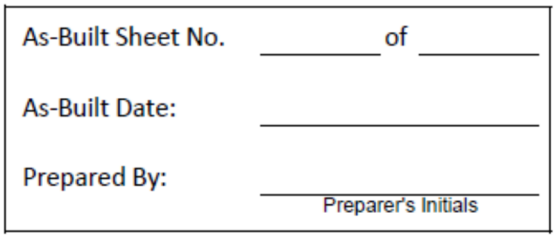
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
2. Format: DWG, Microsoft Windows operating system.
3. Format: Annotated PDF electronic file with comment function enabled.
4. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
5. Refer instances of uncertainty to Construction Manager for resolution.

C. Format: Identify and date each record Drawing; include the designation "AS-BUILT DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheet. Include information described below (item 4) on cover sheet.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Information block to appear on As-Built cover sheet:



5. Information block to appear on all As-Built sheets other than cover sheet:



1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file, paper copy, or scanned PDF electronic file(s) of marked-up paper copy of Specifications.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

C. Format: Submit record Product Data as annotated PDF electronic file, paper copy, or scanned PDF electronic file(s) of marked-up paper copy of Product Data.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as annotated PDF electronic file, paper copy, or scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Construction Manager's reference during normal working hours.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 017839

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SECTION 024113 - SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of removal and satisfactory disposal of pavements, sidewalks, curbs, gutters and other obstructions not designated or permitted to remain, except obstructions to be removed under other contract items. It shall also include salvaging of designated materials. At locations where pavement, curbs or gutter, sidewalk, driveway, or footlaps are to be removed but are not to be replaced, the Contractor shall backfill the area with selected excavated or other suitable approved material at no direct payment.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with selective site demolition.

C. Section Includes:

1. Saw Cutting Pavements (Full Depth)
2. Pavement Removal
3. Utility Line Removal
4. Utility Services
5. Protection

D. Related Requirements:

1. Section 013233 Videographic Documentation
2. Section 014126 Permitting Requirements
3. Section 015639 Temporary Tree and Plant Protection
4. Section 017300 Execution
5. Section 017419 Construction Waste Management and Disposal
6. Section 312316 Excavation and Trenching

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Area Measurement: Measurements will be made as the product of horizontal width and length dimensions of material installed, excluding overlap, and measured in square yards. Irregular surface areas will be measured as a summation of equivalent non-

overlapping rectangles, triangles, circles, partial circles, fillets, or other applicable geometry.

2. Length Measurement: Measurements will be made as the horizontal length dimension of material installed, excluding overlap, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

3. Utility Line Removal: Item is not measured for direct payment.

4. Hauling salvaged materials to specified storage sites will not be measured for payment.

C. Payment:

1. Removal and Disposal of Existing Portland Cement Concrete Pavement: Payment for Removal and Disposal of Existing Portland Cement Concrete Pavement will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. Removal and Disposal of Existing Sidewalk, Driveway, Foot Lap (Concrete, Brick, Asphalt, etc.): Payment for Removal and Disposal of Existing Sidewalk, Driveway, Foot Lap will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

3. Removal and Disposal of Existing Curb (Concrete, Brick, Asphalt, Stone, etc.): Payment for Removal and Disposal of Existing Curb will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

4. Removal and Disposal of Existing Curb and Gutterbottom: Payment for Removal and Disposal of Existing Curb and Gutterbottom will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

5. Removal and Disposal of Existing Gutterbottom or Rolling Strip: Payment for Removal and Disposal of Existing Gutterbottom or Rolling Strip will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

6. Removal and Disposal of Existing Asphaltic Concrete Pavement: Payment for Removal and Disposal of Existing Asphaltic Concrete Pavement will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

7. Saw Cut (Full Depth) Existing Concrete Pavements (Roadway, Sidewalk, Driveway, Curb, Gutter etc.: Payment for Full Depth Saw Cutting of Concrete Pavements will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

8. Saw Cut, Wheel Cut, or Spade Cut Existing Asphalt: Payment for Saw Cutting of asphaltic pavements will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

9. Removal and Disposal of Handicap Ramp: Payment for Removal and Disposal of Existing Handicap Ramp will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

10. Utility Line Removal: Item is not to receive any direct payment. Payment is incorporated in Section 33 31 11 Public Sewerage Gravity Piping

11. When the removal is an area to be excavated and payment is made under other items, no deduction will be made for those items.

1.4 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Remove/Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse or to store.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.5 MATERIALS OWNERSHIP

1. Refer to Section 017419 Construction Waste Management and Disposal paragraph 1.4 for material ownership information.

1.6 SUBMITTALS

A. Proposed Protection Measures: Submit report that indicates the measures proposed for protecting individuals and property, environmental protection, dust control and, noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Site Demolition Activities: Indicate the following:

1. Detailed sequence of selective site demolition and removal work, with starting and ending dates for each activity.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.

C. Pre-demolition Video: Show existing conditions of adjoining construction, including finish surfaces that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Videographic Documentation." Submit before Work begins.

D. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.7 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition

B. New Orleans Department Of Public Works (DPW)

1. General Specifications and Standard Drawings, current edition

1.8 FIELD CONDITIONS

A. Conduct selective site demolition so as not to interfere with property Owner/Renter access. Property access will not be disrupted.

B. Notify Construction Manager of discrepancies between existing conditions and Drawings before proceeding with selective site demolition.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

1. Hazardous materials will be removed by Owner before start of the Work.
2. If suspected hazardous materials are encountered, do not disturb; immediately notify Construction Manager. Hazardous materials will be removed by Owner under a separate contract.

D. Historic Areas: Demolition and hauling equipment and other materials shall be of sizes that clear surfaces within historic spaces and areas, including any temporary protection, as stated in the DPW Standard Specifications.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective site demolition operations.

1. Maintain fire-protection facilities in service during selective site demolition operations.

1.9 COORDINATION

A. Refer to Section 013113, Project Coordination.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

B. Verify that hazardous materials are not present or have been remediated before proceeding with site demolition operations.

C. Survey of Existing Conditions: Record existing conditions by use of preconstruction video.

1. Comply with requirements specified in Section 013233 "Videographic Documentation."
2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
3. Before site demolition that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 SELECTIVE SITE DEMOLITION, GENERAL

A. General: Demolish and remove existing materials only to the extent required by new construction as indicated in the contract documents or as directed by the Engineer. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective site demolition systematically and in accordance with the Project Construction Schedule.
2. Prior to repair site layout, verify location of upstream and downstream sewer manholes.
3. Neatly cut openings square and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.
4. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."

B. Work in Historic Areas: Selective demolition may be performed only in areas of Project that are not designated as historic. In historic spaces, areas, or on historic surfaces, the terms "demolish" or "remove" shall mean historic "removal" or "dismantling."

C. Removed and Salvaged Items: including, but not limited to stone curb, stone sidewalk, brick gutterbottom, brick sidewalk, brick roadway, cobblestone roadway, street name lettering, etc.

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area off-site as designated by Owner.
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items: including, but not limited to stone curb, stone sidewalk, brick gutterbottom, brick sidewalk, street name lettering, etc.

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with removal and installation requirements for reinstalled materials.

E. Existing Items to Remain: Protect construction indicated to remain against damage during selective site demolition.

3.3 SAW CUTTING PAVEMENTS (FULL DEPTH)

A. Portland Cement Concrete Pavement and/or Asphaltic Cement Pavement to be removed, including Roadways, Sidewalks, Driveways, Curbs and Gutters, etc., shall be cut in straight lines and to full depth prior to starting removal. Layout of locations to be saw cut shall be completed as shown on the Drawings and require the approval of an authorized inspector prior to the start of saw cutting.

B. Saw cuts shall be clean, vertical cuts made true to lines parallel to or at right angles to any existing curb line. Depths of cuts shall be full depth and sufficient to permit the removal of pavement to be replaced without causing damage to pavement or structures to be left in place.

C. Curbs and sidewalks shall be cut and removed to the nearest joint scorings.

3.4 PAVING REMOVAL

A. Concrete: Cut concrete to its full depth at junctures with construction to remain. Demolish in sections. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete between saw cuts. At no time shall an excavator bucket be used to break concrete pavement.

B. Asphalt: Cut asphalt to its full depth at junctures with construction to remain. Use hydraulic ram or other equipment designed to break pavement for removal and disposal. Equipment must be appropriate for use in residential areas so that vibration and noise levels are minimized. At no time shall an excavator bucket be used to break asphaltic pavement.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.

3.5 UTILITY LINE REMOVAL

A. Piped Utility Demolition shall be done in accordance with Section 335500 Common Work Results for Utilities.

3.6 UTILITY SERVICES

A. Existing Services to Remain: Maintain services indicated to remain and protect them against damage.

B. Existing Services to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services when requested by Contractor.
2. Arrange to shut off utilities with utility companies.
3. If services are required to be removed, relocated, or abandoned, provide temporary services that bypass area of selective demolition and that maintain continuity of services.

3.7 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings, vehicles, and facilities to remain.

1. Provide protection to ensure safe passage of people around selective site demolition area
2. Comply with DPW Standard Specification requirements for dust control.

B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of trenches.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

D. For all site, tree and plant protection Refer to Section 015639 “Temporary Tree and Plant Protection” and conform to New Orleans Parks and Parkways specifications.

3.8 DISPOSAL OF DEMOLISHED MATERIALS

A. Immediately remove demolition waste materials from project site and dispose of waste materials in an approved and acceptable manner to authorities having jurisdiction; recycle or dispose of waste materials according to Section 017419 "Construction Waste Management and Disposal".

1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3.9 CLEANING

A. Clean adjacent surfaces and improvements of dust, dirt, and debris caused by selective site demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024113

SECTION 310519 – GEOSYNTHETICS FOR EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work shall consist of furnishing and installing all geotextile fabrics and geogrid for embankment separation, bedding stone and subgrade separation, subgrade reinforcement of roadways, subsurface drainage, or riprap lining in a manner and at locations as detailed and specified herein, according to the manufacturer's instruction, plans and specifications, as shown in the drawings or as directed by the Construction Manager or Engineer.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with installation of Geosynthetics for Earthwork.

C. Section includes:

1. Geotextile and geogrid fabrics for stabilization to be installed beneath pavements, subsurface drainage, or riprap.

D. Related Requirements

1. Section 312316 Excavation and Trenching
2. Section 312323 Fill, Backfill, and Compaction
3. Section 321216 Asphalt Paving
4. Section 321123 Aggregate Base Course

1.3 PRICE AND PAYMENT PROCEDURES (NOT USED)

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, and accessories for geotextile fabrics and geogrid.

B. Shop Drawings: Include panel layout, seams, penetrations, perimeter anchorage, and methods of attachment to other construction.

C. Samples: For any product selected include one 12-inch by 12-inch sample to be provided to the Engineer along with the Product Data.

D. Qualification Data: For Installer.

E. Product Certificates: For each type of geotextile fabric and geogrid.

F. Product Test Reports: For each geotextile fabric or geogrid sheet, for tests performed by a qualified testing agency.

G. Sample Warranty: For manufacturer's special warranty, if requested by Engineer.

1.6 REFERENCE STANDARDS

A. Louisiana DOTD Qualified Products List (LADOTD QPL)

B. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM D 4632: Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
2. ASTM D 4533: Standard Test Method for Trapezoid Tearing strength of Geotextiles
3. ASTM D 3787: Standard Test Method for Bursting Strength of Textiles – Constant-Rate-of-Traverse (CRT) Ball Burst Test
4. ASTM D 4833: Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
5. ASTM D 6637: Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method
6. ASTM D 4218: Standard Test Method for Determination of Carbon Black Content in Polyethylene by the Muffle-Furnace Technique

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Contractor to use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

1.9 REGULATORY REQUIREMENTS (NOT USED)

1.10 FIELD CONDITIONS (NOT USED)

1.11 DELIVERY, STORAGE AND HANDLING

A. During shipment and storage the woven fabric shall be wrapped in a heavy-duty covering to protect it from direct sunlight, ultraviolet rays, temperatures greater than 140 degrees F. mud, dirt, dust, debris and abrasion.

B. The geotextile and geogrid shall be delivered in rolls to facilitate installation.

C. Rolls of geotextile fabric and geogrid shall be kept covered at all times until used.

D. Geotextile fabric and geogrid that has been installed shall be covered with embankment within 7 calendar days. When ultraviolet damage occurs, the geotextile fabric and geogrid shall be removed and replaced. The geotextile fabric and geogrid shall be placed at the locations shown on the plans or as directed by the Construction Manager.

E. The manufacturer shall furnish certified test reports showing that the geotextile and geogrid meets the requirements of these Specification.

1.12 COORDINATION (NOT USED)

1.13 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace geotextile or geogrid fabric that fail(s) in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Tearing of fabrics.
b. Defects in seams.

2. Warranty Period: Five years from date of Final Acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The Contractor may request a product from any geotextile fabric or geogrid manufacturer listed in LADOTD’s Qualified Products List.

2.2 GEOTEXTILE FABRIC

A. Work under this section includes furnishing and placing the specified geotextile on the existing subgrade or base. Geotextile manufacturers are encouraged to furnish engineering assistance during installation of woven fabric. In addition, manufacturers might provide special equipment which will ease handling and installation.

B. The woven fabric shall meet the following minimum requirements:

1. Grab Tensile Strength - 400 lbs. minimum per ASTM D 4632.
2. Trapezoid Tear Strength - 130 psi minimum per ASTM D 4533.
3. Bursting Strength - 620 psi minimum per ASTM D 3787.
4. Puncture Resistance - 130 lbs. minimum per ASTM D 4833.

2.3 GEOGRID

A. The Contractor shall install a preapproved geogrid over the geotextile fabric and in full compliance with manufacturer's recommendations, to the alignment and grades designated, in locations shown on the plans or as directed by the Construction Manager. Use only material that has been approved by the Engineer. The Contractor shall check the geogrid, upon delivery, to assure the proper material has been received.

B. The geogrid shall be a regular grid structure formed by punching and drawing a continuous sheet of select polypropylene material and shall have aperture geometry and rib and junction cross-sections sufficient to permit significant mechanical interlock with the material being stabilized. The geogrid shall have high flexural rigidity and high tensile modulus in relation to the material being stabilized and shall also have a high level of continuity through all ribs and junctions of the grid structure. The geogrid shall maintain its confinement and interlock capabilities under repeated dynamic loads while in service and shall also be resistant to ultraviolet degradation, to damage under normal construction practices, and to all forms of biological or chemical degradation normally encountered in the material being stabilized.

C. The geogrid shall meet the following minimum requirements:

1. Nominal Aperture size – 0.6 inches minimum to 1.3 inches maximum
2. Ultimate Tensile Strength – 850 lb/ft minimum per ASTM D-6637
3. Tensile Strength at 2% strain – 280 lb/ft minimum per ASTM D-6637
4. Tensile Strength at 5% strain – 580 lb/ft minimum per ASTM D-6637
5. Carbon Black Content – 0.5% minimum per ASTM D-4218

2.4 MISCELLANEOUS MATERIALS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, with Installer present, for compliance with requirements for soil compaction and grading; for subgrade free from angular rocks, rubble, roots, vegetation, debris, voids, protrusions, and ground water; and for other conditions that may affect performance.

B. Examine trench excavation concrete perimeter, where fabric or grid will be secured, for substrate conditions indicated above and for correct location and configuration.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Subgrade soil shall be prepared as indicated on the construction drawings or as directed by the Engineer. Geogrid shall be laid at the proper elevation and alignment as shown on the construction drawings. Geogrid shall be oriented such that the roll length runs parallel to the road or trench direction. Geogrid shall be overlapped a minimum of 2 ft. Care shall be taken to ensure that geogrid sections do not separate at overlaps during construction. Placement of geogrid around corners will require cutting of geogrid product and diagonal overlapping of same to ensure that excessive buckling of grid material does not occur. Exercise care during placement of embankment over geogrid so as not to damage geogrid.

B. Ruts that occur during construction shall be filled and compacted prior to placement of geotextile fabric.

C. Prepare surfaces of construction penetrating through fabric or grid according to their respective manufacturer's written instructions.

3.3 INSTALLATION

A. General: Place geotextile fabric and geogrid over prepared surfaces to ensure minimum handling. Install according to Shop Drawings and in compliance with geo-fabrics manufacturer's written instructions. Begin placing geo-fabrics at Project's upwind direction and proceed downwind. Install geo-fabrics in a relaxed condition, free from stress and with minimum wrinkles, and in full contact with subgrade. Do not bridge over voids or low areas in the subgrade. The subgrade shall be graded to the elevations required by the plans. Fit closely and seal around inlets, outlets, and other projections through geo-fabrics. Permanently secure edges. Geotextiles which have a difference between the textures of the two sides shall be unrolled with the bearded or fuzzy side down and smooth side up. The geotextile shall be spread in a uniform manner, lapped in accordance with manufacturer’s recommendations, and stretched taut on transverse direction as required to prevent the subbase from pumping. Tears or rips in the fabric shall be replaced.

B. Adjacent rolls of geotextile fabric and geogrid will be overlapped or sewn. When rolls are overlapped, the overlap shall be a minimum of 2-ft, including the ends of the rolls. The top layer of the geotextile fabric and geogrid shall be parallel with adjacent rolls and in the direction of construction.

C. The geotextile fabric shall be placed as smooth as possible with no wrinkles or folds, except in curved road sections. For curved road sections, the geotextile fabric shall be folded to accommodate the curve. The fold shall be in the direction of construction and pinned or stapled.

D. The geotextile fabric should be able to retain the underlying soil without clogging.

E. Geotextile fabrics should be placed to line excavations along its bottom and sides up to a level corresponding to the top of bedding materials.

3.4 MAINTENANCE (NOT USED)

3.5 FIELD QUALITY CONTROL

A. Damaged geotextile fabric and geogrid shall be either removed and replaced with new geotextile fabric and geogrid or covered with a second layer of geotextile fabric and geogrid extending three (3') feet in each direction from the damaged area.

3.6 PROTECTION (NOT USED)

END OF SECTION 310519

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Stripping and stockpiling rock.
6. Removing above- and below-grade site improvements.
7. Disconnecting, capping or sealing, removing site utilities, and abandoning site utilities in place.
8. Temporary erosion and sedimentation control.

B. Related Requirements:

1. Section 013119 “Project Meetings”
2. Section 013543 “Environmental Procedures”
3. Section 015000 "Temporary Facilities and Controls"
4. Section 015526 “Traffic Control”
5. Section 015639 “Temporary Tree and Plant Protection”
6. Section 017419 “Construction Waste Management and Disposal”
7. Section 024113 “Selective Site Demolition”
8. Section 312323 “Fill, Backfill and Compaction”

1.3 PRICE AND PAYMENT PROCEDURES

A. There will be no measurement or payment for Site Clearing.

1.4 DEFINITIONS

A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials.

D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and as specified in Section 015639 "Temporary Tree and Plant Protection."

E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and as indicated according to requirements in Section 015639 "Temporary Tree and Plant Protection."

F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.5 SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

1. Use sufficiently detailed video recordings.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.

B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
3. Traffic control to comply with requirements in Section 015526 “Traffic Control.”

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify **Louisiana One Call** for area where Project is located before site clearing.

D. Tree- and Plant-Protection Zones: Protect according to requirements in Section 015639 "Temporary Tree and Plant Protection."

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312323 "Fill, Backfill, and Compaction."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 015639 "Temporary Tree and Plant Protection."

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Storm Water Pollution Prevention Plan and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site according to requirements in Section 015639 "Temporary Tree and Plant Protection."

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.4 EXISTING UTILITIES

A. Contractor will be responsible for determining the need for and arrange for disconnecting and sealing utilities that serve existing structures before site clearing.

1. Verify that utilities have been disconnected and capped before proceeding with site clearing.

B. Locate, identify, disconnect, and seal or cap utilities indicated to be removed or abandoned in place.

1. Arrange with utility companies to shut off indicated utilities.
2. Contractor will arrange to shut off indicated utilities.

C. Locate, identify, and disconnect utilities indicated to be abandoned in place.

D. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Construction Manager not less than **seven (7)** days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Construction Manager's written permission.

E. Excavate for and remove underground utilities indicated to be removed.

F. Removal of underground utilities is included in earthwork sections; in applicable utilities sections; and in Section 024113 "Selective Site Demolition."

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Grind down stumps and remove roots larger than 2 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 72 inches.
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove pavements, paving, curbs, gutters, and aggregate base as indicated and in accordance with Sections 024113 “Selective Site Demolition.”

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property in accordance with Section 017419 “Construction Waste Management and Disposal.”

B. Burning tree, shrub, and other vegetation waste is not permitted. Burning of other waste and debris is also prohibited.

END OF SECTION 311000

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SECTION 312313 – SUBGRADE PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of preparing and inspecting the subgrade to determine if it is suitable to receive the roadway base course. Unsuitable subgrade will be excavated and replaced with new granular subbase material.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with fill, backfill and compaction of excavations and trenches.

C. Section Includes:

1. Soil Moisture Control.
2. Unsuitable Subgrade Inspection.
3. Subgrade Excavation.
4. Subgrade Sand Filling.

D. Related Requirements:

1. Section 013200 Construction Progress Documentation
2. Section 312319 Dewatering
3. Section 312323 Fill, Backfill and Compaction

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Volume Measurement: Measurements will be made as the product of horizontal width, length dimensions and depth of material installed, measured in cubic yards. Irregular areas will be measured as a summation of equivalent non-overlapping rectangles, triangles, or other applicable geometry multiplied by the average nominal depth.

C. Payment:

1. Unsuitable Subgrade, Excavation & Sand Filling: Payment for Unsuitable Subgrade, Excavation & Sand Filling will be made at the respective Contract unit bid price as scheduled in Section 012200 per Volume Measurement (Paragraph 1.3.B.1) as indicated

in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. Unsuitable subgrade found within a compacted utility trench installed within this contract will not be measured for payment. Contractor will be required to remove and replace unsuitable subgrade in accordance with this section within the limits of utility trenches backfilled and compacted as part of this contract at no additional cost to this contract.

1.4 DEFINITIONS

A. Backfill: See Section 312323 Fill, Backfill and Compaction.

B. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract unit prices.
2. Bulk Excavation: Excavation more than 10 ft. in width and more than 30 ft. in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at no additional expense to the Owner.

C. Subbase Course: Sand layer placed between the subgrade and base course for pavement.

D. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase/base, drainage fill, drainage course, or topsoil materials.

E. Unsuitable Subgrade: Where existing subgrade is not compactable or fails the inspection due to excessive rutting or excessive pumping as defined within this section.

1.5 SUBMITTALS

A. Samples for Verification: For the following products, in sizes indicated below:

1. Subbase material for testing by a testing laboratory selected by the Owner.

B. Gradation and material specifications for subbase material. Resubmit if source material changes at any time during the work.

C. Qualification Data: For qualified testing agency.

D. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D 2487.
2. Laboratory compaction curve according to ASTM D 698 and ASTM D 1557.

E. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.6 REFERENCE STANDARDS

A. City of New Orleans, Department of Public Works (DPW) General Specifications, current edition

B. City of New Orleans, Department of Public Works (DPW) Standard Drawings, current edition

C. Louisiana DOTD Qualified Products List (LADOTD QPL)

D. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM D 698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3(600 kN-m/m^3))
2. ASTM D 1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3(2,700 kN-m/m^3))
3. ASTM D 2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
4. ASTM D 3740-12: Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
5. ASTM E 329: Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

1.7 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

1.8 FIELD CONDITIONS

A. See Section 312323 for required Field Conditions.

1.9 DELIVERY, STORAGE AND HANDLING

A. See Section 007300 Supplementary Conditions (Attachment No. 4) for S&WB Storm Water Pollution Prevention requirements.

1.10 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.11 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: See Section 312323 Fill, Backfill and Compaction for basic soil material requirements.

B. Satisfactory Soils: See Section 312323 Fill, Backfill and Compaction for satisfactory soils. Soil Classification Groups SW, SP, and SM according to ASTM D 2487, Groups A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

1. Clean, pumped river sand will be considered satisfactory for this specification.

C. Unsatisfactory Soils: See Section 312323 Fill, Backfill and Compaction for unsatisfactory soils.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. SUBGRADE:

1. Subgrade Material: Naturally or artificially graded mixture of natural sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve

2. Sand: Sand shall be natural or pumped sand with a maximum liquid limit of twenty-five (25) and a maximum plasticity index of six (6), free from trash, weeds or other foreign or deleterious material. ASTM C 33/C 33M; fine aggregate.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Notify the Engineer when excavations have reached required subgrade.

B. If the Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted subbase material as directed.

C. Authorized additional excavation and replacement material will be paid for according to Contract unit prices.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer and without additional compensation.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

D. Any depressions developed on the subgrade due to contractor's activities shall be filled immediately using suitable subgrade material.

E. The subgrade shall be maintained at all times to be free or ridges, ruts or other drainage impediments that may trap water.

F. Dewatering operations shall comply with Section 312319.

3.3 STORAGE OF SOIL MATERIALS

A. Comply with Section 312323 Fill, Backfill and Compaction.

3.4 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.5 UNSUITABLE SUBGRADE INSPECTION

A. Subgrade Preparation.

1. Areas of existing subgrade that have developed a hardened crust within 6-inches of the surface, the subgrade shall be scarified to a depth of 6-inches.
2. Loosened material shall be spread across the full width of the exposed subgrade and re-compacted to the required subgrades.
3. Uniformly compact the subgrade with a light weight roller (five tons).
4. Areas not compactable shall be marked as 'Unsuitable Subgrade'.

B. Subgrade Proof Rolling.

1. Proof roll subgrade below all schedule roadway paving to identify soft pockets and areas of excessive yielding.

    a. Proof-roll subgrade in one direction.
    b. Proff-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck, loaded to 25 tons (+/- 1 ton).
    c. Limit vehicle speed to 5 mph.

d. Perform proof-rolling during dry weather (See paragraph 3.5) and under the observation of the Construction Manager.

2. Contractor to record limits of vertical deflection, excessive rutting or pumping.
3. Excessive Rutting is defined as ½" or more of deflection without rebound.
4. Excessive Pumping is defined as ½" or more of deflection with rebound.
5. Areas with excessive rutting or pumping shall be marked as 'Unsuitable Subgrade'.
6. Owner and /or Construction Manager reserve the right to perform additional testing in areas where existing subgrade is suspect of not being suitable.

3.6 SUBGRADE EXCAVATION

A. Unsuitable subgrades shall be excavated to a depth of 12-inches and retested as per section 3.8.

1. The limits of excavation shall extend beyond the limits of unsuitable subgrade by four feet (4-ft) in each orthogonal direction.
2. The limits of subgrade excavation shall not extend beyond the limits of work or beneath any existing paving to remain in place.
3. Subgrade excavation shall only be performed if the Contractor is immediately ready for Subgrade Sand Filling. Subgrade sand excavation shall not be left exposed overnight or during inclement weather.

3.7 SUBGRADE SAND FILLING

A. On prepared subgrade, place subgrade sand fill as follows:

1. Place the new subgrade sand fill in 6-inch lifts and compact to 95% density as per Section 312323.
2. Uniformly compact the subgrade with a light weight roller (five tons).
3. In smaller areas, the Contractor may be permitted to perform hand tamping of the subgrade.

   a. Hand tamping shall be performed using a pneumatic type tamper.
   b. Soil moisture control must be maintained as per section 3.5.

4. Proof roll subgrade to verify suitability of subgrade to receive base course and to uniformly compact and properly shape the subgrade to the lines and grades required by the roadway profile and sections.

3.8 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.

3. Determine, during placement and compaction that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Construction Manager.

E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:

1. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 50 feet or less of trench length but no fewer than two tests.

F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; re-compact and retest until specified compaction is obtained.

3.9 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Construction Manager; reshape and re-compact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Construction Manager.

1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property in accordance with Section 017419 Construction Waste Management and Disposal.

END OF SECTION 31 23 13

SECTION 312316 – EXCAVATION AND TRENCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of performing all Excavation, Trenching and necessary shoring and bracing operations for installation of sanitary sewer pipelines and sanitary sewer service laterals in accordance with the specifications and in conformity with the locations, lines, grades, slopes, and typical sections shown on the plans and included herein.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with excavation and trenching.

C. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for Portland cement and asphalt roadways, walks, pavements, turf and grasses and plants.
3. Drainage course for concrete slabs-on-grade.
4. Subbase course for concrete walks pavements.
5. Subbase course and base course for asphalt paving.
6. Excavating trenches for utilities and pits for buried utility structures.
7. Disposal of surplus materials and disposal of water removed from activities involved with trenching.
8. Safety measures involved with excavation and trenching, including but not limited to: sheeting, bracing, and shoring systems.

D. Related Requirements:

1. Section 013200 Construction Progress Documentation
2. Section 013233 Videographic Documentation
3. Section 312319 Dewatering
4. Section 312323 Fill, Backfill, and Compaction

1.3 PRICE AND PAYMENT PROCEDURES

A. No Separate Measurement or Payment will be made for Excavation and Trenching where rehabilitation work is scheduled in the plans for the sanitary sewer line or sanitary sewer service lateral. The Contractor shall include the cost of Excavation and Trenching in the associated scheduled rehabilitation method for the sanitary sewer line and sanitary sewer service laterals.

1.4 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract unit prices.
2. Bulk Excavation: Excavation more than 10 ft. in width and more than 30 ft. in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at no additional expense to the Owner.

G. Fill: Soil materials used to raise existing grades.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

K. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.5 SUBMITTALS

A. Qualification Data: For qualified testing agency.

B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill in accordance with Section 312323 Fill, Backfill, and Compaction.

C. Pre-excavation Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations and submit before earth moving begins and in accordance with Section 013233 Videographic Documentation.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition

B. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM D 2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
2. ASTM D 698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3(600 kN-m/m^3))
3. ASTM D 1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3(2,700 kN-m/m^3))

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

B. Prior to commencing the excavation, the Contractor shall submit a plan of his proposed operations to the Engineer for review. The Contractor shall reflect the equipment and methods to be employed in the excavation. The Contract unit prices established in the bid documents for the work to be done will reflect all costs pertaining to the work. No claims for extras based on substrata or groundwater table conditions will be allowed.

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)

1. CFR 29, Part 1910.146: Permit Required Confined Spaces
2. CFR 29, Part 1926.650 Subpart P: Excavations

1.10 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Owner and New Orleans DPW.
2. Provide alternate routes around closed or obstructed traffic ways if required by the Owner or New Orleans DPW.

B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining the Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Engineer.

C. Utility Locator Service: Notify "One Call" for area where Project is located before beginning earth-moving operations.

D. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 01 50 00 "Temporary Facilities and Controls" are in place.

E. Do not commence earth-moving operations until plant-protection measures specified in Section 01 56 39 "Temporary Tree and Plant Protection" are in place.

F. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

G. Do not direct vehicle or equipment exhaust towards protection zones.

H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

1.11 COORDINATION

A. Refer to Section 013113, Project Coordination.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. Soil Materials shall meet or exceed specifications and material requirements in accordance with Section 312323 Fill, Backfill, and Compaction.

2.2 GEOTEXTILES

A. Geotextile Fabric shall meet or exceed specifications and material requirements in accordance with 310519 Geosynthetics for Earthwork.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

D. Dewatering operations shall comply with Section 312319.

3.2 SHEETING AND BRACING

A. The Contractor shall furnish, put in place, and maintain sheeting and bracing required by Federal, State or local safety requirements to support the sides of excavations, to prevent movement which could in any way diminish the width of the excavation below that necessary for proper construction, and prevent loss of ground which could endanger personnel, damage or delay the work or endanger adjacent structures. Care should be taken by the Contractor to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and compacted by the Contractor.

1. No timber sheeting, shoring, or bracing will be allowed within a Hurricane & Storm Damage Risk Reduction System (HSDRRS) permitted area. Only an engineered shoring system will be allowed. Engineering shoring systems must be designed and stamped by an engineer licensed in LA and submitted to S&WB, and other jurisdictions having authority for review.
2. All work within the permitted HSDRRS area must be scheduled with the authorities having jurisdiction 72 hrs. (excluding weekends and holidays) in advance to allow inspectors to witness exaction and backfilling operations.

B. Sheeting shall be plumb and securely braced and tied in position. Sheeting and bracing shall withstand all pressure to which the structure or trench will be subjected. Any deformation shall be corrected by the Contractor at his own expense so as to provide the necessary clearances and dimensions.

C. Where sheeting and bracing is required to support the sides of excavations greater than 10 feet, the Contractor shall engage a Professional Geotechnical Engineer, registered in the State of Louisiana, to design the sheeting and bracing.

D. All sheeting and bracing not left in place shall be carefully removed in such manner as not to endanger the construction, or other structures, utilities, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with the appropriate material in accordance with 312323 “Fill, Backfill and Compaction,” or otherwise directed by the Engineer.

E. The Contractor shall use the appropriate Sheeting and Bracing installation as shown in the Owner’s “Typical Standard and Nonstandard Sheeting and Open trench Sections for Sewer Pipe Installation” (DWG. NO. 4697-E5-A), current edition.

F. When contractors sheeting and bracing occurs within the USACE jurisdictional limits the Contractor shall follow all agency requirements and restrictions. There will be no additional compensation for these requirements or restrictions.

3.3 EXCAVATION, GENERAL

A. Excavation work shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards. Excavations shall provide adequate working space and clearances for the work to be performed therein and for installation and removal of sheeting, bracing or trench boxes.

B. Excavation shall be made to such dimensions that will give suitable room for bracing and supporting, for pumping and draining, for installing the pipelines, and for all other work required.

C. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the Drawings and should anticipate the encounter of unknown obstructions during the course of the work.

D. Encounters with subsurface obstructions may require hand excavation.

E. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. Subgrade soils which become soft, loose, "quick", or otherwise unsatisfactory for support of structures as a result of inadequate dewatering or other construction methods, shall be removed and replaced by appropriate material as required by the Engineer and in accordance with 312323 “Fill, Backfill and Compaction,” at the Contractor's expense.

F. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include unsatisfactory soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for unsatisfactory soil excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials, replace with satisfactory soil materials.
2. Remove soil to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:

    a. Eight (8) inches below pipe invert.
    b. Maximum trench width allowed shall be 4 feet for 8” and 10” pipe. For larger diameter pipe, the maximum trench width allowed shall be 3 feet plus the outside diameter of the pipe.

G. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock.

1. Earth excavation includes excavating pavements and other materials visible on surface; soil, and other underground materials (structures, utilities, and other items).

3.4 EXPLORATORY EXCAVATION

A. Excavation of test pits may be required for the purpose of locating underground utilities or structures as an aid in establishing the precise location of work.

B. Test pits shall be backfilled and restored as specified herein as soon as the desired information has been obtained. The backfilled surface shall be maintained in accordance with Section 01 50 00 Temporary Facilities and Controls and Section 015526 Traffic Control until resurfaced as specified.

3.5 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1/2 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

B. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.7 EXCAVATION FOR UTILITY TRENCHES

A. Trench excavation shall include material of every description and of whatever substance is encountered. The length of open trench shall be related closely to the rate of pipe laying.

1. The Contractor shall not open more trench in advance of pipe laying than is necessary to expedite the work. One hundred (100) feet shall be the maximum length of open trench on any line under construction. All trench excavation shall be open cut from the surface.

B. While excavating and backfilling operations are in progress, traffic flow shall be maintained in accordance with Section 015526 “Traffic Control” and all utilities and other property protected as required herein. No trenches are to remain open overnight. Trenches shall be filled and a temporary traffic aggregate shall be used is accordance with Section 015000 Temporary Facilities and Controls and Section 015526 Traffic Control until resurfaced as specified.

C. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Excavate trenches to uniform widths to provide the clearance as indicated on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to distance above top of pipe as indicated in the Owner’s Standard Detail Drawings (DWG NO. 4697-E5-A), current edition.

D. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. Trench bottoms are to be prepared as indicated in the Owner’s Standard Detail Drawings; “Typical Standard and Nonstandard Sheeting and Open trench Sections for Sewer Pipe Installation” (DWG NO. 4697-E5-A), current edition.

E. Trench Bottoms: Excavate trenches 6 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

F. Trenches in Tree- and Plant-Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
3. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.8 SUBGRADE INSPECTION

A. Notify Engineer when excavations have reached required subgrade.

B. If the Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Authorized additional excavation and replacement material will be paid for according to Contract unit prices.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavations for other construction, pipe or conduit installations as directed by Engineer at no additional expense to the Owner.

3.10 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

3.13 FIELD QUALITY CONTROL

A. Refer to Sections 312323 Fill, Backfill, and Compaction, 32116 Subgrade Preparation, and 32113 Aggregate Base Course for field quality control requirements for all backfilling and compacting operations.

3.14 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Construction Manager; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.15 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner’s property.

B. Transport surplus satisfactory soil to designated storage areas on Owner’s property. Stockpile or spread soil as directed by Engineer.

1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner’s property.

END OF SECTION 312316

SECTION 312319 - DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes construction dewatering.

B. Related Requirements:

1. Section 013300 Submittal Procedures
2. Section 015000 Temporary Facilities and Controls and
3. Section 015639 Temporary Tree and Plant Protection
4. Section 017419 Construction Waste Management and Disposal
5. Section 013233 Videographic Documentation
6. Section 312316 Excavation and Trenching
7. Section 312323 Fill, Backfill and Compaction

1.3 PRICE AND PAYMENT PROCEDURES

A. No Separate Measurement or Payment will be made for dewatering operations.

1.4 SUBMITTALS

A. Submit in accordance with Section 013300 Submittal Procedures.

B. Shop Drawings: For dewatering system, prepared by or under the supervision of a qualified professional engineer.

1. Include plans, elevations, sections, and details.
2. Show arrangement, locations, and details of wells and well points; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
3. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
4. Include written plan for dewatering operations including sequence of well and well-point placement coordinated with excavation shoring and bracings and control procedures to be adopted if dewatering problems arise.

C. Field quality-control reports.

D. Existing Conditions: Using photographs or video recordings, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.

E. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in design of dewatering systems and dewatering work.

1.6 FIELD CONDITIONS

A. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent existing buildings, structures, and site improvements; establish exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

1. Design dewatering system, including comprehensive engineering analysis by a qualified professional engineer.
2. System should include all discharge piping and connections at point of discharge.
3. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
4. Prevent surface water from entering excavations by grading, dikes, or other means.
5. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
6. Remove dewatering system when no longer required for construction.

B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water- and debris-disposal regulations of authorities having jurisdiction and Section 017419 Construction Waste Management and Disposal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.

1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways, if required, using approved traffic control plans by authorities having jurisdiction.

C. Provide temporary grading to facilitate dewatering and control of surface water.

D. Protect and maintain temporary erosion and sedimentation controls, in accordance with Sections 015000 Temporary Facilities and Controls and 015639 Temporary Tree and Plant Protection, during dewatering operations.

3.2 INSTALLATION

A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.

1. Space well points or wells at intervals required to provide sufficient dewatering.
2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

B. Place dewatering system into operation to lower water to 3-feet below the bottom of the excavation.

C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.

D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

3.3 OPERATION

A. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.

1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
3. Maintain piezometric water level a minimum of 24 inches below bottom of excavation.

B. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.

C. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

D. Remove dewatering system from Project site on completion of dewatering. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

3.4 FIELD QUALITY CONTROL

A. Observation Wells: Provide observation wells or piezometers, take measurements, and maintain at least the minimum number indicated; additional observation wells may be required by authorities having jurisdiction.

1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.
2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.
3. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.

B. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Architect if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.

C. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.

D. Prepare reports of observations.

3.5 PROTECTION

A. Protect and maintain dewatering system during dewatering operations.

B. Promptly repair damages to adjacent facilities caused by dewatering.

END OF SECTION 312319

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SECTION 312323 – FILL, BACKFILL, & COMPACTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of performing all filling, backfilling, subgrade/subbase preparation, and compaction of excavations and utility trenches in accordance with the specifications and in conformity with the locations, lines, grades, slopes, thickness, and typical sections shown on the plans and included herein.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with fill, backfill and compaction of excavations and trenches.

C. Section Includes:

1. Dewatering.
2. Bedding.
3. Backfill.
4. Utility Trench Backfill.
5. Soil Fill.
6. Soil Moisture Control.
7. Grading.
8. Backfilling trenches for utilities and pits for buried utility structures.

D. Related Requirements:

1. Section 013200 Construction Progress Documentation
2. Section 014126 Permitting Requirements
3. Section 015639 Temporary Tree and Plant Protection
4. Section 311000 Site Clearing
5. Section 312316 Excavation and Trenching
6. Section 312319 Dewatering
7. Section 321116 Subgrade Preparation
8. Section 321123 Aggregate Base Course
9. Section 329223 Sodding
10. Section 330130.03 Sewer Flow Control

1.3 PRICE AND PAYMENT PROCEDURES

A. No Separate Measurement or Payment will be made for Fill, Backfill, and Compaction where rehabilitation work is scheduled in the plans for the sanitary sewer line or sanitary sewer service

lateral. The Contractor shall include the cost of Fill, Backfill, and Compaction in the associated scheduled rehabilitation method for the sanitary sewer line and sanitary sewer service laterals.

1.4 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: See Section 321123 Aggregate Base Course.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Engineer. Authorized additional excavation and replacement material will be paid for according to Contract unit prices.
2. Bulk Excavation: Excavation more than 10 ft. in width and more than 30 ft. in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at no additional expense to the Owner.

F. Fill: Soil materials used to raise existing grades.

G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

H. Subbase Course: Refer to Section 321116 Subgrade Preparation.

I. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

J. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.5 SUBMITTALS

A. Samples for Verification: For the following products, in sizes indicated below:

1. Backfill and bedding material for testing by a testing laboratory selected by the Owner.

B. Gradation and material specifications for backfill and bedding material. Resubmit if source material changes at any time during the work.

C. Qualification Data: For qualified testing agency.

D. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D 2487.
2. Laboratory compaction curve according to ASTM D 698 and ASTM D 1557.

E. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations and submit before earth moving begins and in accordance with Section 013233 Videographic Documentation.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition

B. Louisiana DOTD Qualified Products List (LADOTD QPL)

C. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM C 33: Standard Specification for Concrete Aggregates
2. ASTM C 136: Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
3. ASTM D 448: Standard Classification for Sizes of Aggregate for Road and Bridge Construction
4. ASTM D 698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3(600 kN-m/m^3))
5. ASTM D 1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3(2,700 kN-m/m^3))
6. ASTM D 2321: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
7. ASTM D 2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
8. ASTM D 2940: Standard Specifications for Graded Aggregate Material for Bases or Subbases for Highways or Airports
9. ASTM D 3740-12: Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
10. ASTM E 329: Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

1.7 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E 329 and ASTM D 3740 for testing indicated.

1.8 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during filling operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Owner and New Orleans DPW.
2. Provide alternate routes around closed or obstructed traffic ways if required by the Owner or New Orleans DPW.

B. Improvements on Adjoining Property: Authority for performing filling operations indicated on property adjoining the Owner's property will be obtained by the Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Engineer.

C. Do not commence filling operations unless temporary site fencing and erosion- and sedimentation-control measures specified in Section 015000 "Temporary Facilities and Controls" are in place.

D. Do not commence filling operations unless plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.

E. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

F. Do not direct vehicle or equipment exhaust towards protection zones.

G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

1.9 DELIVERY, STORAGE AND HANDLING

A. Delivery, storage, and handling of fill material shall meet the requirements of the S&WB Storm Water Pollution Prevention Plan (Section 007300 Supplementary Conditions, Attachment 4).

1.10 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.11 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General:
   1. Provide new borrow soil materials, for all fill and backfilling operations when sufficient satisfactory soil materials are not available from excavations.
   2. All fill material from on and off-site sources shall be subject to the approval of the Engineer.
   3. All fill material shall be free from rocks or stones larger than 2 inches in their greatest dimension; brush, stumps, logs, roots, debris, and organic material, trash, or other objectionable material. Excess or unsuitable material as designated by the Engineer shall be removed from the job site by the Contractor.
   4. All excavated insitu soil shall be removed in accordance with Section 312316 Excavation and Trenching.

B. Satisfactory Soils: Soil Classification Groups SW, SP, and SM according to ASTM D 2487, Groups A-2-4, A-2-5, and A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

   1. Pumped river sand is acceptable fill material.

C. Unsatisfactory Soils: Soil Classification Groups GW, GP, GM, GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, Groups A-1, A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.

   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
   2. Batture sand and spillway sand are not acceptable fill materials and are deemed unsatisfactory.

D. BASE & SUBBASE: Refer to Section 321123.

   1. Density Requirements: Shall be in accordance with the following testing procedures:

MATERIAL	TEST	DENSITY PERCENT OPTIMUM
Sand Subbase	A.S.T.M. D698	95
Sand Base	A.S.T.M. D698	96
Crushed Concrete or Stone	La.D.O.T.D. 418E	95
Cold-milled Asphaltic Concrete	La.D.O.T.D. 418E	95

The density requirements for other material shall be in accordance with the requirements of the Engineer.

E. Subbase Material: Naturally graded mixture of clean natural sand (ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve) and meeting the requirements of 2.1.B such as pumped river sand.

F. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

H. Pea Gravel: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 448; with maximum aggregate size of 3/8-inch and not more than 5 percent passing a No. 16 sieve.

I. Sand: Sand shall be natural or pumped sand with a maximum liquid limit of twenty-five (25) and a maximum plasticity index of six (6), free from trash, weeds or other foreign or deleterious material. ASTM C 33; fine aggregate.

J. Impervious Fill: Clay fill capable of compacting to a dense state. Fill shall only be used where required by OLD permit and meet the fill specification established by the USACE:

1. The Plasticity Index of the new fill must be 10 or more by Atterburg Limits (ASTM D4318), and the material must be classified as either CH or CI, by ASTM D2487, with less than 35% sand retained on the No. 200 sieve by ASTM D1140.
2. The backfill material must have organic content of no greater than 9%, as determined by ASTM D2974, Method C.
3. Backfill Material must be placed in 6inch lift for the first layer and 12 inch lifts for the succeeding layers and must be compacted to the 90% Standard Proctor ASTM D698.
4. Backfill Material is to be used only where excavation extends into a levee “theoretical section” or otherwise as directed by the Engineer.
5. See Section 014126 Permitting Requirements for applicability.

K. Excavatable Flowable Backfill: self-compacting sand/cement mixture designed for a low compressive strength of 100 psi and shall be used when required for backfill within LADOTD right of way limits and conforming to the tables below.

Flowable Fill Mix Design

Material	Excavatable	Non-Excavatable
Portland Cement	75 - 100 lb/cu yd	76 - 100 lb/cu yd
Fly Ash	0 - 150 lb/cu yd	150 - 600 lb/cu yd
Water[2,3]	-	-
Air[4]	10 - 35%	5 - 20%
Concrete Sand	Proportioned to yield 1 cu yd	Proportioned to yield 1 cu yd
Unit Weight (wet)[4]	90 - 110 lb/cu yd	100 - 125 lb/cu yd
28-Day Compressive Strength[4]	Maximum 100 psi	Minimum 125 psi

Water

	% by Weight (Max.)
Alkali	0.1
Solids (Organic)	0.1
Solids (Inorganic)	0.4
Salt (NaCl)	0.5
Sugar, Oil, or Acid	0.0

[1]Mix designs shall yield 1.0 cubic yard absolute volume.

[2]Mix designs shall produce a consistency that will result in a flowable self-leveling product at the time of placement and conform to the Water - Percent by Weight (Max.) Table.

[3]Water shall comply with the the Water - Percent by Weight table when tested in accordance with AASHTO T 26.

[4]The requirements for percent air, compressive strength and unit weight are for laboratory designs only and not intended for jobsite acceptance requirements unless otherwise directed by the project engineer. For early opening to traffic and expedited placement circumstances, the maximum or minimum required strength shall be attained in the desired time frame.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify site conditions are ready to accept earth moving operations. Perform any required demolition or site clearing operations within the plan limits and within any limits placed by applicable project permits.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

D. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove all water from excavations.

E. Dewatering operations shall comply with Section 312319.

F. All pumping and drainage operations of sanitary sewage shall be performed in accordance with Section 330130.03 Sewer Flow Control.

3.3 SUBGRADE INSPECTION

A. Notify the Engineer when excavations have reached required subgrade.

B. If the Engineer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Authorized additional excavation and replacement material will be paid for according to Contract unit prices.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Engineer and without additional compensation.

3.4 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.5 BEDDING

A. The Contractor shall deposit crushed stone for pipe bedding, or crushed stone for excavation below grade, directly on the bottom of the trench immediately after excavation has reached the proper depth and before the bottom of the trench has become softened or disturbed by any cause.
1. Bedding material shall meet the requirements designated on the drawings and in accordance with ASTM D 2321.

B. The Contractor shall place the crushed stone bedding in layers not exceeding 12 inches in thickness and compacted to 95% the maximum dry density in accordance with ASTM D 1557.

C. The minimum thickness of bedding below the pipe shall be 6 inches. The bedding material shall extend upward from the excavation bottom along the haunches and sides of the pipe up to a distance of 6 inches above the pipe.

D. Compaction shall be achieved by mechanical means such as a vibratory plate or other devices approved by the Engineer.

E. The Contractor shall install filter fabric around the bedding and under the backfill in accordance with Section 310519 Geosynthetics for Earthwork and the Owner’s standard detail drawings, current edition. The filter fabric shall overlap at the top of the bedding the full width of the trench and shall be secured to each side of the trench.

3.6 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring, bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

C. As soon as practical after the pipe has been laid and jointed and bedding material has been installed and compacted, the Contractor shall begin backfilling expeditiously.

D. Where the pipes are laid in areas without a pavement covering, the Contractor shall fill the remainder of the trench with select native material mounded 6 inches above the existing grade or as directed by the Engineer. Where a gravel or similar surface exists prior to excavations, it shall be removed, conserved and replaced to the full original depth as part of the work by the Contractor.

E. Where the pipes are laid in streets, driveways and sidewalks, the remainder of the trench up to the depth of the bottom of the base course of the specified paving shall be backfilled with sand material as specified herein in layers not to exceed 6 inches for mechanical compaction and three 3 feet for compaction by flooding. The backfill shall be thoroughly compacted as specified herein.

F. To prevent longitudinal movement of the pipe, dropping or dumping backfill material into the trench will not be permitted.

G. Backfill shall be brought up evenly on all sides. Each layer of backfill shall be uniformly compacted to 95% of the maximum dry density near optimum water content in accordance with ASTM D-1557.

H. All roadway, driveway and sidewalk surfaces shall be swept and hose-cleaned immediately after backfilling by the Contractor. Dust control measures shall be employed at all times by the Contractor

3.7 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Trenches under Roadways: The Contractor shall conform to the Owner’s standard drawings, current edition.

D. Backfill voids with satisfactory soil while removing shoring and bracing.

E. Initial Backfill:

1. Soil Backfill: Place and compact initial backfill of approved soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.

a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

F. Final Backfill:

1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
2. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.

G. Subgrade Preparation:

1. Compacted backfill within the utility trench shall meet the requirements in Section 312313 Subgrade Preparation. Any required replacement of unsuitable subgrade within the utility trench will not be paid for.

3.8 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under sidewalks within an established tree canopy, use a pea gravel soil material.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.9 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.10 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 12 inches in loose depth for material compacted by heavy compaction equipment and not more than 6 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of pipe and conduit to required elevations and uniformly along the full length of each pipe.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698 and ASTM D 1557:

1. Under pavements, scarify and re-compact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under walkways, scarify and re-compact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent.
3. Under turf or unpaved areas, scarify and re-compact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

D. Excavations shall be backfilled to the original grades or as indicated on the Drawings. Deviation from this grade because of settling shall be corrected. Backfill operation shall be performed to comply with all rules and regulations and in such a manner that it does not create a nuisance or safety hazard.

3.11 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch
2. Walks: Plus or minus 1 inch
3. Pavements: Plus or minus 1/2 inch

3.12 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.

B. Prepare subgrades in accordance with Section 312313 Subgrade Preparation.

C. On prepared subgrade, place subbase course and base course under pavements and walks in accordance Section 321123 Aggregate Base Course.

D. Pavement Shoulders: Place shoulders along edges of subbase course and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.13 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
2. Determine that fill material classification and maximum lift thickness comply with requirements.
3. Determine, during placement and compaction that in-place density of compacted fill complies with requirements.

B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Construction Manager.

E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:
1. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 50 feet or less of trench length but no fewer than two tests.

F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; re-compact and retest until specified compaction is obtained.

3.14 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Construction Manager; reshape and re-compact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.15 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Construction Manager.

1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property in accordance with Section 017419 Construction Waste Management and Disposal.

END OF SECTION 31 23 23

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SECTION 320600 – SCHEDULES FOR EXTERIOR PAVING AND SODDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The section consists of Schedules for Exterior Paving and Sodding as described herein.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to provide all common work results for utilities.

C. Section Includes:

1. Paving Schedule
2. Identification Tags.

D. Related Requirements:

1. Section 013113 Project Coordination
2. Section 024113 Selective Site Demolition for sawcutting and pavement removal.
3. Section 312313 Subgrade Preparation for subgrade requirements.
4. Section 321123 Aggregate Base Course
5. Section 321216 Asphalt Paving
6. Section 321313 Concrete Paving
7. Section 321540 Crushed Stone Surfacing
8. Section 321613 Curbs and Gutters
9. Section 321623 Sidewalks and Driveways
10. Section 329223 Sodding

1.3 PRICE AND PAYMENT PROCEDURES

A. See respective sections for measurement and payment requirements.

B. There is no measurement and payment for Identification Tags.

1.4 REFERENCE STANDARDS

A. LADOTD Standard Specifications of Roads and Bridges (LSSRB), current edition

B. New Orleans Department of Public Works

1. Standard Detail Drawings, current edition
2. General Specifications, current edition

C. New Orleans Department of Parks and Parkways

1. Installation of New Plant Materials, current edition
2. Landscape Protection During Construction, current edition
3. Seeding and Sodding, current edition

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of New Orleans DPW General Specifications and Standard Drawings and LADOTD Standard Specifications of Roads and Bridges (LSSRB), current edition, for paving work, and New Orleans Department of Parks and Parkways for landscaping and sodding requirements.

1.6 FIELD CONDITIONS

A. Do not apply pavement materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure.

B. Proceed with sodding only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

1.7 COORDINATION

A. Coordinate and cooperate with other contractors and agencies performing work in close proximity to the Work on this project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 IDENTIFICATION TAGS

A. Identification tags shall be installed at a minimum of one (1) per fifty (50) linear feet of pavement restoration. For point repairs, one tag shall be required unless otherwise directed by the Construction Manager. The tags shall be color-coded in accordance with the Department of Public Works specifications and shall include the year of the repair.

B. Each tag shall be embedded at zero grade tolerance, or slightly below, in the new pavement surface. Failure to mark permanent pavement at the time of installation may result in fines from the Department of Public Works.

3.2 PAVING SCHEDULE

Paved Surface	Material	Thickness
1. Asphalt Streets	Asphaltic Concrete	Subgrade Preparation Geotextile Fabric Geogrid 8” aggregate base course 4.5” binder course or greater as required to match existing street profile 2.5” wearing course
2. Composite Streets	Asphaltic Concrete Portland Cement Concrete (4000 psi)	Subgrade Preparation Geotextile Fabric Geogrid 8” aggregate base course 8” concrete w/ 6 x 12-0/1 mesh Leveling Binder as required to match existing street profile 2.5” wearing course
3. Concrete Streets	Portland Cement Concrete (4000 psi)	Subgrade Preparation Geotextile Fabric Geogrid 8” aggregate base course 8” concrete w/6 x 12-0/1 mesh
4. Driveways A (Residential) B (Commercial)	Portland Cement Concrete (3000 psi)	Sand subbase A. 6” concrete w/ 6 x 12 - 0/1 mesh B. 8” concrete w/ 6 x 12 - 0/1 mesh
5. Sidewalks	Portland Cement (3000 psi)	Sand subbase 4” concrete w/ 6 x 6 - No. 6 mesh (standard) 6” concrete w/ 6 x 6 - No. 6 mesh (at intersections and ADA ramps)
6. Sidewalks within Tree Canopies	Portland Cement (3000 psi)	4”- 6” pea gravel bed (sloped as per detail, STD 10) 4” concrete w/ 6 x 6 - No. 6 mesh
6. Crushed Stone Surfacing	No. 57 Limestone	Subgrade Preparation Geotextile Fabric Geogrid 8” Minimum stone (no crushed concrete)
3. Street Milling (Cold Milling and overlay)	Asphaltic Concrete	2.5” Minimum cold milling 2.5” Minimum wearing course
4. Interim Pavement	No. 57 Limestone Asphaltic Concrete	Geotextile Geogrid 12” stone base 2.5” Wearing Course

3.3 PAVEMENT RESTORATION SEQUENCING

A. Contractor shall not perform any pavement restoration above the required aggregate base course until the completion of all sewer rehabilitation work (excavated, CIPP or other trenchless) has been completed, CCTV inspected and accepted by the Engineer. Measurement and Payment for any new pavement placed prior to this requirement being met, or its removal or replacement due to subsequent required sewer rehabilitation work will not be made.

B. Temporary Maintenance Aggregate (TMA):
   1. Contractor is only permitted to use TMA while currently mobilized on a block and currently working on sewer rehabilitation.
   2. TMA shall be installed at the end of each work day to maximize drive and parking surfaces available to the public.
   3. TMA should be replaced with Interim Restoration prior to demobilizing from the block **when directed by the engineer.**
   4. TMA that has been separated from backfill, adjacent soils and other contamination may be re-used as TMA only. Contaminated TMA may not be re-used.
   5. TMA may **not** be re-used as final base course or for piping bedding course.
   6. Recycled crushed concrete is not allowed at any time.
   7. Measurement and Payment: There is no measurement and payment for TMA installation or removal.
   8. TMA shall be in-place for a minimum of 30 days prior to installation of Final Restoration.

C. Interim Restoration: Contractor shall provide interim asphaltic pavement immediately upon completion of excavated sewer rehabilitation prior to demobilization from the site **when directed by the engineer**.
   1. Contractor shall provide full compacted backfill of the trench to the subgrade as per relevant specification sections and S&WB standard detail requirements.
   2. Contractor shall fill with temporary Base Course from roadway subgrade, to 2-1/2”inches below final adjacent grades.
   3. TMA meeting a #57 gradation curve may be used as temporary base course for Interim Restoration but must be removed prior to placement of final restoration. Recycled crushed concrete is not allowed at any time.
   4. Contractor shall provide 2-1/2” of temporary asphalt to match adjacent grades.
   5. Interim Restoration shall be in-place for a minimum of 30 days prior to installation of Final Restoration.
   6. Measurement and Payment: There is no measurement for temporary base course used with interim restoration. Installation of the 2-1/2” asphalt pavement will be measured and paid under the respective bid item for Asphalt Concrete Wearing Course (2 ½” Thick).

D. Final Restoration:
   1. Final Restoration shall not be installed prior to the acceptance of all sewer rehabilitation work, including acceptance and reviews of post-repair CCTV inspection and acceptance of all required sewer utility testing (mandrel, air pressure, hydrostatic water, etc).
   2. Final Restoration installed prior to the acceptance of the sewer rehabilitation work will not be measured and paid until after the acceptance of the sewer rehabilitation work. Removal of Final Restoration to accommodate repairs to rejected sewer rehabilitation work will not be measured or paid for.
   3. Final Restoration shall be installed within 30 days of acceptance of the sewer rehabilitation work.

4. All TMA, Interim Restoration and Interim Restoration base course must be removed back prior to installation of Final Restoration, at no direct measurement or payment.
5. Roadway Subgrade must be re-established with clean, pumped river sand and compacted prior to installation of Final Restoration.
6. Final Restoration shall be installed scheduled in Section 3.2 herein, the SSERP RDSS pavement plans and as per the DPW Standard Details for Roadway Pavement Sections.
7. Measurement and Payment: Measurement and Payment for Final Restoration will be made at the respective assembly unit costs as per these specifications.
8. Failure to install Final Restoration within 30 days of final acceptance will require a supplemental of post-rehabilitation CCTV inspections of the sanitary sewer lines at the Contractor's expense. This will be required at each 30-day interval until Final Restoration has been installed.
9. Contractor will be required to make repairs, as directed by the engineer to any newly discovered sewer pipe damages that were not present in the previous post-repair CCTV video inspection, or previously acceptable pipe defects that have further deteriorated into unacceptable pipe defects from the previous post-repair CCTV video inspection.

END OF SECTION 320600

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SECTION 321123 – AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Review these documents for coordination with additional requirements and information that apply to work under this Section.

1.2 SUMMARY

A. The work consists of preparation, stockpiling, hauling, placing, and compacting of aggregate base courses as indicated on the drawings and specified herein.

B. The Contractor shall provide all supervision, labor, material, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with aggregate base course installation.

C. Section Includes:

1. Aggregate Base

D. Related Requirements:

1. Section 012200 Unit Prices
2. Section 312313 Subgrade Preparation
3. Section 312316 Excavation and Trenching
4. Section 312323 Fill, Backfill, and compaction
5. Section 310519 Geosynthetics for Earthwork

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Volume Measurement: Measurements will be made as the product of horizontal width, length dimensions and depth of material installed, measured in cubic yards. Irregular areas will be measured as a summation of equivalent non-overlapping rectangles, triangles, or other applicable geometry multiplied by the average nominal depth.

C. Payment:

1. Base Course: Payment for Base Course will be made at the respective Contract unit bid price as scheduled in Section 012200 per cubic yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

1.4 DEFINITIONS

A. Acceptance: Wherever the terms acceptance or accepted are used herein, they mean acceptance of the Engineer in writing.

B. Subgrade: The soil surface on which aggregate base or cement-treated base is placed.

1.5 SUBMITTALS

A. Submittals shall comply with Section 013300 Submittal Procedures.

B. Materials Sources: Submit name of imported materials source.

C. Aggregate composition Test Reports: Results of laboratory tests on proposed and actual materials used.

D. Compaction Density Test Reports

1.6 REFERENCE STANDARDS

A. General:

1. The following documents form part of the Specifications to the extent stated. Where differences exist between codes and standards, the one affording the greatest protection shall apply.
2. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.
3. Refer to Division 01 Section "General Requirements" for the list of applicable regulatory requirements.

B. City of New Orleans Department of Public Works (DPW) Standard drawings, current edition.

C. City of New Orleans Department of Public Works (DPW) General Specifications, current edition.

D. Louisiana Department of Transportation and Development Standard Specifications for Roads and Bridges (LADOTD).

E. American Society of Testing and Materials (ASTM), Latest Edition

1. ASTM C 136: Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D 698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
3. ASTM D1556: Standard Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method.
4. ASTM D1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))

1.7 QUALITY ASSURANCE

A. Source: Material to be furnished from approved sources throughout Work.

B. Certification: Contractor is to schedule material sampling and field test with approved testing lab, as designated by the Engineer, to perform tests required to prove that Work-in-progress meets requirements of these Specifications. By accepting this Contract, the Contractor certifies that all materials and workmanship shall conform to the requirements in these Specifications.

1.8 DELIVERY, STORAGE, AND HANDLING

A. On Site Storage: Store aggregate-base material on-site covered or in a location where material will not be contaminated. Aggregate storage area must not interfere with normal traffic operation and is subject to approval from the Construction Manager.

1.9 SITE CONDITIONS

A. Unfavorable Weather: When weather is such that satisfactory results cannot be secured, suspend operations until the weather is considered favorable.

B. Wet Subgrades: Do not place material on wet or muddy subgrade.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aggregate Base Course shall be crushed limestone from a single source, or approved equivalent.

1. Crushed stone shall conform to the requirements of ASTM C 136, Gradation No. 57
2. Maximum acceptable aggregate size is 1-½ inches.
3. Recycled crushed concrete is not allowed at any time.

B. Geotextile Fabric: conform to Section 310519 Geosynthetics for Earthwork.

C. Water: Clean and potable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of General Conditions: Examine site and verify that conditions are suitable to receive Work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.

B. Subgrade: See Section 312313 Subgrade Preparation.

3.2 PREPARATION

A. Protection of Existing Conditions:

1. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant materials and walks on or adjacent to the site of the Work.
2. Provide barricades, fences or other barriers to protect existing conditions to remain from damage during construction.
3. Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing plants to remain.
4. Submit written notification of damaged plants and structures to the Construction Manager.

B. Subgrade Preparation:

1. Meet requirements for subgrade preparation, per specifications herein and in accordance with Section 312313 Subgrade Preparation, prior to placement of aggregate base.
2. Grade subgrade with uniform slope between points where elevations are given.
3. Use equipment of proper size and appropriate type to achieve grades required.
4. Fill and compact any depressions and remove loose material to finish true to line and grade, presenting a smooth, compacted and unyielding surface, except where indicated otherwise.
5. Remove debris, loose dirt and other extraneous materials.

C. Geosynthetics:

1. Install geotextile fabric in accordance with Section 310519 Geosynthetics for Earthwork and in conformance with New Orleans DPW Standard Drawings.
2. Install geogrid in accordance with Section 310519 Geosynthetics for Earthwork and in conformance with New Orleans DPW Standard Drawings.

3.3 AGGREGATE BASE

A. Pre-wetting Aggregate Base: Meet requirements of Section 312323 Fill, Backfill and Compaction Paragraph 3.9.

B. Placement of Aggregate Base:

1. Spread base in an even distribution of material without perceptible segregation.
2. Method of spreading and field operation shall be acceptable to the Owner at all times and in accordance with these and DPW General Specifications.
3. Shape subbase course and base course to required crown elevations and cross-slope grades.
4. Construct base course in lifts not exceeding 6 inches in depth so that when compacted to the specified density, the finished surface will conform to grades and dimensions shown, with proper allowance for subsequent courses where specified.
5. Construct the base course in an orderly manner so that reasonable size areas will be ready for testing and a reasonable length of time will be allowed for the Owner to perform tests and obtain the test results during normal working hours.
6. Compaction equipment shall be adequate in design and number to obtain the specified density for each layer while still moist.
7. Apply minimal water as needed to obtain the specific densities.
8. Place each layer of base course and compact to the specified density before a succeeding layer is placed.

C. Compacting of Aggregate Base:

1. Compact each lift of base as soon after spreading operations as practicable and continue until a density of 95 percent of the maximum dry density has been achieved as determined in accordance with ASTM D1557.
2. Roll each course of surfacing until the material does not creep under the roller before a succeeding course of surfacing material is applied.
3. At the outer edges of the surfacing and continue toward the center.
4. Add small quantities of sand to stone mix as appropriate to assist compaction.

D. Correction of Surface Defects: Should irregularities develop in any surface during or after rolling, they shall be remedied by loosening the surface and correcting the defects, after which the entire area, including surrounding surfaces, shall be rerolled until thoroughly compacted. Finished surfaces shall be true to grade and crown before proceeding with surfacing.

3.4 SCHEDULE

A. Under Concrete Pavement: Total compacted thickness of 8-inches (Compacted to 95% maximum dry density)

B. Under Asphalt Pavement: Total compacted thickness of 8-inches (Compacted to 95% maximum dry density)

C. Under Composite Pavement: Total compacted thickness of 8-inches (Compacted to 95% maximum dry density)

D. Under Interim Pavement: Total compacted thickness of 12-inches (Compacted to 95% maximum dry density)

3.5 TOLERANCES

A. Aggregate Base Course Variation from Thickness: Plus or minus ½ inch.

B. Aggregate Base Course Finished Surface Smoothness: Plus or minus 1/4-inch.

3.6 FINAL CLEANING

A. Final Clean-up:

1. After work is completed, the entire area shall be neatly finished and trimmed to lines, grades and cross sections shown.
2. Unused aggregate and other materials shall be removed from the site on the day that aggregate base is installed. Grass and paved areas are to be thoroughly cleaned to the extent that all loose aggregate and residual material is completely removed. The site will be left in a condition acceptable to the Engineer’s Resident Inspector.

END OF SECTION 321123

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SECTION 321216 – ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work shall consist of furnishing and constructing one or more courses of asphaltic concrete mixture applied hot in conformance with these specifications and in conformity with the lines, grades, thicknesses and typical sections shown on the plans or established.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with installation of Asphalt Paving.

C. Section Includes:

1. Cold milling of existing asphalt pavement.
2. Hot-mix asphalt patching.
3. Surface Preparatory Coatings.
4. Paving Geotextile Installation.
5. Placing Hot-mix asphalt.
6. Interim Pavement.
7. Joints.
8. Compaction.

D. Related Requirements:

1. Section 024113 Selective Site Demolition
2. Section 310519 Geosynthetics for Earthwork
3. Section 312313 Subgrade Preparation
4. Section 312316 Excavation and Trenching
5. Section 312323 Fill, Backfill and Compaction
6. Section 321123 Aggregate Base Course
7. Section 321313 Concrete Paving
8. Section 321613 Curbs and Gutter

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200 – Unit Prices, for unit price requirements.

B. Measurement:

1. Area Measurement: Measurements will be made as the product of horizontal width and length dimensions of material installed, excluding overlap, and measured in square

yards. Irregular surface areas will be measured as a summation of equivalent non-overlapping rectangles, triangles, circles, partial circles, fillets, or other applicable geometry.

2. Volume Measurement: Measurements will be made as the product of horizontal width, length dimensions and depth of material installed, measured in cubic yards. Irregular surface areas will be measured as a summation of equivalent non-overlapping rectangles, triangles, circles, partial circles, fillets, or other applicable geometry multiplied by the average nominal depth.

3. Weight Measurement: Measurements will be made as a weight measurement in tons (2,000 pounds). For quantities equal to a full truck, the weight will be taken as the certified weight provided on the truck load ticket. For quantities smaller than a full truck (partial loads), the weight will be calculated based on the Volume Measurement (Paragraph 1.3.B.2) multiplied by the compacted density for asphalt.

    a. The asphalt compacted density will be assumed as a standard 150 pounds per cubic foot (2.025 tons per cubic yard) unless the supplier has provided a product data sheet indicating a different density.
    b. The owner and/or construction manager reserve the right to perform testing on compacted samples to determine the actual field compacted density in accordance with ASTM D 2950

C. Payment:

1. Superpave Asphaltic Binder Course: Payment for Superpave Asphaltic Binder Course will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. Superpave Asphaltic Leveling Course: Payment for Superpave Asphaltic Leveling Course will be made at the respective Contract unit bid price as scheduled in Section 012200 per cubic yard (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

3. Superpave Asphaltic Wearing Course: Payment for Superpave Asphaltic Wearing Course will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

4. Interim Pavement (2” Thick): Payment for Interim Pavement will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

5. Cold Planing Asphaltic Pavement (2” Average Thick): Payment for Cold Planing Asphaltic Pavement will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in

accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

D. Reduction in Payment:

1. When asphaltic materials sampled at the point of delivery do not conform to requirements for 100 percent pay, and in the opinion of the Construction Manager have resulted in an unsatisfactory product, the materials shall be removed and replaced or otherwise corrected at no direct pay. The adjustment in pay for asphaltic materials shall be applied only to samples taken at the point of delivery. When test results are such that a payment adjustment would result from more than one test value, the payment adjustment for the greatest reduction shall apply.

1.4 REFERENCE STANDARDS

A. New Orleans Department of Public Works Standard Detail Drawings, current edition

B. New Orleans Department of Public Works General Specifications, current edition

C. LADOTD Louisiana Standard Specifications for Roads and Bridges, current edition.

D. LADOTD Qualified Products List (LADOTD QPL)

1. QPL 10 Mineral Filler for Asphaltic Concrete
2. QPL 41 Asphaltic Materials
3. QPL 57 Anti-Strip Additives
4. QPL 67 Hot-Poured Rubberized Asphaltic Joint Sealant

E. LADOTD Testing Procedures Manuals (DOTD TR)

1. DOTD TR 109: Method of Test for Determining the Quantity of Clam Shell in Clam and Reef Shell Mixtures
2. DOTD TR 112: Method of Test for Amount of Material Finer than the No. 200 Sieve in Aggregate by Wash
3. DOTD TR 113: Method of Test for Sieve Analysis of Fine and Coarse Aggregate
4. DOTD TR 119: Method of Test for Determination of Deleterious Materials
5. DOTD TR 120: Method of Test for Sand Equivalent of Soils and Fine Aggregate
6. DOTD TR 300: Method of Test for Determination of Specific Gravity of Aggregate and Mineral Filler for Asphaltic Mixtures
7. DOTD TR 313: Method of Test for Determining the Index of Retained Marshall Stability of Immersed Specimen
8. DOTD TR 317: Method of Test for Water Susceptibility of Asphaltic Concrete Materials
9. DOTD TR 327: Theoretical Maximum Specific Gravity of Asphalt Concrete Mixtures
10. DOTD TR 605: Measuring Thickness and Widths of Base and subbase Courses and Aggregate Type Surface Courses

F. American Society of Testing and Materials (ASTM), Latest Edition

1. ASTM D 692: Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures

2. ASTM D 946: Standard Specification for Penetration-Graded Asphalt Binder for Use in Pavement Construction
3. ASTM D 977: Standard Specification for Emulsified Asphalt
4. ASTM D 979: Standard Practice for Sampling Bituminous Paving Mixtures
5. ASTM D 1073: Standard Specification for Fine Aggregate for Asphalt Paving Mixtures
6. ASTM D 1188: Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
7. ASTM D 2027: Standard Specification for Cutback Asphalt (Medium-Curing Type)
8. ASTM D 2041: Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
9. ASTM D 2726: Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures
10. ASTM D 2950: Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
11. ASTM D 3549: Standard Test Method for Thickness or Height of Compacted Asphalt Mixture Specimens
12. ASTM D 3666: Standard Specifications for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
13. ASTM D 3381: Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction
14. ASTM D 6373: Standard Specification for Performance Graded Asphalt Binder
15. ASTM D 6690: Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements ASTM D 6927: Standard Test Method for Marshall Stability and Flow of Asphalt Mixtures
16. ASTM D 6927: Standard test Method for Marshall Stability and Flow of Asphalt Mixtures

G. American Association of State Highway and Transportation Officials (AASHTO), Latest Edition

1. AASHTO M 29: Standard Specification for Fine Aggregate for Bituminous Paving Mixtures
2. AASHTO M 140: Standard Specification for Emulsified Asphalt
3. AASHTO M 288: Standard Specification for Geosynthetic Specification for Highway Applications
4. AASHTO M 320: Standard Specification for Performance-Graded Asphalt Binder
5. AASHTO T 19: Standard Method of Test for Bulk Density (“Unit Weight”) and Voids in Aggregate
6. AASHTO T 84: Standard Method of Test for Specific Gravity and Absorption of Fine Aggregate
7. AASHTO T 85: Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate
8. AASHTO T 168: Standard Method of Test for Sampling Bituminous Paving Mixtures
9. AASHTO T 245: Standard Method of Test for Resistance to Plastic Flow of Asphalt Mixtures Using Marshall Apparatus
10. AASHTO T 287: Standard Method of Test for Asphalt Binder Content of Asphalt Mixtures by the Nuclear Method

H. Asphalt Institute (AI)

1. AI MS-2: Asphalt Mix Design Methods
2. AI MS-22: Construction of Hot Mix Asphalt Pavements

1.5 SUBMITTALS

A. Product Data: For each type of product.

1. Include technical data and tested physical and performance properties.
2. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
3. Job-Mix Designs: For each job mix proposed for the Work.

B. Qualification Data: For manufacturer and testing agency.

C. Material Certificates: For each paving material. Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.

D. Material Test Reports: For each paving material, by a qualified testing agency.

E. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Asphalt shall be from an approved source listed in the LADOTD QPL 41.

B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.

C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of New Orleans DPW General Specifications and Standard Drawings and LADOTD Standard Specifications of Roads and Bridges (LSSRB), current edition, for asphalt paving work.

1.7 DESIGN AND QUALITY CONTROL OF MIXTURES

A. It is the intent of these specifications that the mixtures produced and placed meet the requirements for 100% payment. The Contractor shall be responsible for production, transportation and laydown of mixtures. Work shall meet the requirements of this Section and be subject to acceptance by the Engineer.

B. The Contractor shall exercise quality control over materials and their assembly, processing, production, hauling, laydown and associated equipment. Quality control is defined as the constant monitoring of equipment, materials and processes to ensure that mixtures produced and laid are uniform, are within control limits, and meet specification requirements. When these specifications are not being met and satisfactory control adjustments are not being made, operations shall be discontinued until proper adjustments and uniform operations are established. Control shall be accomplished by a program independent of, but correlated with, the Owner’s testing and shall ensure that the requirements of the job mix are being achieved and that necessary adjustments provide specification results.

1.8 TESTING AND ACCEPTANCE

A. Acceptance testing for pavement density will be conducted by the Owner. One pavement core for each mix use shall be taken from each sublot within 72 hours after placement. Sampling shall be performed by the Owner using the random number tables shown in DOTD TR 605. When the sampling location determined by random sampling falls within areas that are to be replaced, within 1 foot of the pavement edge, or within 5 feet of a transverse joint; another sampling location will be determined. Samples will be drilled by the Contractor at the locations determined by the Owner. The Director shall transport the cores to the asphalt plant for testing by the Owner's representative. The Contractor's representative will inspect the cores upon delivery to the plant and before any testing is performed on the core. Any damaged cores or cores that are less than 1 3/8"; can be rejected at that time and a new sampling location must be determined and the core re-drilled. The removed pavement shall be replaced with hot or cold mixture and refinished during the work day the coring is performed. Cores less than 1-3/8" thick shall not be used as pavement samples for payment determination. The average density of all cores for each lot shall be greater than 92% of Maximum Theoretical Gravity (TR 327). Roadway density will be calculated using the lot average for Maximum Theoretical Gravity.

B. Lot Sizes: A lot is a segment of continuous production of asphaltic concrete mixture from the same job mix formula produced for a given job at an individual plant. A standard lot will be defined as:
   1. 2000 tons production
   2. Partial lots will require testing at the frequency of one test per 500 tons, and portion thereof.

C. Each lot will be sub-divided into four equal sublots based on expected production. Testing will be conducted as follows:

   1. First Sublot

      a. Tests will be performed on aged specimens compacted to N-design as follows:
         1) Percent Voids
         2) Percent VFA
         3) Percent VMA
      b. Theoretical Maximum Specific Gravity (Gmm)
      c. Gradation, AC Content and Percent Crushed
      d. Aged or un-aged specimens compacted to N-maximum as follows:
         1) Percent Gmm at N-initial
         2) Percent Gmm at N-Maximum

   2. Second Sublot

      a. Theoretical Maximum Specific Gravity (Gmm)
      b. Aged or un-aged specimens compacted to N-maximum as follows:
         1) Percent Gmm at N-initial
         2) Percent Gmm at N-Maximum

   3. Third Sublot

      a. Tests will be performed on aged specimens compacted to N-design as follows:
         1) Percent Voids
         2) Percent VFA

3) Percent VMA
b. Theoretical Maximum Specific Gravity (Gmm)
c. Gradation, AC Content and Percent Crushed
d. Aged or un-aged specimens compacted to N-maximum as follows:
1) Percent Gmm at N-initial
2) Percent Gmm at N-Maximum

4. Fourth Sublot

a. Theoretical Maximum Specific Gravity (Gmm)
b. Aged or un-aged specimens compacted to N-maximum as follows:
1) Percent Gmm at N-initial
2) Percent Gmm at N-Maximum

D. Tests for Theoretical Maximum Specific Gravity, Voids, VMA and VFA shall be conducted by the Owner. If lot averages (minimum two samples) exceed tolerances listed in Superpave Mixture Criteria Table, an adjustment must be made to the mix by the Contractor to bring the mix back within tolerance. If two consecutive lots are out on the same parameter, production must be halted and the mix re-designed.

E. Tests for Gradation, AC Content, and Percent Crushed and for aged or un-aged specimens compacted to N-maximum shall be conducted by the Contractor's Quality Control representative. If lot averages (minimum two samples) exceed tolerances listed in Superpave Requirements Table, an adjustment must be made to the mix by the Contractor to bring the mix back within tolerance. If two consecutive lots are out on the same parameter, production must be halted and the mix re-designed.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:

1. Prime Coat: Minimum surface temperature of 60 deg F.
2. Tack Coat: Minimum surface temperature of 60 deg F.
3. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
4. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

1.10 WARRANTY

A. The Contractor guarantees all materials and workmanship provided under the contract to be free of defects for a total of one (1) year from the date of Final Acceptance.

B. The Contractor guarantees by his execution of the contract, that for a period of one year after the date of Final Acceptance of the project by the Owner all necessary repairs to or replacement of said defective warranted equipment, apparatus, or material and workmanship shall be made by the Contractor at no cost to the Owner.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Aggregates shall come from an approved source and use materials and gradations that have performed satisfactorily in previous installations, and conform to the parameters set in the tables below:

Superpave Requirements				
A. REQUIREMENTS FOR EXTRACTED ASPHALT CEMENT AND AGGREGATE GRADATION				
U.S. (Metric) Sieve Passing	1/2 inch (12.5 mm) Nominal	1/2 inch (12.5 mm) Nominal	1/2 inch (12.5 mm) Nominal	Mix Tolerance [1]
2 inch (50 mm)	--	--	--	± 6
1-1/2 inch (37.5 mm)	--	--	100	± 6
1 inch (25 mm)	--	100	90 - 100	± 6
3/4 inch (19 mm)	100	90 - 100	89 Max.	± 6
1/2 inch (12.5 mm)	90 - 100	89 Max.	--	± 6
3/8 inch (9.5 mm)	89 Max.	--	--	± 6
Np. 4 (4.75 mm)	--	--	--	± 6
No. 8 (2.36 mm)	28 - 58	23 - 49	19 - 45	± 5
No. 16 (1.18 mm)	--	--	--	± 4
No. 30 (600 µm)	--	--	--	± 3
No. 50 (300 µm)	--	--	--	± 3
No. 100 (150 µm)	--	--	--	± 2
No. 200 (75 µm)	2.0 - 10.0	2.0 - 8.0	1.0 - 7.0	± 1.5
Extracted Asphalt, %	--	--	--	± 0.4
Mix Temperature	--	--	--	± 25°F (± 14°C)
Aggregate[2]	A,B,C	A,B,C	A,B,C,D,E	--
B. PAVEMENT REQUIREMENTS				
Density, Min. 92.0 (% of Maximum Theoretical Gravity) Roadway Travel Lane Wearing, Binder and Base Courses				
Density, Min. 89.0 (% of Maximum Theoretical Gravity) Shoulders, Patching and Widening				

[1] Job Mix Formula based on validated mix design. Tolerances apply only to Lot average (2 samples minimum)

[2] A - Gravel, B - Slag, C - Stone approved for wearing course, D - Stone, E - Reclaimed Asphaltic Pavement

FRICTION RATING	DESCRIPTION
I	Aggregates that have a Polish Value of greater than 37 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.

II	Aggregates that have a Polish Value of 35 to 37 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
III	Aggregates that have a Polish Value of 30 to 34 and demonstrate the ability to retain acceptable friction numbers for the life of the pavement.
IV	Aggregates with a Polish Value of 20 to 29

B. Coarse Aggregate: ASTM D 692/D 692M, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

C. Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.

1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

2. Coarse Sand: Coarse sand shall be natural occurring sand processed to meet asphaltic mixture requirements, shall be graded from coarse to fine, and shall be free from vegetative and other foreign matter.

3. Fine Sand: Fine sand shall be natural occurring sand processed to meet asphaltic mixture requirements, and shall be free from vegetative and other foreign matter.

   a. The fine sand shall be non-plastic and no clay balls or clay lumps shall be incorporated into the asphaltic mixture. The gradation shall have a maximum of 35 percent passing the No. 200 sieve. Clay lumps shall not exceed 1.00 percent by weight when sampled from the stockpile and tested in accordance with DOTD TR 119.

   Natural Sand: Natural sand shall be coarse sand or a combination of coarse sand and fine sand which is used in the asphaltic concrete mixture. Natural sand shall consist of clean, hard, durable, siliceous grains graded from coarse to fine and shall be reasonably free from vegetative matter or other deleterious materials. The sand equivalent of the fraction passing the No. 4 sieve of the natural sand in the asphaltic concrete mixture shall be less than 35 when tested in accordance with DOTD TR 120.

4. Crushed Shell: Shell material shall consist of clam or reef shell. Foreign matter (DOTD TR 109) such as silt and clay shall not exceed 5 percent, and such material shall be dispersed throughout the mass.

5. Screenings: When used, shall be made by crushing aggregates which conformed to the requirements for coarse aggregates in DPW General Specifications materials section. Screenings shall meet the following gradation requirements:

U.S. Sieve	Percent Passing
3/8"	100
No. 4	80 - 100

D. Mineral Filler: Shall be an approved product listed on LADOTD QPL 10 and shall consist of limestone dust, pulverized hydrated lime, shell dust, portland cement, or cement stack dust. Mineral dust collected in bag houses or by other dust collectors at asphaltic concrete plants is not classified as mineral filler. Cement stack dust shall consist of material collected form waste rotary kiln gases discharged through a collector of a cement plant. Mineral filler shall conform to the following gradation:

U.S. Sieve	Percent Passing
No. 30	100
No. 80	95 - 100
No. 200	70 - 100
No. 270	60 - 100

Mixtures of aggregate, filler and asphalt, in proportions to meet the requirements of mixes being used, shall have an index of retained Marshall Stability (DOTD TR 313) of at least 85 percent, and a maximum of 1.0 percent volumetric swell (DOTD TR 313).

E. In addition to the test methods given in each subsection, the following methods shall be used in testing aggregates:

Property	Test Method
Deleterious Materials	DOTD TR 119
Foreign Matter in Shell	DOTD TR 109
Unit Weight	AASHTO T 19
Specific Gravity & Absorption of Coarse Aggregate	AASHTO T 84
Polish Value	AASHTO T 85
Amount of Material Finer than No. 200 Sieve	AASHTO T 278
Sieve Analysis (Gradation)	DOTD TR 112
Specific Gravity of Aggregate for Asphaltic Mixtures	DOTD TR 113
Liquid Limit and Plasticity Index	DOTD TR 300

When the No. 200 sieve is included in the gradation requirements, the results obtained by washing in accordance with DOTD TR 112 shall be added to that obtained by dry sieving in accordance with DOTD TR 113, unless otherwise specified.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: ASTM D 6373 or AASHTO M 320 binder designation PG 64-22.

B. Asphalt Cement: Asphalt Cement grades used are specified in the table below. ASTM D 3381 for viscosity-graded material ASTM D 946 for penetration-graded material.

Superpave Asphalt Cement Usage

Current Traffic Load Level	Mixture Type[1]	Grade of Asphalt Cement
Level A	Incidental Wearing Course	PG64-22
Level 1	Binder and Wearing Course	PG64-22
	Base Course	PG64-22*

[1] Nominal aggregate size must conform to the Lift Thickness requirements listed in Superpave Mixture Criteria

* Binder and Base Course containing between 20 and 30 percent RAP shall use PG58-28. All Wearing Courses shall use PG64-22

C. Cutback Prime Coat: ASTM D 2027, prime coat shall be cutback asphalt Grade MC-30, MC-70, or AEP Emulsified Asphalt conforming to New Orleans DPW Specifications, current edition.

PRIME COATS

	Application Rate (Gallon/square yard)		Application Temperature(°F)	
Asphalt Grade	**Min.**	**Max.**	**Min.**	**Max.**
MC-30	0.15	0.30	60	120
MC-70	0.15	0.30	100	180
AEP	0.15	0.30	60	120

D. Emulsified Asphalt Prime Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt.

E. Tack Coat: ASTM D 977 or AASHTO M 140 modified asphalt emulsion (Grade SS-1, SS-1H or CMS-2) or a modified asphalt emulsion (Grade CRS-2P, CRS-2L, SS-1P or SS-1L) conforming to New Orleans DPW Specifications, current edition.

F. Water: Potable.

G. Wearing Courses shall be ½" Nominal Size and Binder and Base Courses shall be ¾" or 1" Nominal Size and conforming to the Lift Thickness shown in the table below:

Superpave Mixture Criteria					
Nominal Max., Size Agg.	0.5 inch		0.75 inch	1.0 inch	
Type of Mix	Incidental Paving	Wearing Course	Binder course	Binder Course	Base Course
Level	A	1	1	1	1
Asphalt Binder	Superpave Asphalt Cement Usage Table (2.2.B)				
Coarse Agg. Angular-ity, + No. 4	55	75	75	75	75

Fine Agge. Angularity, Min. % - No. 4	40	40	40	40	40
Flat and Elongated Particles, % Max. (5:1) + No. 4	10				
Sand Equivalent, Min % (Fine Agg.) - No. 4	40	40	40	40	40
Natural Sand, Max % of New Agg.	N/A	15	15	15	15
RAP, Max. % of Mix[1]	20	20	30	30	30
Compacted Mix Volumetrics					
VMA, Min. %	13	13	12	11	11
Air Voids, %	2.5 - 4.5				
VFA, %	68 - 78				
$N_{initial}$ 91% Max. (Gyrations)	7	7	7	7	7
N_{design} 96.5 ± 1.5% (Gyrations)	75	75	75	75	75
N_{max} 98% Max. (Gyrations)	115	115	115	115	115
Moisture Sensitivity, TSR Min.	80				
Dust/Effective Asphalt Ratio, %	0.6 - 1.6				
Lift thickness, Inch	1.5 - 2.0	1.5 - 2.0	2.0 - 3.0	2.5 - 4.0	2.5 +

[1] For RAP percentages between 20 and 30 percent, use asphalt cement grade PG58-28

2.3 AUXILIARY MATERIALS

A. Recycled Materials for Hot-Mix Asphalt Mixes: Use of recycled asphalt in asphaltic concrete mixes is not allowed. Use virgin materials only with aggregate sizes suitable to the application.

B. Herbicide: Commercial chemical for weed control, registered by the EPA, and not classified as "restricted use" for locations and conditions of application. Provide in granular, liquid, or wettable powder form.

C. Sand: ASTM D 1073 or AASHTO M 29, Grade No. 2 or No. 3.

D. Paving Geotextile: AASHTO M 288 paving fabric; nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.

E. Joint Sealant: ASTM D 6690 Type II or III, hot-applied, single-component, polymer-modified bituminous sealant and should be an approved product listed in LADOTD QPL 57.

2.4 MIXES

1. Surface Course Limit: Recycled content no more than 10 percent by weight.

B. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by the Construction Manager and designed according to procedures in AI MS-2, "Asphalt Mix Design Methods" and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Base Course: PG 64-22.
3. Surface Course: PG 64-22.

2.5 ADDITIVES

A. Anti-Strip: Anti-strip additives for asphaltic materials shall be approved products listed in LADOTD QPL 57 and will be tested in accordance with DOTD TR 317.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.

B. Subgrade Preparation: See Section 312313 Subgrade Preparation

C. Sawcutting Pavements: See section 024113 Selective Site Demolition

D. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

E. Base Course: See Section 321123 Aggregate Base Course

3.3 COLD MILLING/PLANING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling/planing to grades and cross sections indicated.

1. Mill to a depth of 2 inches, or depth indicated on plans.
2. Mill to a uniform finished surface free of excessive gouges, grooves, and ridges.
3. Control rate of milling to prevent tearing of existing asphalt course.
4. Repair or replace curbs, gutterbottoms, driveway aprons, manholes, and other construction damaged during cold milling.
5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
6. Patch surface depressions deeper than 1 inch after milling, before wearing course is laid.
7. Handle milled asphalt material according to approved waste management plan required in Section 017419 "Construction Waste Management and Disposal."
8. Keep milled pavement surface free of loose material and dust.
9. Do not allow milled materials to accumulate on-site.

3.4 ASPHALT PATCHING AND REPAIRS

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base in accordance with Section 312316 Excavation and Trenching. Cut and remove rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply at a rate of 0.02 to 0.08 gal./sq. yd.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

C. Placing Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

D. Leveling Course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch in existing pavements.

1. Install leveling wedges in compacted lifts not exceeding 3 inches thick.

3.5 SURFACE PREPARATORY COATINGS

A. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

1. Mix herbicide with prime coat if formulated by manufacturer for that purpose.

C. Cutback Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd. . Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

D. Emulsified Asphalt Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.30 gal./sq. yd. per inch depth. Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

E. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.02 to 0.08 gal./sq. yd. and in accordance with the table below.

1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

ASPHALTIC TACK COATS

Existing Surface	Rate (gal/sq. yd.)[1]
Bleeding Surface Treatment	0.02
Dry Surface Treatment	0.03
New Hot Mix	0.03
Old Hot Mix	0.07
Portland Cement Concrete	0.07
Friction Course	0.05
Cold Planed Surface[2]	0.08

[1] Rate are minimum rates of undiluted asphaltic material

[2] Minimum of two applications

3.6 PAVING GEOTEXTILE INSTALLATION

A. Place paving geotextile promptly according to manufacturer's written instructions. Broom or roll geotextile smooth and free of wrinkles and folds. Overlap longitudinal joints 4 inches and transverse joints 6 inches.

B. Protect paving geotextile from traffic and other damage, and place hot-mix asphalt overlay the same day.

3.7 PLACING HOT-MIX ASPHALT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
2. Place hot-mix asphalt surface course in single lift.
3. Spread mix at a minimum temperature of 250 deg F.
4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 2 inches from strip to strip to ensure proper compaction of mix along longitudinal joints.
2. Complete a section of asphalt base course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

D. When the use of mechanical finishing equipment is not practical, the mix may be placed and finished by hand to the satisfaction of the Construction Manager. No casting will be allowed including casting the mixture from the truck to the grade. During paving operations material shall be thoroughly loosened and uniformly distributed. Material that has formed into lumps and does not break down readily will be rejected. The surface shall be checked before rolling and irregularities corrected.

E. No loads shall be sent out so late in the day that completion of spreading and compaction of the mixture cannot be completed during daylight, unless artificial lighting has been approved.

3.8 INTERIM PAVEMENT

A. The Contractor shall install, maintain, and remove interim asphaltic concrete pavement within trench areas in concrete as directed by the Engineer. The Contractor shall maintain the grade and profile of interim pavement at each location until the permanent pavement is restored. At any time, should the Engineer determine that the condition of Interim Pavement is unacceptable, the Contractor shall replace or repair the work to the satisfaction of the Engineer and at no additional expense to the Owner.

B. At any time, should the Engineer determine that the installation of additional Interim Pavement is in the best interest of the Board, the Contractor will perform the additional work and will accept compensation for this work in accordance with Section 012200 Unit Prices.

C. Density tests must be performed on the roadway base and sub-base materials. The Contractor shall not place pavement until material has been uniformly compacted and densities meet or exceed the density requirements specified herein.

D. The Contractor shall provide a clean straight edge on abutting roadways via sawcutting in conformance with Paragraph 3.2.C above. Jagged, pointed edges are not acceptable.

E. It will be the Contractor's responsibility to establish a level, uniform surface which transitions smoothly to adjoining pavement. This condition is to be maintained over the life of the Interim Pavement.

F. The Contractor shall clearly and legibly mark all temporary restoration sites “Interim Pavement” with orange paint using stenciled block letters. Four-inch letters shall be used on all roadway surfaces and three-inch letters shall be used on all driveways and sidewalks. In instances where one (1) site exceeds twenty five (25) feet in length additional “Interim Pavement” markings shall be used at twenty-five foot intervals.

G. Contractor shall re-stencil “Interim Pavement” at locations that become worn or faded or whenever necessary as determined by the Engineer.

3.9 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."
5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.10 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compaction shall be conducted by uniform methods that will obtain specified densities and smoothness. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Equipment:

1. Steel Wheel Rollers: Steel wheel rollers may be either vibratory or nonvibratory. Wheels shall be true to round and equipped with suitable scrapers and watering devices. Vibratory rollers shall be designed for asphaltic concrete compaction and shall have separate controls for frequency, amplitude and propulsion. The use of steel wheel rollers which result in excessive crushing of aggregate will not be permitted.

C. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

D. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 96 percent of reference laboratory density according to ASTM D 6927 or AASHTO T 245, but not less than 94 percent or greater than 100 percent.
2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent or greater than 96 percent.

E. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

F. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

G. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

H. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.11 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Base Course: 1/4 inch.
2. Surface Course: 1/8 inch.
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.12 FIELD QUALITY CONTROL

A. Testing Agency: The Owner will engage a qualified testing agency to perform tests and inspections. Any deviation from the specifications will result in a payment adjustment as specified.

B. Samples taken at the refinery or supplier shall conform to specification requirements. When the refinery or supplier sample fails to meet these requirements, the material will be rejected and shall not be shipped to the jobsite.

C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

E. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979 or AASHTO T 168.

1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726

    a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than three cores taken.
    b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

F. Replace and compact hot-mix asphalt where core tests were taken.

G. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.13 WASTE HANDLING

A. General: Handle asphalt-paving waste according to approved waste management plan required in Section 017419 Construction Waste Management and Disposal.

3.14 OPENING FOR TRAFFIC

A. No traffic shall be permitted on the pavement until six (6) hours after compaction.

3.15 ASPHALT PAVING SCHEDULE

A. See Section 320600 Schedules for Exterior Paving and Sodding

1. Pavement thickness for asphaltic concrete roadways is scheduled for five inches (5”) of binder course and two inches (2”) of wearing course.
2. Asphaltic pavement thickness for composite roadways is scheduled for leveling binder course as required and two inches (2”) of wearing course.

B. Asphaltic thickness for interim pavement is scheduled for two inches (2”) of wearing course

END OF SECTION 321216

SECTION 321313 – CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of constructing roadway pavement in compliance with the specifications and in accordance with the locations, lines, grades, slopes, thickness, sections and strength shown on the plans and included herein.

B. Roadway pavement shall be of the size and shape shown on the plans including integral curbs and shall consist of one course of concrete with joints, dowels, etc. as called for in the plans and details.

C. The Contractor shall provide all supervision, labor, material, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with Concrete Paving installation.

D. Section Includes:

1. Edge Forms.
2. Steel Reinforcement.
3. Joints.
4. Concrete Placement.
5. Concrete Finishing.
6. Protection and Curing.
7. Joint Filling.

E. Related Requirements:

1. Section 312313 Subgrade Preparation
2. Section 312323 Fill, Backfill and Compaction
3. Section 320600 Schedules for Exterior Paving and Sodding
4. Section 321123 Aggregate Base Course
5. Section 321613 Curbs and Gutters

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Area Measurement: Measurements will be made as the product of horizontal width and length dimensions of material installed, excluding overlap, and measured in square yards.

Irregular surface areas will be measured as a summation of equivalent non-overlapping rectangles, triangles, circles, partial circles, fillets, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Reinforced Concrete Roadway Pavement (8" Thick): Payment for Reinforced Concrete Pavement (8" Thick) will be made at the respective Contract unit bid price as scheduled in Section 012200 per Area Measurement (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

1.4 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.5 SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1. Indicate amounts of mixing water to be withheld for later addition at Project site.

C. Joint Layout: Indicate proposed joints required to construct the roadway according to specifications.

1. Location of construction joints is subject to approval of the Construction Manager.

D. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.

E. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Admixtures.
3. Form materials and form-release agents.
4. Steel reinforcement and reinforcement accessories.
5. Curing compounds.
6. Bonding agents.
7. Adhesives.
8. Semi-rigid joint filler.
9. Joint-filler strips.

10. Repair materials.
11. Applied finish materials.
12. Bonding agent or epoxy adhesive.

1.6 REFERENCE STANDARDS

A. City of New Orleans Department of Public Works

1. General Specifications, current edition.
2. Standard Detail Drawings, current edition.

B. American Association of State highway and Transportation Officials, “Standard Specifications for Transportation, Materials, and Methods of Sampling & Testing” (AASHTO).

1. AASHTO M 173: Concrete Joint Sealer, Hot Poured Elastic Type.
2. AASHTO M 182: Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats.
3. AASHTO M 254: Corrosion-Resistant Coated Dowel Bars.
4. AASHTO T 44: Standard Method of Test for Solubility of Bituminous Material.
5. AASHTO T 48: Standard Method of Test for Flash and Fire Points by Cleveland Open Cup.
6. AASHTO T 49: Standard Method of Test for Penetration of Bituminous Materials.
7. AASHTO T 51: Standard Method of Test for Ductility of Bituminous Materials.
8. AASHTO T 53: Standard Method of Test for Softening Point of Bitumen.
9. AASHTO T 55: Standard Method of Test for Water in Petroleum Products and Bituminous Materials by Distillation.
10. AASHTO T 111: Standard Method of Test for Mineral Matter or Ash in Asphalt Materials.
11. AASHTO T 187: Standard Method of Test for Concrete Joint Sealers.

C. American Concrete Institute (ACI)

1. ACI 117: Specification for Tolerances for Concrete Construction and Materials.
2. ACI 301: Standard Specifications for Structural Concrete
3. ACI 304R-00: Guide for Measuring, Mixing, Transporting, and Placing Concrete.
4. ACI 306.1-90: Standard Specifications for Cold Weather Concreting.
5. ACI 325.9R-15: Guide for Construction of Concrete Pavements

D. American Society of Testing and Materials (ASTM)

1. ASTM A 171: Standard Specification for Sheet Materials for Curing Concrete.
2. ASTM A 184: Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement.
3. ASTM A 615: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
4. ASTM A 767: Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
5. ASTM A 775: Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
6. ASTM A 780: Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
7. ASTM A 996: Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement

8. ASTM A 1064: Standard Specification for Carbon-Steel Wire and Welded wire Reinforcement, Plain and Deformed, for Concrete.
9. ASTM C 31: Standard Practice for Making and Curing Concrete Test Specimens in the Field
10. ASTM C 39: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
11. ASTM C 33: Standard Specification for Concrete Aggregates.
12. ASTM C 94: Standard Specification for Ready-Mixed Concrete.
13. ASTM C 136: Standard Test for Sieve Analysis of Fine and Coarse Aggregates
14. ASTM C 143: Standard Test Method for Slump of Hydraulic Cement Concrete
15. ASTM C 172: Standard Specification for Sampling Freshly Mixed Concrete
16. ASTM C 150: Standard Specification for Portland Cement.
17. ASTM C 231: Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
18. ASTM C 260: Standard Specification for Air-Entraining Admixtures for Concrete.
19. ASTM C 309: Standard Specification for Liquid Membrane-Forming Compound for Curing Concrete.
20. ASTM C 494: Standard Specification for Chemical Admixtures for Concrete.
21. ASTM C 618: Standard Specification for Coal Fly Ash and raw or Calcined natural Pozzolan for use in Concrete.
22. ASTM C 989: Standard Specification for Slag Cement for Use in Concrete and Mortars.
23. ASTM C 1064: Standard Test Method for Temperature of Freshly Mixed Hydraulic Cement Concrete
24. ASTM C 1077: Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
25. ASTM D 1751: Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
26. ASTM D 1752: Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
27. ASTM D 3963: Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars
28. ASTM E 329: Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

E. American Wood Preservers Association (AWPA).

F. Concrete Reinforcing Steel Institute (CRSI).

1. Manual of Standard Practice

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.

B. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of New Orleans DPW General Specifications and Standard Drawings and LADOTD

Standard Specifications of Roads and Bridges (LSSRB), current edition, for concrete paving work.

1.8 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1-90 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 306.1, but no less than 50 deg F at all times.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
4. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
5. Concrete shall not be placed when the air temperature is below 32 deg F, or forecasted to go below 32 deg F within 12 hours.

B. Hot-Weather Placement: Comply with ACI 301 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement.
   a. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water.
   b. Using liquid nitrogen to cool concrete is Contractor's option.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete.
   a. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.
3. Concrete placed with a temperature of 95 deg F or higher will be rejected by the Owner, then removed and replaced by the Contractor at no additional compensation.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Concrete: Conform to ACI 304R-00 and ASTM C 94.

B. Concrete not placed within 1-1/2 hours after initial injection of water to the mix will be rejected by the Owner.

C. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.10 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.11 WARRANTY

A. The Contractor guarantees all materials and workmanship provided under the contract to be free of defects for a total of one (1) year after the contractual date of Final Acceptance.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. Comply with the following ACI publications unless modified by the requirements in this Contract.

1. ACI 325.9R-15

2.2 FORMS

A. Straight Sided Forms:

1. Straight sided forms shall be constructed of metal.
   a. Minimum Thickness: $^{7}/_{32}$”
   b. Minimum Length: 10-ft
      1) Exception: for curves with a radius greater than 150-ft, shorter straight forms will be permitted.
   c. Minimum Depth: 80% of the concrete edge thickness.

B. Curved Forms or Flexible Forms:

1. Curved for Flexible forms are required for curves with a radius of or less than 150-ft.
2. Forms shall be secured in a manner to prevent movement during construction.
3. Flange braces shall extend outward on the base not less than 2/3 of the height of the forms.

C. Damaged forms, battered surfaces, bent, twisted or otherwise broken and/or repaired are not permitted.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

1. Exception: The weld-shear strength requirement shall be extended to include a wire size differential up to and including six gauge.

B. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, flat sheet.

1. Exception: The weld-shear strength requirement shall be extended to include a wire size differential up to and including six gauge.

C. Reinforcing Bars: ASTM A 615, Grade 60; deformed.

D. Steel Bar Mats: ASTM A 184; with ASTM A 615, Grade 60 deformed bars; assembled with clips.

E. Plain-Steel Wire: ASTM A 1064/A 1064M.

F. Joint Dowel Bars: ASTM A 615, Grade 60, plain-steel bars.

1. Cut bars true to length with ends square and free of burrs.
2. Zinc Coating: ASTM A767, Class 1.

G. Plastic Coated, Joint Dowel Bars: ASTM A 615, Grade 60, plain-steel bars.

1. Cut bars true to length with ends square and free of burrs.
2. Coating: ASTM A 775 and/or AAHTO M 254.
   a. Coating shall be scheduled as per the current DPW requirements in Section C601.04

H. Tie Bars: ASTM A 615, Grade 60; deformed.

I. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

J. Coating Repairs:

1. Zinc Coating Repair Material: ASTM A 780
2. Epoxy Repair Coating Material: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

2.4 CONCRETE MATERIALS

A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

B. Cementitious Materials:

1. Cement: Portland Cement Type I or II conforming to ASTM C 150.
2. Fly Ash: ASTM C 618, Class C for use in pavement only (not in structural).
3. Ground granulated Blast Furnace slag shall meet the requirements of ASTM C 989.

C. Aggregate, Normal Weight:

1. Fine aggregate shall be a clean natural sand conforming to the requirements of ASTM C 33 and ASTM C 136.
2. Coarse aggregate shall be clean, hard, durable gravel or crushed stone conforming to the requirements of ASTM C 33 and ASTM C 136, Gradation AASHTO No. 467 or 57. Recycled crushed concrete is not allowed at any time.
3. Maximum Coarse Aggregate Size: 1-1/2-inches
4. Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixtures:

1. Air Entraining Admixtures: Conform to ASTM C 260.

E. Chemical Admixtures:

1. Water Reducing Admixtures: Conform to ASTM C 494.
2. Retarding Admixtures: Conform to ASTM C 494.
3. Superplasticizers: Conform to ASTM C 494, Type F or Type G.

F. Water:

1. Potable and complying with ASTM C 94.

2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3 burlap cloth.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Curing Compounds: ASTM C 309, Type 2; White pigmented, Waterborne, Membrane-Forming and Impervious.

2.6 RELATED MATERIALS

A. Expansion Joint Fillers, Wood: ¾-inch thick lumber limited to the selection of: clear-heart redwood, clear-heart western red cedar, Idaho white pine, wester white spruce, northern white pine, sugar pine, western hemlock, white fir or other lumber material approved by DPW.

B. Expansion Joint Fillers, Preformed: ¾-inch thick preformed such as ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

C. Metal Parting Strips: Strips used to for keyed joints shall be 16-guage galvanized steel.

D. Joint Sealing Compound: Contractor may use any of the below joint sealing compounds as permitted by DPW.

1. Hot Poured Asphalt Mineral Filler: Asphalt mineral filler shall be homogenous and shall be composed of asphalt and mineral filler. The asphalt shall be free from impurities. Asphalt mineral filler shall conform to the following requirements:

PROPERTY	AASHTO TEST METHOD	REQUIREMENT	
		MAXIMUM	MINIMUM
Softening Point, Ring and Ball Method, ºF	T 53	125	145
Penetration at 32ºF, 200 grams, 60 seconds	T 49	15	--
Penetration at 77ºF, 100 grams, 5 seconds	T 49	50	70
Ductility at 77ºF, cm	T 51	15	--
Asphalt, %	T 44	45	55
Mineral Filler, %	T 44	45	55
Water, %	T 55	--	2

2. Hot Poured Elastic Asphaltic Type: This sealer shall conform to AASHTO Designation M 173, except the pour point test will be performed only as deemed necessary.
3. Hot Poured Catalytically Blown Asphalt: Catalytically blown asphalt shall be uniformly blended with 10% diatomaceous earth filler which passes the No. 325 sieve. It shall form a suitable joint and crack sealer which may be melted to pouring consistency in a regular asphalt kettle at a temperature of 400ºF to 485ºF. The material shall conform to the following requirements:

PROPERTY	AASHTO TEST METHOD	REQUIREMENT	
		MAXIMUM	MINIMUM
Penetration at 77ºF, 100 grams, 5 seconds	T 49	68	88
Penetration at 32ºF, 200 grams, 60 seconds	T 49	38	--
Penetration at 115ºF, 50 grams, 5 seconds	T 49	--	160
Softening Point, Ring and Ball Method, ºF	T 53	175	200
Flash, Cleveland Open Cap Method, ºF	T 48	500	--
Specific Gravity, 77/77 %F	--	1.02	--
Ductility at 77ºF, 5 cm/minute, cm	T 51	5	--
Flow, 140ºF, cm	T 187	8	0.5
Ash Weight, %	T 111	8	20
Ductility at 77ºF, cm	M 190-5.3.1	No Cracking	

4. Cold Applied Sealing Compound: The Contractor may use cold applied sealing compound such as silicon sealants. Silicon rubber base joint sealing compound shall conform to Federal Specifications TT-S-001543A for Class A sealants.
5. Preformed Sealant: The Contractor may use a 1.25” Preformed Elastomeric Compression Seal sized for the width of the joint.
6. Silicone Sealant: The Contractor may use a single part silicone joint sealant with the use of a full width preformed backer material

2.7 CONCRETE MIXTURES

A. Design Mixture: Proportion in accordance with ACI 301, for each type of required concrete and as determined by laboratory trial mixtures and field experience.

1. Mix design shall be forwarded to the Contractor and Engineer within 48 hours of receipt.

B. Cementitious Materials:

1. Minimum Cementitious Content: 500 pounds per cubic yard.
   a. High Early Strength Minimum Cementitious Content: 658 pounds per cubic yard.
2. Fly Ash: 30 percent cementitious content, limited to 150 pounds per cubic yard.
3. Slag Cement: 50 percent cementitious content.

C. Air-Entraining Admixture:

1. Use per manufacturer’s prescribed rates to result in normal-weight concrete at time of placement to have:
2. Air Content: 5 percent plus or minus 1-1/2 percent.

D. Chemical Admixtures:

1. Use admixtures according to manufacturer's written instructions.
2. Use water-reducing, plasticizing and/or retarding admixtures in concrete as required for placement and workability.
3. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

E. Concrete Mixture: Normal Weight Concrete:

1. Compressive Strength (28 Days): 4,000 psi.
2. Maximum W/C Ratio at time of placement: 50 percent.
3. Slump Limit: 4 inches.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete:

1. Measure, batch and mix concrete materials and concrete: ASTM C 94.
2. Concrete Mixing shall also comply with ACI 304R-00.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subgrade in accordance with Section 312313 Subgrade Preparation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Install Aggregate base course in accordance with Section 321123 Aggregate Base Course.

B. Remove loose material from compacted base surface immediately before placing concrete.

C. Ensure base course is maintained “moist” prior to concrete placement. Sprinkle base course with potable water if the base course is dry and in a manner that does not disrupt the grades and profiles of the base course surface. There should be no visible pockets of mud, ruts, ridges or pools of water.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations.

B. Any form(s) has been disturbed or any grade has become unstable, the form shall be reset and rechecked prior to the placement of concrete.

C. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

D. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORMCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of dirt, oil, paint, grease, loose or thick rust and mill scale, earth, ice, or other bond-reducing materials.

C. All reinforcing shall be bent, placed and secured exactly as required in accordance with paving plan details and schedules.

D. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Use wiring and or blocking as required to securely hold in position. Maintain minimum cover to reinforcement.

E. Secure all reinforcement at intersections to prevent displacement during compaction.

F. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

G. Zinc-Coated Reinforcement: Use galvanized-steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.

H. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.

I. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete.

1. Set all construction joints in accordance with the current DPW Standard Drawing Sheets "Typical Roadway Sections for Street Construction" numbered "RW2" through "RW3".
2. Construct transverse joints at right angles to centerline unless otherwise indicated.
3. Longitudinal joints shall be used when the panel widths are greater than 15 feet in width.
4. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
5. Bars shall be positioned parallel to the pavement centerline and surface.
6. Bars shall be firmly held in position by the mechanical device until concrete has been thoroughly consolidated around the bars.
7. An approved sleeve shall be furnished with each dowel bar used in expansion joints.
    a. The sleeve shall fit the dowel bar tightly and the closed end shall be watertight.

B. Construction Joints:

1. Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
2. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
3. Provide tie bars at sides of paving strips where indicated.
4. Butt Joints: Use bonding agent or epoxy-bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
5. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated on the standard drawings.
6. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or grease one-half of dowel length to prevent concrete bonding to one side of joint.

C. Expansion Joints: Form expansion joints of wood or preformed joint-filler strips, transversely isolating concrete panels as required and where indicated.

1. Locate expansion joints at all intersections, points of curvature, at equally spaced intervals of 150 feet or less and anywhere else indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler 3 inches below finished surface for 8 inch thick pavement; 3.5 inches below for thicker pavement sections.
4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
5. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

E. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated.

1. Refer to the DPW Standard Drawings for the required depth of contraction joints.
2. Locate contraction joints at, at equally spaced intervals no less than 10 feet and no greater than 15-ft and anywhere else indicated.

3. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 3/8-inch thickness. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
    a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.
4. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
    a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.
5. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated.
    a. Spot weld dowels on alternating sides of the dowel basket.
    b. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to the opposing side of joint from the spot weld.

F. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/8-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Moisten base to provide a uniform dampened condition at time concrete is placed (Paragraph 3.2.C).

C. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

E. Deposit and spread concrete in a continuous operation between transverse joints.

1. Concrete shall be deposited on the grade in such a manner to minimize the amount of handling.
2. Do not push or drag concrete into place or use vibrators to move concrete into place.
3. Necessary spreading shall be done with square-faced shovels or other approved tools, excluding rakes.
4. Do not use intermediate bulkheads.
5. Concrete shall be spread in a manner that prevents segregation.

F. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Concrete shall be consolidated by using vibrating screeds or internal vibrators.
2. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator.

3. Keep vibrator away from joint assemblies, reinforcement, or side forms.
4. Use only square-faced shovels for hand spreading and consolidation.
5. Consolidate with care to prevent dislocating reinforcement, dowels and joint devices.

G. Screed paving surface with a straightedge and strike off as soon as placement is complete.

1. The screed shall be two feet longer than the maximum width of the slab to be struck off.
2. The screed shall be approved design, sufficiently rigid to retain its shape and constructed of either metal or other suitable material shod with metal.

H. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface.

1. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

I. Curbs and Gutters: See Section 321613.

3.7 FINAL FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

1. Where an exception is permitted by DPW, the addition of water shall be performed by means of an approved fog spray equipment.

B. During final finishing, all areas that are improperly finished shall be refloated and refinished as required.

C. Finishing Machine Operations: Operate in a forward manner to avoid damage or misalignment of joints and shall be stopped where the screed is eight-inches from a joint.

1. Segregated concrete shall be removed from in front of and from on top of the joint.
2. The front screed shall be lifted and gently set on top of the joint and resume forward motion.
3. When the second screed is close enough to the joint to cause excess mortar to flow in front or over the joint, the machine should be stopped and the second screed should be lifted and carried over the joint.
4. Thereafter for successive runs, the machine may run over the joints without lifting the screed.
5. The screed shall be moved forward on forms with a combined longitudinal and transverse shearing motion, moving always in the direction in which the work is progressing and so manipulated that neither end is raised from the side of the forms during the strike-off process.
6. Process shall be repeated until the surface has a uniform texture, is true to grade and cross-section and is free from porous area.

D. Machine Finishing: Vibrators for full width vibration of the concrete paving slabs shall not be operated for any longer than 15 seconds in one location.

1. If uniform and satisfactory density of concrete is not obtained by the vibratory method at joints, along forms, at structures or throughout the pavement, the Contractor shall furnish equipment and use methods which will provide pavement conforming to the specifications.

E. Hand Finishing: Hand finishing is not permitted except where the size or shape of the pavement area makes machine finishing impractical.

3.8 FLOAT FINISHING

A. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

B. Longitudinal Float Method: The mechanical longitudinal float shall be of a design approved by the Construction Manager and shall be in good working condition. The tracks from which the float operates shall be accurately adjusted to the required crown. The float shall be accurately adjusted and coordinated with the adjustments of the transverse finishing machine so that a small amount of mortar is carried ahead of the float at all times. The forward speed shall be adjusted so that the float will lap the distance specified by the area of pavement at least twice. Excessive operation over a given area will not be permitted. Any excess water or soupy material shall be wasted over the side forms on each pass.

C. Pan Float Method: The Contractor may use a machine composed of cutting and smoothing float or floats suspended from and guided by a rigid frame. The frame shall be carried by four or more visible wheels riding on and constantly in contact with the side forms.

D. If necessary, following one of the preceding methods of floating, long handled floats, having blades not less than 5-feet in length and 6-inches in width, may be used to smooth and fill in open-textured areas in the pavement. Long handled floats shall not be used to float the entire surface of the pavement in lieu of, or supplementing one of the preceding methods of floating. When strike-off and consolidation are done by hand methods and the crown of the pavement will not permit use of the longitudinal float, the surface shall be floated transversely by means of the long handled float. Care shall be taken not to work the crown out of the pavement during the operation. After floating, any excess water and laitance shall be removed from the surface of the pavement by a straightedge, 10-feet or more in length. Successive drags shall be lapped one-half the length of the blade.

E. Straightedge Testing and Surface Correction: After floating has been completed and excess water removed, but while the concrete is still plastic, the surface of the concrete shall be tested for trueness with an accurate 10-feet straightedge swung from handles approximately 3-feet longer than one-half the width of the slab. The straightedge shall be furnished and used by the Contractor. It shall be held with the surface in successive positions parallel to the road centerline and the whole area gone over from one side of the slab to the other as necessary. Advancement along the road shall be in successive stages of not more than one-half the length of the straightedge. Ant depressions found shall be immediately filled with freshly mixed concrete, struck off, consolidated and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure the surface across the joints meets with requirements for smoothness. Straightedge testing and surface corrections shall continue until entire surface is found to be free from observable departures from the straightedge and the slab conforms to the required grade and cross-section.

F. Final Finish and Texture: Unless otherwise specified, the final finish and texture shall be obtained using a broom in accordance with this section. The surface texture shall be a broom finish.

1. It shall be applied when the water sheen has practically disappeared.
2. The broom shall be drawn from the center to the edge of the pavement with adjacent strokes slightly overlapping.
3. The brooming operation shall be so executed that the corrugation produced in the surface shall be uniform in appearance and not more than 1/16-inches in depth.
4. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation.
5. The finished surface shall be free from rough and porous areas, irregularities and depressions resulting from improper handling of the broom.
6. Brooms shall be of such quality, size and construction and be so operated as to produce a surface finish meeting the approval of the Owner and Construction Manager.
7. Subject to satisfactory results being obtained, the Contractor will be permitted to use mechanical brooming in lieu of manual brooming.

G. Edging at Forms and Joints: After final finish, but before the concrete has taken its initial set, the edges of pavement along each side of transverse expansion joints, formed joints and transverse construction joints shall be worked with approved tool and rounded to the radius specified. A well-defined, continuous radius shall be produced and a smooth, dense mortar finish obtained. The surface of the slab shall not be unduly disturbed by tilting the tool during use. Tool marks appearing on the slab adjacent to joints shall be eliminated by brooming the surface. In doing this, the rounding of the corner of the slab shall not be disturbed. All concrete on top of joint filler shall be removed. All joints shall be tested with a straightedge before the concrete has set. Corrections shall be made if one side of the joints are higher than the other or if joints are higher or lower than in adjacent slabs.

3.9 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Immediately after completion of finishing operations and as soon as marring of concrete will not occur, the entire surface of newly placed concrete shall be covered and cured with a white pigmented impervious membrane.

C. The Contractor shall have available at the job site, sufficient covering material to cover and properly protect the last hour's pour against the effects of rain. This covering material may be burlap mats, waterproof paper or combined burlap and white polyethylene sheeting. Failure to provide sufficient cover material or to adequately take care of curing requirements shall be cause for immediate suspension of concreting operations.

D. Curing compound shall be applied under pressure by mechanical sprayers at the rate recommended by the manufacturer. In no case should less than one gallon per 100 square feet of surface area be applied. The spraying equipment shall be the full atomizing type equipped with a tank agitator. At the time of use, the compound shall be stirred continuously by mechanical or other approved means. Hand-spraying odd widths or shapes and on surfaces exposed by the removal of forms will be permitted provided the curing compound has been thoroughly agitated prior to placing it in the hand sprayer. The curing compound shall be applied to the inside faces of joints to be sealed. In split-slab construction, the curing compound shall be applied in such a manner as to prevent the spraying of exposed reinforcing steel.

E. Upon removal of side forms, the sides of the slabs and curbs exposed shall be protected immediately in such a manner as to provide a curing treatment equal to that provided for the surface.

3.10 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least two weeks.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install preformed semi-rigid joint filler in formed joints for a depth of $^{11}/_{16}$ inch depth.

D. Install silicone sealant in formed joints for a depth ½ inch with a backer rod.

1. Overfill joint and trim joint filler flush with top of joint after hardening.

3.11 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-feet long; unleveled straightedge not to exceed 1/4 inch.
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
5. Lateral Alignment and Spacing of Dowels: 1 inch.
6. Vertical Alignment of Dowels: 1/4 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.
11. Joint Filler Thickness: 1/16 inch
12. Joint Filler Depth: 1/8 inch
13. Joint Filler Length: 1/4 inch

3.12 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each **500 sq. yd.** or fraction thereof of each concrete mixture placed each day.

a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231/C 231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.
    a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met.

E. Core Samples: The average thickness of concrete pavement to be used as a basis for the price to be paid shall be the average thickness of the core drilling from the concrete, representing the area bounded between lines drawn at right angles to the center of the roadway and at a point halfway between any two consecutive cores.

1. Cores will be taken at about the center of each 500 square yards (approximately) of paved lane or a major fraction thereof, with a minimum of one core per lane per block.
2. No less than four cores shall be taken from the pavement or foundation built under and one contract.
3. The following schedule will be used to determine the unit price to be paid for the work (thickness as determined by cores – proportional part of concrete price allowed):
    a. Full specified thickness or greater – 100%
    b. 0.0 to 0.2 inch or less below specified thickness – 100%
    c. 0.21 to 0.3 inch below specified thickness – 90%
    d. 0.31 to 0.4 inch below specified thickness – 85%
    e. 0.41 to 0.5 inch below specified thickness – 80%
    f. 0.51 to 0.75 inch below specified thickness – 70%
    g. 0.75 to 1.0 inch below specified thickness – 60%
4. Should any core show a deficiency of more than 1-inch below the specified thickness, additional cores will be taken 5 feet on either side of the deficient core. If both of those cores are within the 1-inch tolerance, the procedure will be to cut cores in the following order: 25-feet, 50-feet, 100-feet, the same to be measured from the location of the original core found to be deficient in thickness, then at 100-foot intervals until a thickness within the 1-inch tolerance is found in both directions.
5. Any cores required over those specified to establish the average thickness of the pavement or foundation shall be made at the expense of the Contractor.

6. Areas found to be deficient in thickness by more than 1-inch shall be removed and replaced with concrete of the thickness shown on the plans and details.

F. Concrete paving will be considered defective if it does not pass tests and inspections.

G. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.13 ISOLATION PADS

A. All manholes within concrete paving areas shall be isolated (boxed out) by means of an approved square isolation pad in accordance with the DPW General Specifications for Street Paving and DPW Standard Drawing MC2.

3.14 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint.

B. Replacement concrete shall be a High Early Strength Mix; there will be no additional compensation for this.

C. Drill test cores, where directed by the Owner, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.

D. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

E. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for inspections.

3.15 OPENING FOR TRAFFIC

A. No traffic shall be permitted on the pavement until all joints have been cleaned and sealed.

B. When the concrete strength is determined to be at least 3,000 psi by means of compressive strength testing, the street shall be opened to traffic.

3.16 CONCRETE PAVING SCHEDULE

A. See Section 320600 Schedules for Exterior Paving and Sodding

1. Pavement thickness for Portland cement concrete roadways is scheduled for eight inches (8”).
2. Concrete Pavement thickness for Composite roadways is scheduled for eight inches (8”).

B. Pavement for sidewalks and driveways is specified in Section 321623 “Sidewalks and Driveways.”

END OF SECTION 321313

SECTION 321540 – CRUSHED STONE SURFACING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section. Review these documents for coordination with additional requirements and information that apply to work under this Section.

1.2 SUMMARY

A. The work consists of preparation, stockpiling, hauling, placing, and necessary compaction of crushed stone surfacing as indicated on the drawings and specified herein.

B. The Contractor shall provide all supervision, labor, material, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with Concrete Paving installation

C. Section Includes:

1. Crushed Stone Surfacing

D. Related Requirements:

1. Section 012200 Unit Prices
2. Section 310519 Geosynthetics for Earthwork
3. Section 312313 Subgrade Preparation
4. Section 312316 Excavation and Trenching
5. Section 312323 Fill, Backfill, and compaction

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Volume Measurement: Measurements will be made as the product of horizontal width, length dimensions and depth of material installed, measured in cubic yards. Irregular surface areas will be measured as a summation of equivalent non-overlapping rectangles, triangles, circles, partial circles, fillets, or other applicable geometry multiplied by the average nominal depth.

C. Payment:

1. Crushed Stone Surfacing: Payment for Crushed Stone Surfacing will be made at the respective Contract unit bid price as scheduled in Section 012200 per cubic yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Submittals shall comply with Section 013300 Submittal Procedures.

B. Materials Sources: Submit name of imported materials source.

C. Aggregate composition Test Reports: Results of laboratory tests on proposed and actual materials used.

D. Compaction Density Test Reports.

1.6 REFERENCE STANDARDS

A. American Society of Testing and Materials (ASTM), Latest Edition

1. ASTM C 136: Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
2. ASTM D 698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3).
3. ASTM D 1556: Standard Test Method for Density and Unit Weight of Soil in Place by the Sand Cone Method.
4. ASTM D 1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3).

B. City of New Orleans Department of Public Works (DPW): Standard drawings and specifications.

C. Louisiana Department of Transportation and Development Standard Specifications for Roads and Bridges (LADOTD).

1.7 QUALITY ASSURANCE

A. Single Source: Furnished from single source throughout Work.

B. Certification: Arrange with Construction Manager to have Owner's Geotechnical Engineer certify that source of materials for this Work meets these Specifications and provide tests required to prove that Work-in-progress meets requirements of these Specifications.

1.8 DELIVERY, STORAGE, AND HANDLING

A. On Site Storage: Store aggregate-base material on-site covered or in a location where material will not be contaminated. Aggregate storage area must not interfere with normal traffic operation and is subject to approval from the Construction Manager.

1.9 SITE CONDITIONS

A. Unfavorable Weather: When weather is such that satisfactory results cannot be secured, suspend operations until the weather is considered favorable.

B. Wet Subgrades: Do not place material on wet or muddy subgrade.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stone Surfacing shall be crushed limestone from a single source, or approved equivalent.

1. Crushed stone shall conform to the requirements of ASTM C 136, Gradation No. 57
2. Maximum acceptable aggregate size is 1-½ inches.
3. Crushed recycled PCCP stone will not be accepted for aggregate surfacing.

B. Geotextile Fabric shall conform to Section 310519 Geosynthetics for Earthwork.

C. Water: Fresh, clean, potable.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of General Conditions: Examine site and verify that conditions are suitable to receive Work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.

B. Subgrade: See Section 312313 Subgrade Preparation.

3.2 PREPARATION

A. Protection of Existing Conditions:

1. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant materials and walks on or adjacent to the site of the Work.
2. Provide barricades, fences or other barriers to protect existing conditions to remain from damage during construction.
3. Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing plants to remain.
4. Submit written notification of damaged plants and structures to the Construction Manager.

B. Subgrade Preparation:

1. Meet requirements for subgrade preparation, per specifications herein and in accordance with Section 312313 Subgrade Preparation, prior to placement of aggregate base.
2. Grade subgrade with uniform slope between points where elevations are given.
3. Use equipment of proper size and appropriate type to achieve grades required.
4. Grade subgrade surface to within 0.05-foot of elevations indicated by the Drawing details.
5. Fill and compact any depressions and remove loose material to finish true to line and grade, presenting a smooth, compacted and unyielding surface, except where indicated otherwise.
6. Remove debris, loose dirt and other extraneous materials.

C. Geosynthetics:

1. Install geotextile fabric in accordance with Section 310519 Geosynthetics for Earthwork and in conformance with New Orleans DPW Standard Drawings.
2. Install geogrid in accordance with Section 310519 Geosynthetics for Earthwork and in conformance with New Orleans DPW Standard Drawings.

3.3 CRUSHED STONE SURFACING

A. Pre-wetting Aggregate Base: Meet requirements of DPW General Specifications.

B. Placement of Crushed Stone Surfacing:

1. Spread base in an even distribution of material without perceptible segregation.
2. Method of spreading and field operation shall be acceptable to the Owner at all times and in accordance with these and DPW General Specifications.
3. Shape subbase course and base course to required crown elevations and cross-slope grades.
4. Construct base course in lifts not exceeding 6 inches in depth so that when compacted to the specified density, the finished surface will conform to grades and dimensions shown, with proper allowance for subsequent courses where specified.
5. Construct stone surfacing in lifts so that when compacted to the specified density, the finished surface will conform to grades and dimensions shown.
6. Compaction equipment shall be adequate in design and number to obtain the specified density for each layer while still moist.
7. Apply minimal water as needed to obtain the specific densities.
8. Place each layer of stone surfacing and compact to the specified density before a succeeding layer is placed.

C. Compacting of Aggregate Base:

1. Compact each lift of stone surfacing as soon after spreading operations as practicable and continue until a density of 95 percent of the maximum dry density has been achieved as determined in accordance with ASTM D1557.
2. Roll each course of surfacing until the material does not creep under the roller before a succeeding course of surfacing material is applied.
3. At the outer edges of the surfacing and continue toward the center.
4. Add small quantities of sand to stone mix as appropriate to assist compaction.

D. Correction of Surface Defects: Should irregularities develop in any surface during or after rolling, they shall be remedied by loosening the surface and correcting the defects, after which the entire area, including surrounding surfaces, shall be rerolled until thoroughly compacted. Finished surfaces shall be true to grade and crown before proceeding with surfacing.

3.4 SCHEDULE

A. Crushed Stone Surfacing: Total compacted thickness of 8-inches (Compacted to 95% maximum dry density)

3.5 TOLERANCES

A. Stone Surfacing Variation from Thickness: Plus or minus ½ inch.

3.6 FINAL CLEANING

A. Final Clean-up:

1. After work is completed, the entire area shall be neatly finished and trimmed to lines, grades and cross sections shown.
2. Unused construction material shall be removed, and stockpile areas shall be cleaned of aggregate and left in a condition acceptable to the Construction Manager.

END OF SECTION 321123

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SECTION 321613 CURBS AND GUTTERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. All Submittals, Performance Requirements, Quality Assurance, Field Conditions, and Delivery, Storage and Handling shall be executed in conjunction with Section 321313 Concrete Paving

1.2 SUMMARY

A. The work consists of furnishing and constructing Curbs and Gutters in accordance with the specifications and in conformity with the locations, lines, grades, slopes, thickness, and typical sections shown on the plans and included herein.

B. The Contractor shall provide all supervision, labor, material, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with Curb and Gutter installation.

C. Section Includes:

1. Joints
2. Concrete Placement
3. Finishing
4. Joint Filling
5. Stone Curb
6. Timber Curb

D. Related Requirements:

1. Section 012200 Unit Prices
2. Section 024113 Selective Site Demolition
3. Section 311000 Site Clearing
4. Section 312313 Subgrade Preparation
5. 312316 Excavation and Trenching
6. Section 312323 Fill, Backfill, and Compaction
7. Section 321313 Concrete Paving

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Length Measurement: Measurements will be made as the horizontal length dimension of material installed, excluding overlap, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

C. Payment:

1. Concrete Mountable Curb with Dowels: Payment for Concrete Mountable Curb with Dowels will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. 6" Concrete Barrier Curb with Dowels: Payment for 6" Concrete Barrier Curb with Dowels will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

3. Concrete Mountable Curb and Gutterbottom (or Rolling Strip): Payment for Concrete Mountable Curb and Gutterbottom (or Rolling Strip)will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

4. 6" Concrete Barrier Curb and Gutterbottom (or Rolling Strip): Payment for 6" Concrete Barrier Curb and Gutterbottom (or Rolling Strip) will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

5. Stone Curb Including Base (Straight, Circular, or Depressed): Payment for Stone Curb Including Base (Straight, Circular, or Depressed) will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

6. Reset Existing Curb (Precast Concrete, Stone, etc.) Including Base: Payment for Reset Existing Curb (Precast Concrete, Stone, etc.) Including Base will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

7. No additional payment shall be made for including curb transitions or depressions or after hand-forming curbs and curb and gutterbottom as directed by the Engineer.

8. Excavation, backfill, joint materials, asphaltic tack coat and steel tie bars will not be measured for payment.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS (NOT USED)

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition

B. Louisiana DOTD Qualified Products List (LADOTD QPL)

C. New Orleans Department of Public Works Standard Detail Drawings, current edition.

D. American Society of Testing and Materials (ASTM), Latest Edition

1. All ASTM Standard Specifications, Tests, Practices, and Methods as listed in Section 321313 Concrete Paving shall apply to Curbs and Gutters.

E. American Concrete Institute (ACI), Latest Edition

1. All ACI Standard Specifications and Guides as listed in Section 321313 Concrete Paving shall apply to Curbs and Gutters.

F. American Association of State highway and Transportation Officials, "Standard Specifications for Transportation, Materials, and Methods of Sampling & Testing" (AASHTO), Latest Edition.

1. All AASHTO Specifications as listed in Section 321313 Concrete Paving shall apply to Curbs and Gutters.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE (NOT USED)

1.9 REGULATORY REQUIREMENTS (NOT USED)

1.10 FIELD CONDITIONS (NOT USED)

1.11 DELIVERY, STORAGE, AND HANDLING (NOT USED)

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.13 WARRANTY

A. The Contractor guarantees all materials and workmanship provided under the contract to be free of defects for a total of one (1) year from the date of Final Acceptance.

B. The Contractor guarantees by his execution of the contract, that for a period of one year after the date of Final Acceptance of the project by the Owner all necessary repairs to or replacement of said defective warranted equipment, apparatus, or material and workmanship shall be made by the Contractor at no cost to the Owner.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. The concrete used shall be mixed with the same materials, having the same compressive strength and shall be cured in the same manner as specified for in 321313 Concrete Paving.

2.2 FORM-FACING MATERIALS (NOT USED)

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; plain and deformed.

B. Wire for concrete reinforcement shall conform to "Standard Specifications for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete" (ASTM A 1064).

C. Welded wire fabric for concrete reinforcement shall conform to "Standard Specifications for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete"

(ASTM A 1064) except that the weld-shear strength requirement of those specifications shall be extended to include a wire size differential up to and including six gauge.

D. When placed, all reinforcement shall be free from dirt, oil, paint, grease, mill scale, loose or thick rust, or other deleterious substances. When bending is required, it shall be accurately done. All reinforcement shall be placed in the exact positions shown on the plans. Reinforcement shall be securely held in position by wiring and blocking it from the forms and by wiring it together at intersections so that it will not be displaced during depositing and compacting of the concrete.

E. Curing compound shall be a white pigmented, impervious membrane conforming to the requirements of ASTM C 309, Type 2.

F. Tie bars shall be deformed concrete reinforcing steel conforming to ASTM A 615, Grade 40.

G. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.

H. Deformed-Steel Welded-Wire Reinforcement: ASTM A 1064, flat sheet.

2.4 CONCRETE MATERIALS

A. The concrete used shall be mixed with the same materials, having the same compressive strength and shall be cured in the same manner as specified for in 321313 Concrete Paving.

2.5 JOINT AND REINFORCEMENT MATERIALS

A. Shall conform to Joint and Reinforcement Material requirements as stated in Section 321313 Concrete Paving

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Verify that subgrade is dry and in suitable condition to begin work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare subgrade in accordance with Section 312313 Subgrade Preparation.

B. Sawcutting Pavements: See section 024113 Selective Site Demolition.

C. Ensure base course is maintained “moist” prior to concrete placement. Sprinkle base course with potable water if the base course is dry and in a manner that does not disrupt the grades and profiles of the base course surface. There should be no visible pockets of mud, ruts, ridges or pools of water.

3.3 CONCRETE MIXING AND DELIVERY

A. Shall conform to Concrete Mixing and Delivery requirements as stated in Section 321313 Concrete Paving.

3.4 FORMWORK INSTALLATION

A. Shall conform to Formwork Installation requirements as stated in Section 321313 Concrete Paving.

B. The curb forms shall provide for the dimensions specified and must be set to the established grades.

3.5 JOINTS

A. Undowelled contraction joints shall be placed through the entire width of the concrete curb or curb and gutterbottom, at no greater than fifteen (15') foot intervals. Contraction joints shall be formed by a jointing tool or other acceptable means, having a 2-inch depth and ¼-inch width and filled with silicone sealant or another joint sealant approved by the Engineer.

B. Dowelled expansion joints shall be placed at intersections, not to exceed three hundred (300') foot intervals, and/or as indicated on the plans.

C. Pre-moulded joint filler shall be placed and extended through the entire section of the concrete curb or curb and gutterbottom at those points where joint filler is used in the roadway slab. The concrete curb and gutterbottom shall be reinforced in accordance with the standard plans

D. Construct joints true to line with faces perpendicular to surface plane of concrete and in accordance with DPW “Typical Roadway Sections for Street Construction” (Dwg No. RW1, RW2, RW3,RW4).

3.6 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and subgrade or base course cross-sections are inspected.

B. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

C. Deposit concrete continuously in one layer and to avoid segregation.

1. Concrete shall be placed between the forms in such a manner as to avoid segregation, avoid damage to forms and joints, and avoid unnecessary movement once it has been placed.
2. Consolidate placed concrete with mechanical vibrating equipment or internal vibrators according to ACI 301 and approved by the Engineer.
3. The subgrade or base course shall be brought to a proper cross-section. High areas shall be trimmed to proper elevation. The finished grade shall be maintained in a smooth and compacted condition until the pavement is placed. No concrete shall be placed until the subgrade or base course has been approved.
4. The subgrade or base course shall be uniformly moist when concrete is placed. If it becomes too dry, the subgrade or base course shall be sprinkled, but the method of sprinkling shall not be such as to form mud or pools of water.

D. Integral Types:

1. After concrete pavement has been struck off, curb forms shall be clamped or otherwise securely fastened in place on the slab form. Concrete for curbing shall be placed and thoroughly tamped within 30 minutes after pavement has been finished. Concrete shall be spaded or vibrated sufficiently to eliminate voids and shall be tamped to bring mortar to the surface. The concrete shall be finished smooth and even with a wooden float. Edges shall be rounded with an approved finishing tool to the specified radius. Care shall be taken to secure monolithic construction.
2. Integral type curb may be placed after completion of pavement, provided reinforcing steel is placed in the pavement of the size, type and spacing shown on the plans at no direct pay.

E. Non-Integral Types:

1. Concrete shall be placed on the prepared subgrade, struck off and consolidated to required thickness. Concrete shall be spaded or vibrated sufficiently to eliminate voids and shall be tamped to bring mortar to the surface, after which it shall be finished smooth and even with a wooden float. Edges shall be rounded to the specified radius.

F. Slip-formed Concrete:

1. Slip-formed concrete shall have uniform consistency and shall be placed with an approved extrusion machine designed to spread, consolidate and finish concrete in one pass of the machine such that minimum hand finishing is necessary. Sliding forms shall be rigidly held together to prevent spreading of forms. After the passing of the forms there shall be no noticeable slumping of concrete. Finished concrete shall be free from voids. Any additional finishing required shall be performed immediately after placement.

G. Tolerances:

1. Grade of combination curb and gutter shall not exceed the theoretical grade and shall not be more than 1/2 inch low.

3.7 COMBINED CONCRETE CURB AND GUTTERBOTTOM AND/OR CONCRETE CURB, STRAIGHT OR CIRCULAR

A. Combined concrete curb and gutterbottom shall be either combined mountable concrete curb and gutterbottom or barrier concrete curb and gutterbottom. Concrete curb shall be either mountable or barrier. The type of concrete curb or concrete curb and gutterbottom to be provided shall be as shown on plans.

1. Where it is required to construct concrete curb and gutterbottom, the curb and gutterbottom must be poured monolithically.

3.8 CONCRETE GUTTER

A. Where the concrete gutter is constructed as a part of combined curb and gutterbottom, it shall conform to the requirements of combined curb and gutterbottom.

B. Where the concrete gutter is constructed in conjunction with roadway pavement, it shall, unless otherwise specified or directed, be poured monolithically with, become part of, be laid at the same time, in the same manner and have the same compressive strength as concrete roadway foundation, for such roadway pavements. It shall be of the same width indicated on the plans and of such depth as will be equal to the combined thickness of the roadway foundation and the roadway pavement wearing surface.

3.9 FINISHING FORMED SURFACES

A. Forms shall be removed within 24 hours after concrete has been placed. Honeycombed areas and other minor defects shall be filled with mortar composed of Portland cement and sand complying with Section 321313 Concrete Paving.

B. Immediately after the concrete has been placed, it shall be tamped, struck off and worked with a wood float in a manner to provide a surface free from irregularities and depressions, bringing the mortar to the top.

C. The surface shall then be broomed or brushed with a soft hand broom in the direction of the flow line of the gutter. Surface joints shall be made by a steel joining tool and premoulded joint filler shall be placed and extended through the entire gutter section at those joints where filler is used in the roadway slab or curb.

D. During final surface-finish operations, all areas that are improperly finished shall be refloated and refinished as required.

E. Plastering will not be permitted on faces of curb or gutter. Rejected curb or gutter shall be removed and replaced at no additional expense to the Owner.

F. The top and face of curb or gutter shall be finished prior to initial set with a wood float, brush, and water.

3.10 CONCRETE PROTECTING AND CURING

A. After finishing, curb or gutter shall be cured in accordance with Section 321313 Concrete Paving.

B. Curbs not cast integrally with the slab shall be cured in accordance with Section 321313 Concrete Paving, after completion of finishing.

3.11 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least one month. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12 BACKFILLING

A. After curb or gutter has set sufficiently, the contractor shall backfill adjacent to curb or gutter with usable soil compacted o the density of surrounding soil as specified in Section 312323 Fill, Backfill, and Compaction.

3.13 STONE CURB

A. Stone curb shall either be old stone curb or new stone curb as herein specified.

B. Old stone curb shall be of suitable quality with well-defined face and top, of depth not less than prescribed for new curb and not less than three (3') feet in length.

C. New stone curb shall be best North River Blue Stone or Cabin Creek Blue Stone or Granite or similar stone acceptable to the Engineer.

1. Shall measure five (5") inches in thickness for the remainder of depth
2. Lengths of not less than five (5') feet except for closures.
3. The top of the curb shall be peen-hammer dressed, and the face for ten (10") inches below the top pointed, so that there will be no protrusions or depressions measuring more than one-half (1/2") inch from a straightedge laid in any direction parallel to the general surface.
4. All ends shall be squared so as to form close-fitting joints.
5. No drill holes will be permitted to show on any exposed surface.
6. All edges shall be well-defined.

D. Stone curb shall be set to lines and grades indicated on plans, or as may be otherwise directed. The subgrade on which the curb base is to be placed shall be excavated and thoroughly tampered by means of a pneumatic tamper.

E. Contractor shall place under each curb joint, or as close thereto as may be practical, a concrete pier, except in cases where it is impractical to construct one at said point.

1. Piers and concrete base shall be constructed in accordance with dimensions shown on the New Orleans DPW detail plans. Excavation made prior to the pouring of the concrete shall conform to Section 312316 Excavation and Trenching.

F. Old stone curb of proper quality and dimensions will be relined and reset at its present location when required by the proposal or specifications, or it shall be removed to other points within the limits of the project, as designated by the Engineer, and reset.

G. The ends of all curb, new or old, shall be squared so as to form close-fitting joints. Joint filler one-half (1/2") inch in thickness shall be placed adjacent to catch basins and circular curbs when setting stone curbs. All joints in stone curb shall be thoroughly and neatly pointed with mortar. The joints in the precast concrete curbs shall be neatly filled with a joint filler, one-eighth (1/8") inch thick. This joint filler material shall be finished flush with the top and roadway face of the curb.

3.14 TIMBER CURB (NOT USED IN THIS CONTRACT)

END OF SECTION 321613

SECTION 321623 – SIDEWALKS AND DRIVEWAYS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of constructing sidewalks and driveways in conformance with the specifications and in conformity with the locations, lines, grades, slopes, thickness, sections and strength shown on the plans and included herein.

B. The Contractor shall provide all supervision, labor, material, equipment, tools, fuel, power, water and incidentals required to perform all operations associated with Concrete Paving installation.

C. Section Includes:

1. Subgrade Preparation
2. Joints
3. Concrete Placement
4. Finishing
5. Protection and Curing
6. Joint Filling
7. Considerations for Tree Canopies
8. Handicap Accessories and Provisions
9. Brick Sidewalk and Banquette Pavement
10. Tile Street Names

D. Related Requirements:

1. Section 012200 Unit Prices
2. Section 311000 Site Clearing
3. Section 312316 Excavation and Trenching
4. Section 321313 Concrete Paving

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Area Measurement: Measurements will be made as the product of horizontal width and length dimensions of material installed, excluding overlap, and measured in square yards. Irregular surface areas will be measured as a summation of equivalent

non-overlapping rectangles, triangles, circles, partial circles, fillets, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Concrete Sidewalk (4” Thick): Payment for Concrete Sidewalk (4” Thick) will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. Concrete Driveway (6” Thick): Payment for Concrete Driveway (6” Thick)will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

3. Handicap Ramps, Curb and Gutter, and Concrete Sidewalks at Intersections: Payment for Handicap Ramps, Curb and Gutter, and Concrete Sidewalks at Intersections will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

4. Sidewalk Transition Adjacent to Handicap Ramps: Payment for Sidewalk Transition Adjacent to Handicap Ramps will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

5. Brick Sidewalk and Banquette Pavement: Payment for Brick Sidewalk and Banquette Pavement will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.+

6. Letter or Number for Tile Street Name: Payment for Letter or Number for Tile Street Name will be made per each at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

7. Resetting Tile Street Name: Payment for Resetting Tile Street Name will be made per each at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Joint Layout: Indicate proposed joints required to construct the roadway according to specifications. Location of construction joints is subject to approval of the Engineer

D. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.

E. Material Certificates: For cementitious materials, curing compounds, steel reinforcement and reinforcement accessories, and bonding agent or epoxy adhesive

F. Field quality-control reports.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition

B. Louisiana DOTD Qualified Products List (LADOTD QPL)

C. City of New Orleans Department of Public Works (DPW) Standard Detail Drawings, current edition

D. American Society of Testing and Materials (ASTM), Latest Edition

1. All ASTM Standard Specifications, Tests, Practices, and Methods as listed in Section 321313 Concrete Paving shall apply to Sidewalks and Driveways.

E. American Concrete Institute (ACI), Latest Edition

1. All ACI Standard Specifications and Guides as listed in Section 321313 Concrete Paving shall apply to Sidewalks and Driveways.

F. American Association of State highway and Transportation Officials, “Standard Specifications for Transportation, Materials, and Methods of Sampling & Testing” (AASHTO), Latest Edition

1. All AASHTO Specifications as listed in Section 321313 Concrete Paving shall apply to Sidewalks and Driveways.

G. Americans with Disabilities Act: Title 49 CFR Transportation.

H. National Bureau of Standards, Federal Specifications TT-S-001543A: Class A Sealing Compound.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1.9 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 306.1-90
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 306.1-90 and as follows:

1. Maintain concrete temperature below 90 deg F at time of placement.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

C. Concrete shall not be placed on a frozen subgrade when the air temperature is below freezing, or when the air temperature is expected to go below 32° F within 12 hours with a minimum concrete temperature of 50° F.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1.11 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.12 WARRANTY

A. The Contractor guarantees all materials and workmanship provided under the contract to be free of defects for a total of one (1) year from the date of Final Acceptance.

B. The Contractor guarantees by his execution of the contract, that for a period of one year after the date of Final Acceptance of the project by the Owner all necessary repairs to or replacement of said defective warranted equipment, apparatus, or material and workmanship shall be made by the Contractor at no cost to the Owner.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. Sidewalks and Driveways shall be constructed of such widths, elevations, and at such points as stipulated in the proposal and Special Specifications, or otherwise designated by the Engineer.

B. All standard driveways shall be six (6") inches and all heavy duty driveways shall be eight (8") inches in thickness.

C. Portland cement concrete sidewalk shall consist of a one course Portland cement concrete pavement four (4") inches in thickness.

D. Portland cement concrete sidewalk at intersections, including ramps for the handicapped, shall be six (6") inches thick.

E. Expansion joints shall be provided where shown on Standard Plans or as may be otherwise directed by the Construction Manager.

F. Weakened planes shall be formed by a jointing tool or other acceptable means. Weakened planes shall extend into concrete for at least 1/4 of the depth and shall be approximately 1/8 inch wide. A longitudinal weakened plane shall be formed along the centerline of drives more than 16 feet wide, and transverse weakened planes shall be formed at not more than 16-foot intervals.

2.2 STEEL REINFORCEMENT

A. Sidewalks or banquettes shall be reinforced with 6 X 6 – W2.9 X W2.9 wire mesh weighing forty-two (42) pounds per hundred square feet.

B. Driveways shall be reinforced with 6 X 12 – W7.5 X W6.5 welded wire fabric weighing seventy-seven (77) pounds per hundred (100) square feet.

C. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; plain and deformed.

D. Tie bars: ASTM A 615/A 615M, Grade 40, deformed.

E. Welded wire fabric for concrete reinforcement shall conform to "Standard Specifications for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete" (ASTM A 1064) except that the weld-shear strength requirement of those specifications shall be extended to include a wire size differential up to and including six gauge.

F. When placed, all reinforcement shall be free from dirt, oil, paint, grease, mill scale, loose or thick rust, or other deleterious substances. When bending is required, it shall be accurately done. All reinforcement shall be placed in the exact positions shown on the plans. Reinforcement shall be securely held in position by wiring and blocking it from the forms and by wiring it together at intersections so that it will not be displaced during depositing and compacting of the concrete.

2.3 CONCRETE MATERIALS

A. The concrete used shall be Portland cement concrete having a minimum compressive strength of three thousand (3,000) psi. at twenty-eight (28) days.

B. The minimum cement content shall be five and one-half (5-1/2) bags per cubic yard of concrete.

C. The maximum water content, including free water in the aggregate, shall not be greater than six (6) gallons per bag of cement. The consistency of concrete shall be such as to have a slump no less than (2") inches and not greater than four (4") inches.

2.4 ADMIXTURES

A. Admixtures: Use admixtures according to manufacturer's written instructions.
   1. If used, air entraining admixtures shall conform to the requirements of ASTM C 260.
   2. Water used in mixing concrete shall be potable and fit for human consumption.
   3. Water reducing admixtures and water reducing, retarding admixtures shall conform to the requirements of ASTM C 494.
   4. Super plasticizers shall conform to the requirements of ASTM C 494, Type F or G.

2.5 JOINT AND REINFORCEMENT MATERIALS

A. Shall conform to Joint and Reinforcement Material requirements as stated in Section 321313 Concrete Paving

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Verify that subgrade is dry and in suitable condition to begin work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Prepare subgrade in accordance with Section 312313 Subgrade Preparation.

B. Sawcutting Pavements: See section 024113 Selective Site Demolition.

C. Ensure base course is maintained “moist” prior to concrete placement. Sprinkle base course with potable water if the base course is dry and in a manner that does not disrupt the grades and profiles of the base course surface. There should be no visible pockets of mud, ruts, ridges or pools of water.

3.3 CONCRETE MIXING AND DELIVERY

A. The method of Concrete Mixing and Delivery shall conform to the requirements as stated in Section 321313 Concrete Paving.

3.4 SUBGRADE PREPARATION

A. In preparing the subgrade sidewalk and driveway will be placed, all soft and spongy places shall be removed and all depressions filled with sand which shall be thoroughly compacted in layers not exceeding six (6") inches in thickness.

B. The subgrade on which the driveways are to rest shall be thoroughly rolled or tamped so as to be uniformly compacted and solidified. The finished subgrade shall be smooth, even, well-graded and exactly parallel to the finished surface of the sidewalk or driveway

C. When the Portland cement concrete sidewalk is to be constructed over an old path composed of gravel or cinder, the old path shall be entirely loosened, the material spread for the full width of the subgrade and compacted as specified.

D. All fills shall be made in a manner satisfactory to the Engineer. The use of muck, quicksand, soft clay, spongy or perishable material is prohibited. The top of all fills shall extend at least two (2') feet beyond the sidewalk on each side and the sides shall have a maximum slope not greater than one (1) vertical to one and one-half (1-1/2) horizontal before any sidewalk will be allowed to be placed thereon.

E. Tree Canopy: Sidewalks within tree canopies shall receive a minimum 4-inch to 6-inch pea gravel bed in accordance with DPW Standard Plan, STD10.

3.5 FORMWORK INSTALLATION

A. Shall conform to Formwork Installation requirements as stated in Section 321313 Concrete Paving.

B. The curb forms shall provide for the dimensions specified and must be set to the established grades.

3.6 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Expansion Joints:
1. All expansion joints shall be perpendicular to the surface of the sidewalk and at right angles to the edge of same.
2. The surface of the concrete adjacent to expansion joints shall be finished with a wood float, which is divided through the center and which will permit finishing on both sides of the joint at the same time.
3. An expansion joint shall also be provided adjacent to solid walls of masonry, behind curbs, at intersections and at footlaps. Where posts or poles fall within the limit of the sidewalk, an expansion joint not less than one-half (1/2") inch in width shall be placed around said posts or poles and filled with joint filler.
4. Expansion joints adjacent to masonry walls, at footlaps and around posts or poles, the joint filler shall not extend above the surfaces of the sidewalk and any excess filler that so protrudes shall be cut off and made flush with the sidewalk.

C. The Contractor shall furnish and install all necessary jointing material as indicated in the New Orleans Department of Public Works Standard Detail Drawings (RW1, RW 2, RW 3, and RW 4).

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed, including but not limited to subgrade or base course cross-sections.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as

indicated. Deposit concrete to avoid segregation, avoid damage to forms and joints, and avoid unnecessary movement once it has been placed.

1. Consolidate placed concrete with mechanical vibrating equipment or internal vibrators as approved by the Engineer.
2. Necessary hand-spreading shall be done with shovels or other approved tools.
3. The subgrade or base course shall be uniformly moist when concrete is placed. If it becomes too dry, the subgrade or base course shall be sprinkled, but the method of sprinkling shall not be such as to form mud or pools of water.

C. The sidewalk and driveway pavement shall be of the size and shape shown on the plans. It shall consist of one course of concrete with joints, dowels, etc., as called for in the plans.

3.8 FINISHING FORMED SURFACES

A. Sequence: The sequence of operations shall be the strike off, consolidation floating and removal of laitance, straight edging, and final surface finish.

B. In general, the addition of water to the surface of concrete to assist in finishing operations will not be permitted unless approved by the Engineer. If approved, it shall be applied as a fog spray by means of approved spray equipment.

C. During final surface-finish operations, all areas that are improperly finished shall be refloated and refinished as required.

D. Depressions found shall be immediately filled with freshly mixed concrete, struck off, consolidated and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure the surface across the joints meets with requirements for smoothness.

E. Final Finish and Texture: Unless otherwise specified, the final finish and texture shall be obtained using a broom. The surface texture shall be a broom finish.

1. It shall be applied when the water sheen has practically disappeared.
2. The broom shall be drawn from the center to the edge of the pavement with adjacent strokes slightly overlapping.
3. The brooming operation shall be so executed that the corrugation produced in the surface shall be uniform in appearance and not more than 1/16" in depth.
4. Brooming shall be completed before the concrete is in such condition that the surface will be torn or unduly roughened by the operation.
5. The finished surface shall be free from rough and porous areas, irregularities and depressions resulting from improper handling of the broom.
6. Brooms shall be of such quality, size and construction and be so operated as to produce a surface finish meeting the approval of the Owner and Construction Manager.
7. Subject to satisfactory results being obtained, the Contractor will be permitted to use mechanical brooming in lieu of manual brooming.

F. Edging at Forms and Joints:

1. After final finish, but before the concrete has taken its initial set, the edges of pavement along each side of transverse expansion joints, formed joints and transverse construction joints shall be worked with approved tool and rounded to the radius specified.
2. A well-defined, continuous radius shall be produced and a smooth, dense mortar finish obtained.
3. Surface of the slab shall not be unduly disturbed by tilting the tool during use.
4. Tool marks appearing on the slab adjacent to joints shall be eliminated by brooming the surface. In doing this, the rounding of the corner of the slab shall not be disturbed.
5. All concrete on top of joint filler shall be removed.
6. All joints shall be tested with a straightedge before the concrete has set.
7. Corrections shall be made if one side of the joints are higher than the other or if joints are higher or lower than in adjacent slabs.

3.9 MISCELLANEOUS CONCRETE ITEM INSTALLATION (NOT USED)

3.10 CONCRETE PROTECTING AND CURING

A. General:
1. As soon as finished work has hardened sufficiently to prevent damage, the concrete surface of the walk or driveway shall be covered with curing compound.
2. Freshly finished work shall be protected from hot sun and drying winds until it can be covered as specified.
3. Curing by application of chemicals or some other method of curing may be used upon the approval of the Engineer.
4. The concrete surface must not be damaged or pitted by raindrops and the Contractor shall provide and use, where necessary, sufficient tarpaulins to completely cover all sections that have been placed within the preceding twelve (12) hours.
5. The Contractor shall erect and maintain suitable barriers to protect walks and driveways from traffic, and any section damaged from traffic or other causes, shall be repaired or replaced by the Contractor at his own expense, in a manner satisfactory to the Engineer. The walk or dirveway shall not be opened to traffic until the prescribed curing period has expired .

3.11 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.12 CONCRETE SURFACE REPAIRS (NOT USED)

3.13 FIELD QUALITY CONTROL

A. Testing is to be conducted on supplied and installed concrete at the Owner's request with no notification to the Contractor. All testing shall conform to the specified procedures as listed in 321313 Concrete Paving.

3.14 SIDEWALKS WITHIN TREE CANOPIES

A. Subgrade preparation shall conform to paragraph 3.3.E beneath a 4-inch concrete sidewalk.

B. Gravel beds to extend under the sidewalk and be placed on existing grade to achieve a slope of 2% at the sidewalk surface.

C. No more than 1.5-inch to 2-inch of fill to be placed under any tree canopy.

D. No expansion joints to be placed over roots. Only weakened planes shall be allowed.

E. All concrete and reinforcing materials shall be the same as standard sidewalk installations as specified herein.

3.15 HANDICAP RAMP TACTILE/DETECTABLE CAST-IN-PLACE TILES

A. All materials under this section shall conform to the American with Disabilities Act (Title 49 CFR TRANSPORTATION, Part 37.9 STANDARDS FOR ACCESSIBLE TRANSPORTATION FACILITIES, Appendix A, Section 4.29.2, DETECTIBLE WARNINGS ON WALKING SURFACES) and revisions to date, unless otherwise specified.

B. Handicap ramps shall comply with DPW requirements, refer to DPWGS standard drawings, ADA1 through ADA4.

1. On a curb ramp, the running slope is the slope in the direction of pedestrian travel on the ramp run and must be 8.33 percent (1:12) or less. Where provided, curb ramp flares shall not be steeper than 1:10.
2. On a curb ramp, the cross slope is the slope perpendicular to [across] the direction of pedestrian travel on the ramp run and the cross slope of the ramp run itself may not exceed 2 percent (1:50).
3. The ramp, or ramp run, must be at least 48 inches wide, not including the flared sides. The ramp run must have detectable warnings – i.e., dome-shaped bumps – that extend the full width and depth of the ramp.
4. Transitions from the ramp to the walkway, gutter, and street must be flush (level) and free of abrupt level changes. The gutter must have a slope of no more than 5 percent (1:20) toward the ramp.

5. Landings shall be provided at the tops of curb ramps. The minimum landing clear length shall be 48 inches. The landing clear width shall be at least as wide as the curb ramp, excluding flared sides, leading to the landing.
6. Diagonal or corner type curb ramps with returned curbs or other well-defined edges shall have the edges parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have a clear space of 48 inches minimum outside active traffic lanes of the roadway. Diagonal curb ramps provided at marked crossings shall provide the 48 inches minimum clear space within the markings. Diagonal curb ramps with flared sides shall have a segment of curb 24 inches long minimum, located on each side of the curb ramp and within the marked crossing.
7. Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides. Each curb ramp shall have a level area 48 inches long minimum by 48 inches wide minimum at the top of the curb ramp in the part of the island intersected by the crossings. Each 48 inch minimum by 48 inch minimum area shall be oriented so that the 48 inch minimum length is in the direction of the running slope of the curb ramp it serves. The 48 inch minimum by 48 inch minimum areas and the accessible route shall be permitted to overlap.

C. The running slope of sidewalks must be 5 percent (1:20) or less. The cross slope of sidewalks must be 2 percent (1:50) or less. The clear width of sidewalks shall be at least 48 inches and a sidewalk with a clear width of less than 60 inches shall provide passing spaces at intervals of 200 feet maximum. If the longitudinal slope of the sidewalk exceeds 1:20, it is considered a ramp and a level landing must be provided for every 30-inch change in elevation

D. Color shall be homogeneous throughout the tile. Color will be selected by the Owner from the manufacturer’s standard colors.

3.16 BRICK SIDEWALK AND BANQUETTE PAVEMENT

A. Brick Sidewalk and Banquette pavement shall be of such width, grades or elevations as shown on plans or as may be designated by the Construction Manager and laid in the manner herein described and as shown on the standard drawings.

B. The surface of the earth upon which the brick sidewalk or banquette pavement will rest shall be first graded and tamped and otherwise prepared as specified in this section for Portland cement concrete sidewalk.

C. Five (5") inches of reinforced concrete foundation having a compressive strength of not less than three thousand (3,000) psi. in twenty-eight (28) days shall be poured and tamped. The brick shall be laid on a prepared subgrade, a minimum of a three-eighths (3/8") inch setting bed, composed of one (1) part cement to three (3) parts sand. Brick shall be in close contact and thoroughly tamped. After tamping, they shall be thoroughly sprinkled and all joints shall at once be completely filled with grout, one (1) part Portland cement concrete to three (3) parts sand. Thereafter, clean, sharp sand shall be evenly spread on the surface to a thickness of approximately one-half (1/2") inch. When the grout has been in place for seventy-two (72) hours or longer, this sand shall be removed and may be re-used at the option of the Contractor.

D. After completion, the brick sidewalk and banquette pavement shall be closed to traffic and not opened until so directed by the Construction Manager. The Contractor will be required to barricade and protect the pavement in every way as prescribed and required for Portland cement concrete sidewalk or banquette pavement.

3.17 TILE STREET NAMES

A. Letters or Numbers for Tile Street Names:

1. Letters or numbers for tile street names shall be hard, tough, durable, porcelain tile or other material satisfactory to the Owner. The letters or numbers shall be block type on tile not less than five and one-half (5-1/2") inches, nor greater than six (6") inches high. The letters or numbers shall not be less than five (5") inches high, of blue or willow green in color, on a white background. Letter or numbers for tile street names shall be installed and oriented so that they may be read by pedestrians approaching the intersection where they are located.

B. Resetting Tile Street Names

1. Existing tile street names shall be salvaged intact by saw-cutting the name out of the concrete in which the tiles are imbedded. The saw-cut shall be located two (2") inches away from the name's perimeter and will extend through the depth of the concrete, usually four (4") inches. The salvaged street name tile shall be reset in the fresh concrete of the sidewalk intersection, flush with the level of the sidewalk and clean of any cement residue.

END OF SECTION 321623

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SECTION 329223 - SODDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of furnishing, hauling, planting, rolling, watering, and maintaining placed and in-place approved species of live grass turfs and sods in conformance with the specifications and in conformity with the City of New Orleans Parks and Parkways.

B. Section Includes:

1. Sodding.
2. Maintenance and Protection

C. Related Requirements:

1. Section 312323 Fill, Backfill and Compaction.

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200 Unit Prices, for unit price requirements.

B. Measurement:

1. Area Measurement: Measurements will be made as the product of horizontal width and length dimensions of material installed, excluding overlap, and measured in square yards. Irregular surface areas will be measured as a summation of equivalent non-overlapping rectangles, triangles, circles, partial circles, fillets, or other applicable geometry

C. Payment:

1. Sodding: Payment for Sodding will be made at the respective Contract unit bid price as scheduled in Section 012200 per square yard (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

1.4 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.5 SUBMITTALS

A. Qualification Data: For landscape Installer.

1.6 REFERNCE STANDARDS

A. Contractor shall adhere to all regulatory requirements as governed by the US Department of Agriculture (USDA).

B. City of New Orleans Department of Parks and Parkways, current edition.

C. Turfgrass Producers International (TPI).

1. Specifications for Turfgrass Sod Materials
2. Specifications for Turfgrass Sod Transplanting and Installation
3. Guideline Specifications to Turfgrass Sodding

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.

1. Landscape Contractor shall hold a valid Louisiana Horticulturalist License as issued by the Louisiana State Horticultural Commission.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation"

sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.9 FIELD CONDITIONS

A. Planting Restrictions: Plant during one of the following periods.

1. Spring Planting: March 31 through September 15.
2. Fall Planting: September 15 through March 31.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 TURFGRASS SOD

A. Turfgrass Species: 100% Bermudagrass (Cynodon dactylon), meeting the following requirements:

1. Locally field grown.
2. Sod shall be at least two (2) years old, well rooted and cut to a depth range of three-quarters of an inch to 1-inch.
3. Sod shall be cut into rectangular strips of twelve inches wide to a workable length which will permit the strip to be lifted without breaking.
4. Sources of sod shall be made known to the Landscape Architect at least five days prior to cutting.
5. Delivered sod shall be approved by the Landscape Architect prior to installation.

2.2 FERTILIZERS

A. Commercial Fertilizer: Agriform CRG 16-7-12 (+ Iron) or approved equal.

2.3 HERBICIDE

A. The Contractor shall supply the necessary amounts of chemicals for weed control upon acceptance of the area to sodded by the Department of Parks and Parkways Landscape Architect. The following list is a list of the exact chemical names and concentrations:

1. M.S.M.A. 6 Selections Post Emergent Weed Control to contain 6.0 pounds M.S.M.A. per gallon with surfactant at a rate of three gallons per acre.
2. P.B.I. Trimec Broadleaf Herbicide at a rate of three gallons per acre.

2.4 ADDITIONAL EARTH FILL

A. If required for proper sod bed preparation and finish grading operations, additional fill shall be top soil (Section 2.5), clean and free from excessive clay, any roots, muck or other objectionable material.

B. Sand fill shall be clean pumped sand.

2.5 TOP SOIL

A. Shall be friable, natural surface soil obtained from a well drained area and free of all stones, shells, brush, weeds, stumps, roots and other litter. The soil shall have at least six (6%) percent organic matter and an acidity range between pH 5.0 to 7.0 inclusive, and no more than twenty (20%) percent clay.

2.6 WATER MANAGEMENT GEL

A. Water management gel shall consist of an acrylamide copolymer gel with the ability to retain and release available water to the root zone. The manufacturer’s recommended amount the water management gel shall be mixed with the required amount of backfill soil per plant before backfilling.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable or which is dusty.

B. The Contractor shall, prior to seeding or sodding operations, repair any ruts, depressions, eroded areas, etc. to the satisfaction of the Department of Parks and Parkways Landscape Architect.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

D. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Department of Parks and Parkways Landscape Architect and replace with new planting soil.

3.2 PREPARATION

A. Perform finish grading.

1. Immediately prior to seeding or sodding the bed shall be prepared by breaking, disking, harrowing, balding, dragging or other approved methods. The soil shall be thoroughly pulverized to a minimum depth of approximately four (4”) inches and smoothed by means of ranking or other approved methods. Each area shall then be rolled in two directions perpendicular to each other with a light roller and then finely raking shall be done by hand adjacent to structures, walks, curbing, and trees.
2. The finished surface shall be smooth, finely textured, free of all sticks, debris, rubbish, etc. and shall conform to the lines and grades indicated on the drawings and/or as directed by the Department of Parks and Parkways Landscape Architect. All humps, depressions or other irregularities shall be corrected prior to sodding.
3. Grade changes within the dripline of trees shall not exceed two inches.

3.3 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement and mix planting soil according to Parks and Parkways.

1. Reduce elevation of planting soil to allow for soil thickness of sod.

B. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

C. Before planting, obtain Construction Manager’s acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 SODDING

A. Lay sod within 24 hours of harvesting unless a suitable preservation method is accepted by Construction Manager prior to delivery time. Do not lay sod if dormant or if ground is frozen or muddy.

B. Upon delivery, slab sod shall be transferred and laid properly to avoid gaps and overlay of the soil, rolled or tamped and watered as directed.

1. Butt each piece tightly against the others.
2. Lay sod to form a solid mass with tightly fitted joints.

3. Butt ends and sides of sod; do not stretch or overlap.
4. Stagger sod strips or pads to offset joints in adjacent courses.
5. Avoid damage to soil or sod during installation.
6. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface.
7. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

D. Inspection of the work to determine its final acceptance will be made by the Department of Parks and Parkways Landscape Architect. No grass will be accepted unless it is alive and healthy.

E. In the event that sod is laid in place after September 15th and before March 31st, the Contractor shall be required to over-seed the sod with the required Annual Ryegrass seed.

3.5 TURF MAINTENANCE AND PROTECTION

A. General: The Contractor shall produce dense, vigorous, well established lawn and shall maintain lawn areas until final acceptance of the work by the Department of Parks and Parkways Landscape Architect.

1. Roll, regrade, and resod bare or eroded areas to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
2. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease.

B. Watering: Watering shall be required for all areas which have been seeded except when natural precipitation has provided the necessary moisture as determined by the Department of Parks and Parkways Landscape Architect. Watering shall be done in a manner which will prevent erosion due to the application of excessive qualities, and the watering equipment shall be of a type that will prevent damage to the finished surface. A minimum amount of rainfall would be two (2) one (1) inch rainfalls per week. If more water is needed it is the responsibility of the Contractor to provide it.

C. Protection: The sodded areas shall be protected against traffic or other use by placing warning signs of a type approved by the Department of Parks and Parkways Landscape Architect on the various areas where seeding or sodding has been completed or by other means, such as protective fencing.

D. Maintenance: The contractor shall provide all maintenance including, but not be limited to, the preparation and resodding of any bare areas, proper watering refilling of rainwashed gullies and rutted areas, refertilizing and mowing.

1. At the time of the first cutting, mower blades shall be set two and one half (2½) inches high. At least three (3) mowings shall be completed before the work will be accepted.

2. Any areas which fail to show a uniform stand of grass shall be reworked and reseeded at the Contractor's expense with the same seed as originally used thereon, and such reseeding shall be replaced until all required areas are covered with a satisfactory stand of grass.
3. A satisfactory stand of grass is defined as a cover of living grass in which gaps larger than four (4) inches do not occur at the time of acceptance by the Department of Parks and Parkways.
4. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings.
5. Do not delay mowing until grass blades bend over and become matted.
6. Do not mow when grass is wet.

E. Turf Post-fertilization: The Contractor shall refertilize the lawn areas after eight (8) weeks and the first two grass cuttings have been made, or as otherwise directed by the Department of Parks and Parkways Landscape Architect.

3.6 FINAL INSPECTION

A. Turf installations shall meet the following criteria as determined by Department of Parks and Parkways Landscape Architect:

1. Inspection of work to determine its final acceptance will be made by the Department of Parks and Parkways Landscape Architect. No plant material, turf included, will be accepted unless it is alive and healthy and all related work conforms to the drawings and specifications.
2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

B. Should any portion of the work be unacceptable, Contractor shall make all work acceptable and request a re-inspection by Department of Parks and Parkways Landscape Architect, within five (5) working days.

C. The Contractor will be notified by letter of acceptance within five (5) days after reinspection should the latter be necessary.

3.7 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

D. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION 329223

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SECTION 330110 – OPERATION AND MAINTENANCE OF WATER UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of performing all water utility transmission and distribution, joining, testing and disinfection, cleaning, inspection and rehabilitation work as defined in the plans and as per the requirements set forth in these specifications and related requirements.

B. The contractor shall provide all supervision, labor, materials, equipment, fuel, power, water and incidentals required to perform sewer rehabilitation as per the related specifications.

C. Section Includes:

1. Schedule of Operation and Maintenance of Water Utilities

D. Related Requirements:

1. Section 012200 Unit Prices
2. Section 013113 Project Coordination.
3. Section 013300 Submittal Procedures

1.3 PRICE AND PAYMENT PROCEDURES

A. Refer to Section 012200, Unit Prices, for an itemized schedule of bid items applicable to operation and maintenance of sewer utilities.

B. Price and Payment Procedures for Operations and Maintenance of Water Utilities is detailed in the applicable sections as itemized in Section 3.1, Schedule of Operation and Maintenance of Water Utilities

1.4 DEFINITIONS (NOT USED)

1.5 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans

1. General Specifications and Standard Drawings, current edition.

B. American Water works Association (AWWA), Latest Edition

C. Louisiana Administrative Code: Public Health – Sanitary Code Title 51, Part XII: Water Supplies

1.6 QUALITY ASSURANCE (NOT USED)

1.7 REGULATORY REQUIREMENTS (NOT USED)

1.8 FIELD CONDITIONS

A. Water Utility Rehabilitation, new construction, and testing and disinfection shall not interfere with residential or commercial water access within the City of New Orleans.

1.9 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.10 WARRANTY

A. See Section 017839, Project Record Documents, for general warranty requirements.

B. All work performed under Operation and Maintenance of Water Utilities, including all water utility rehabilitation as specified within Section 1.3, Related Requirements, shall include a minimum one (1) year warranty beginning on the date of Final Acceptance by the Owner, unless a longer warranty period is specified for individual products.

C. The contractor shall make corrective repairs to all defective work within the specified warranty period after the date of Final Acceptance.

D. Refer to the applicable specifications under Section 3.1 for warranty requirements specific to the sewer utilities work performed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

3.1 SCHEDULE OF OPERATION AND MAINTENANCE OF WATER UTILITIES

A. Operation and Maintenance of Water Utilities for this contract includes the following specification sections. The scope of work and procedures for measurement and payment are detailed in each applicable section.

1. Section 330110.73 Excavated Rehabilitation of Water Piping Utilities
2. Section 330112 Inspection, Testing and Disinfection of Water Utility Piping
3. Section 330509.11 Piping Specialties for Water Utilities
4. Section 330523 Horizontal Directional Drilling (Not Used)
5. Section 330531.16 PVC Pipe for Water Transmission and Distribution
6. Section 330531.19 Fusible PVC Pipe (Not Used)
7. Section 331421 Valves for Utility Service
8. Section 339200 Ductile Iron Piping (Not Used)
9. Section 339534 Polyethylene Pressure Piping (Not Used)
10. Section 339550 PVC Pressure Piping, Rubber Joints. (Not Used)

END OF SECTION 330110

SECTION 330110.73 – EXCAVATED REHABILITATION OF WATER PIPING UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of the rehabilitation of water pipelines and house connections by means of excavation (point repair) and line relocations.

1. Water repairs will only be made where directed and authorized by the Owner and/or the Engineer.

B. Water pipeline rehabilitation may include replacement or repair of, but shall not be limited to, cracked pipe, broken pipe, faulty tap, protruding tap, sheared joint, dropped joint, or other similar conditions. All necessary material will be furnished and installed by the Contractor to ensure proper water services after work is completed.

C. All materials and workmanship required by this section shall be performed in accordance with the applicable specification sections below.

D. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required for rehabilitation of all sewers utilities.

E. Section Includes:

1. Utility Location, Protection And Relocation
2. Sequencing of Work
3. Water Pipe Removal
4. Water Pipe Installation
5. Water Line Replacement
6. Water Line Relocation
7. Water Line Point Repair
8. Water House Connection Replacement
9. Replace Lead Service Line Water House Connection Replacement
10. Water Utility Manholes

F. Related Requirements:

1. Section 012200 Unit Prices
2. Section 013300 Submittal Procedures
3. Section 312319 Dewatering
4. Section 330130 Operation and Maintenance of Water Utilities
5. Section 330500 Common Work Results for Utilities
6. Section 330509.11 Piping Specialties for Water Utilities
7. Section 330531.16 PVC Pipe for Water Transmission and Distribution

8. Section 331300 Pipeline Testing and Disinfection

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Length Measurement: Measurements will be made as the horizontal length dimension of material installed, excluding overlap, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Install New Water Main: Payment for Install New Water Main will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Install New Water Main is broken down into specific pay-items based on nominal pipe diameter of water main as per the unit price schedule in Section 012200 Unit Prices.

2. Repair Water Main with Full Circle Clamp: Payment for Repair Water Main with Full Circle Clamp will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Repair Water Main with Full Circle Clamp is broken down into specific pay-items based on nominal pipe diameter of water main as per the unit price schedule in Section 012200 Unit Prices.

3. Repair Water Main with Bell Joint Clamp: Payment for Repair Water Main with Bell Joint Clamp will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Repair Water Main with Bell Joint Clamp is broken down into specific pay-items based on nominal pipe diameter of water main as per the unit price schedule in Section 012200 Unit Prices.

4. Water Main Point Repair (Less than 10-ft): Payment for Water Main Point Repair will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

a. Water Main Point Repair is broken down into specific pay-items based on nominal pipe diameter of water main as per the unit price schedule in Section 012200 Unit Prices.

5. Water Main Point Repair (Beyond 10-ft): Payment for Water Main Point Repair will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Water Main Point Repair is broken down into specific pay-items based on nominal pipe diameter of water main as per the unit price schedule in Section 012200 Unit Prices.

6. Replace Existing Water Main House Connection (Main to Water Meter): Payment for Replace Existing Water Main House Connection from Main to Water Meter will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Replace Existing Water Main House Connection (Main to Water Meter) is broken down into specific pay-items based on nominal pipe diameter of house connection as per the unit price schedule in Section 012200 Unit Prices.

7. Replace Lead Service Line Water House Connection (Main to Water Meter): Payment for Replace Existing Water Main House Connection from Main to Water Meter will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Replace Lead Service Line Water Main House Connection (Main to Water Meter) is broken down into specific pay-items based on nominal pipe diameter of house connection as per the unit price schedule in Section 012200 Unit Prices.

D. There is no direct measurement or payment for removal of existing water piping (including excavation and disposal of all subsurface organic and inorganic materials, existing service laterals, fittings and appurtenances), for the installation of repair couplings, service connection fittings (wyes or tees), or saddle fittings (wyes or tees), temporary water service connections and related work including temporary tie ins, removal of temporary work after installation or permanent work, and flushing, testing and disinfection of the permanent water main. This work is considered incidental to the rehabilitation of water lines and the cost of this work shall be included in the unit item bid price for the associated work included within this section.

E. Water Piping Point Repairs shall include all excavation, trenching, sheeting, shoring, pipework bedding, backfill and compaction, and traffic maintenance aggregate. Pavement sawcutting and removal, base course, pavement and sod restoration are not included in this work.

1.4 DEFINITIONS

A. House Connection: House Connections shall refer to the water service laterals and fittings necessary to connect from the main line to a building (house or other) meter.

B. Lateral Replacement: The replacement of a water service lateral and connections from the main line to the public property side of a S&WB water meter (including all fittings).

C. Point Repair: The repair of a defective length of an existing water line with defined limits as per the plans or adjustments in the field, inclusive of tie-ins and includes the replacement of any existing house connections with the use of wyes and/or tees.

D. Replacement: The replacement of an existing water line from the specified upstream to downstream station callout including all new and existing house connections, fittings and connectors.

E. Wye Cards: Wye Cards are the official Owner record of house connections for all water and sewer utilities, on file by the Owner's Department of House Connections, and filed by address block. The cards provide water house connection location information and shall be used to field locate service laterals prior to saw cutting, pavement removal and/or excavation.

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Product Data:

1. The Contractor shall submit the product data for the piping, joints, fittings and appurtenances documenting the manufacturer's name, pipe dimensional sizing and minimum pipe stiffness.

C. Certifications:

1. The Contractor shall submit pipe manufacturer's certification of compliance with these Specifications.

2. The Contractor shall submit documentation that the pipe manufacturer has certified the workmen who will be jointing pipe.

D. Manufacturer's Instructions:

1. The Contractor shall submit the pipe manufacturer's printed recommendations for handling, storing, and installing pipe.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

B. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Testing: Materials testing shall be based upon applicable ASTM Test Methods and AWWA Standards referenced herein. Costs of such inspection and tests shall be borne by the Contractor.

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)

1. CFR 29, Part 1910.146: Permit Required Confined Spaces
2. CFR 29, part 1926, Subpart P: Excavations

1.10 FIELD CONDITIONS

A. The Contractor shall examine the locations of every plan sheet, well in advance of any planned construction within that block, and report all leaks to the S&WB by calling in 529-2837.

1.11 DELIVERY, STORAGE AND HANDLING, AND INSPECTION

A. Refer to Sections 330531.16 PVC Pipe for Water Transmission and Distribution and 330509 Piping Specialties for Water Utilities for Delivery, Storage and Handling, and Inspection requirements for all PVC pipe, accessories, and related materials for this Contract.

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.13 WARRANTY

A. The Contractor shall furnish an extended warranty for Water line repairs for a period of one (1) year from the date of Final Acceptance.

B. It is the intent of these specifications and of the contract based thereon, that all pipe joints be water tight under all service conditions. Any and all leaks from improperly laid or defective joints which are discovered at any time prior to the elapse of one year following the final acceptance by the S&WB of the entire work, will be repaired by and at the expense of the Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

A. PVC Pipe and Fittings

1. All Pipe and Fittings used for the Rehabilitation of Water Piping shall be in accordance with Sections 330531.16 PVC Pipe for Water Transmission and Distribution and 330509 Piping Specialties for Water Utilities.

B. Bedding Material:

1. All bedding material shall conform to the S&WB General Specifications and Standard Drawings, current edition and Section 312323 Fill, Backfill and Compaction.

2.2 ACCESSORIES

A. All Accessories used for the Rehabilitation of Water Piping shall be in accordance with Sections 330531.16 PVC Pipe for Water Transmission and Distribution and 330509 Piping Specialties for Water Utilities.

2.3 BELL JOINT LEAK CLAMP

A. Bell-Spigot Ring

1. Material:

a. 2" – 12" nominal pipe size = Cast using Ductile Iron 80-55-06 per ASTM 536
b. 14" nominal pipe size = Carbon Steel per ASTM A36

2. Flexi-Coat® fusion bonded epoxy finish which meets application methods AWWA C213
3. Two piece interlocking design allow ease of installation without interrupting the flow in pipe
4. Spigot ring design enables a single clamp nominal size to fit on virtually all classes and brands of the same nominal size
5. Integral bolt head pocket for one wrench installation

B. Bell-Spigot Section

1. Material: 16" – 36" nominal pipe size = Cast using Ductile Iron 80-55-06 per ASTM 536
2. Flexi-Coat® fusion bonded epoxy finish which meets application methods AWWA C213
3. Interlocking design allow ease of installation without interrupting the flow in pipe
4. Integral bolt head pocket for one wrench installation

C. Section Connector

1. Material: 16" – 36" nominal pipe size = Cast using Ductile Iron 80-55-06 per ASTM 536
2. Flexi-Coat® fusion bonded epoxy finish which meets application methods AWWA C213
3. Interlocking design interfaces with bell-spigot section securing sections together with no hardware
4. Integral bolt head pocket for one wrench installation

D. Range Spacer

1. Material: 16" – 36" nominal pipe size = Cast using Ductile Iron 80-55-06 per ASTM 536
2. Flexi-Coat® fusion bonded epoxy finish which meets application methods AWWA C213
3. Spacer allows for nominal size section to fit on virtually all classes and brands of the same nominal size

E. Gasket

1. Nitrile (Buna-N) per ASTM D2000
2. Certified to NSF/ANSI 61-G & 372

3. Compounded to resist water, oil, natural gas, acids, alkalies, most (aliphatic) hydrocarbon fluids, and many other chemicals
4. Temperature range: -20ºF to +180ºF
5. Kee-lok Gasket design eliminates the need of field cutting the gaskets - the ends are easily joined - no need of staples tongs, tape or other gadgets to hold the gasket ends together (not available in 14", 30" or 36" which have bias cut ends)
6. Kee-lok Gasket provided with extension piece for use on larger O.D. pipe sizes

F. Restraint Rod

1. HSLA Carbon Steel per AWWA C111/A21.11
2. Rolled threads for improved physical characteristics, greater thread accuracy, and smooth surface finish

G. Nut

1. HSLA Carbon Steel per AWWA C111/A21.11
2. Heavy Hex Semi-Finished

2.4 SOURCE QUALITY CONTROL

A. Complete records of inspections, examinations and tests shall be kept and submitted to the Engineer.

B. The Engineer reserves the right to perform any of the inspections set forth herein where deemed necessary to assure that material and services conform to the prescribed requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. All necessary Examination prior to the Rehabilitation of Water Piping shall be conducted in accordance with Section 330531.16 PVC Pipe for Water Transmission and Distribution.

3.2 PREPARATION

A. All necessary preparation prior to the Rehabilitation of Water Piping shall be conducted in accordance with Section 330531.16 PVC Pipe for Water Transmission and Distribution.

B. Dewatering operations shall comply with Section 312319.

3.3 UTILITY LOCATION, PROTECTION AND RELOCATION

A. The existing utilities shown are approximate. The Contractor shall locate any and all utilities on site that may require protection and/or relocation. The contractor is solely responsible for verifying the location of and scheduling any relocation of all conflicting utilities.

B. The Contractor shall obtain the S&WB “Wye Cards” and shall field mark the locations of all sewer service laterals and water house connections that are located within or adjacent to the limits of rehabilitation.

C. Where it is necessary for the proper accomplishment of the work to repair, move, and/or replace any such utility or structure, do so in accordance with the provisions set forth herein.

D. Damages to the water distribution system caused by the Contractor, shall be repaired by the Contractor at no direct pay, or repaired by the S&WB at the Contractor's expense. If in the opinion of the Engineer that damages to the water distribution system were not a result of the Contractors normal construction activities, the contractor will be paid at the unit prices in the bid form. It is the Contractor's responsibility to verify the location of water and sewer services and to protect them from damage.

1. Where service connections or lines from water or gas mains or sewers to the user's premises are disconnected, broken, damaged, or otherwise rendered inoperative by the Contractor for any reason, the Contractor shall, at Contractor's own expense, arrange with the respective utility company for any repairs or relocation of lines under their jurisdiction, or for any lines not within their jurisdiction; the Contractor shall repair or replace same and restore service to the premises.

3.4 SEQUENCING OF WORK

A. The Contractor's crew shall complete all rehabilitation required on a single water line segment, defined by the limits in the construction documents, before the crew can move to another location.

B. Extreme care shall be exercised to keep pipe in exact alignment and elevation.

1. New/replacement water lines and/or house connections shall be installed at the same existing elevations and grades unless otherwise directed by the Engineer.

2. At any time during a repair, the Engineer may make field judgments that shall govern over the repair.

C. Pipe laying shall not precede backfilling by more than 100 feet without approval by the Engineer.

D. The Contractor shall not leave any excavation/trenches open overnight.

3.5 WATER PIPE REMOVAL

A. After defective pipe has been exposed, uncover only as much additional pipe as is necessary to allow space for workmen and the installation of the new pipe.

B. Cut out the defective pipe in such a way that the ends are straight and smooth and free of chips or cracks.

C. Remove and dispose of the defective pipe from the trench, and excavate the former bedding material of any nature to 12-inches below the pipe grade.

D. There is no direct measurement or payment for the removal of water piping, house connections or bedding.

3.6 INSTALLATION

A. Water piping installation shall be performed in accordance with the manufacturer's instructions and in accordance with the applicable specification section for the water pipeline material specification.

B. Installation of PVC water main for rehabilitation include pipe replacement, point repairs and/or replacement of water house connections, shall be performed in accordance with Section 330531.16 PVC Pipe for Water Transmission and Distribution.

3.7 WATER LINE REPLACEMENT

A. Work shall include the complete removal of specified existing water piping and house connections, the decommissioning of specified water piping via the introduction of flowable fill into isolated water main sections and in accordance with Section 3.5.

B. Installation of new PVC water pipelines in accordance with Section 3.6.

C. All water house connections shall be replaced from the main sewer pipeline to the private property line in accordance with Section 3.10 below.

D. Couplings shall be provided at the limits of work for each water house connection located at the property line and in accordance with Section 330509 Piping Specialties for Water Utilities.

E. Fittings shall be included with water main replacements in accordance with Section 330509 Piping Specialties for Water Utilities.

3.8 WATER LINE RELOCATION

A. Where the rehabilitation schedule requires an existing line to be relocated, the Contractor shall layout the work in order to maintain the existing upstream and downstream invert elevations.

B. Installation of new PVC water mains in accordance with Section 3.6.

C. All water house connections shall be replaced from the main sewer pipeline to the private property line in accordance with Section 3.10 below.

D. Upon completion of water main relocations and tie-in of all house connections, the Contractor shall abandon in place the existing sewer pipeline using flowable fill in accordance with Section 330500, Common Work Results for Utilities, at no additional cost to the Owner.

3.9 WATER LINE POINT REPAIR

A. The Contractor is responsible for verifying locations in reference to the water main pipeline as shown on the plans.

B. For PVC water pipelines, the limits of the starting and ending stations for the point repair shall be field adjusted to match existing pipe joints.

C. Point repairs of an existing water main shall consist of recaulking an existing lead bell joint and installing a bell joint clamp, repair a leak on the water main by installing a full circular

stainless steel repair clamp or replacing a section of existing water main. Work shall include the complete removal of all existing water pipeline and house connections located within the limits of the point repair and in accordance with Section 3.5.

D. Installation of new PVC water pipelines in accordance with Section 3.6.

E. All house connections shall be replaced from the water main to the private property line in accordance with Section 3.10 below.

F. A coupling shall be provided at each of the point repair in accordance with Section 330509 Piping Specialties for Water Utilities.

G. A coupling shall be provided at the limits of work for each water house connection located at the property line and in accordance with Section 330509 Piping Specialties for Water Utilities.

H. A fitting shall be included with water main replacements in accordance with Section 330509 Piping Specialties for Water Utilities.

3.10 WATER HOUSE CONNECTION REPLACEMENT

A. Water house connections 5/8" to 2" shall consist of replacing the entire service connection from the water main to the meter box at the property line as indicated on the plans, any time a wye or tee connection is replaced as part of a water main repair or replacement, or otherwise as directed by the Engineer.

B. Existing 5/8" and 1" services shall be replaced with 1" Polyethylene (PE) tubing. All other existing water house connections shall be replaced with the same size as the existing connection, unless otherwise noted.

C. There shall be no splices allowed in the new or existing water service connections unless there is a new main being installed at this location, or if directed by the Engineer.

D. House Connection point repairs are performed only on those portions of service lines that are located in an easement or right-of-way; no repairs to service lines shall be performed on private property.

E. The limits of the house connections shall be determined or verified by the Engineer in the field.

3.11 REPLACE LEAD SERVICE LINE WATER HOUSE CONNECTION

A. Whenever the contractor encounters a lead service water house connection in the performance of this contract, the service line shall be reported to the S&WB project representative and then replaced by the Contractor.

B. Discovered lead service water lines shall be reported to S&WB Construction Manager.

C. The Contractor shall notify the homeowner, using the S&WB provided notification, prior to performance of work.

D. The Contractor will replace the existing water house connection upon receipt of written authorization by the S&WB Representative.

E. The new water service house connection provided shall be in accordance with Section 3.10 above.

F. The Contractor shall dispose of the lead service water line in accordance with S&WB Environmental directives and all applicable state regulations for lead contaminated items.

3.12 WATER MANHOLES

A. Water Manholes shall be made and conform to Section 330572 Masonry Structures and the S&WB Stand Drawings.

B. A flexible manhole adapter, conforming to Section 330509 Piping Specialties for Sewer Utilities, shall be fitted onto the PVC pipe and inserted into the manhole opening.

3.13 MAINTENANCE (NOT USED)

3.14 FIELD QUALITY CONTROL

A. Lay no pipe except in the presence of an inspector representing the Engineer.

B. Do not allow water to run or stand in the trench while pipe laying is in progress or before the trench has been backfilled.

C. Do not at any time open up more trench than available pumping facilities are able to dewater in accordance.

D. Testing, Disinfection and Inspection shall conform to Section 331300 Pipeline Testing and Disinfection.

3.15 PROTECTION

A. The Contractor shall carefully protect all existing sewers, water lines, gas lines, sidewalks, curbs, gutters, pavements, electric lines, or other utilities or structures in the vicinity of the work from damage at all times.

B. The Contractor shall take reasonable care during the initial excavation of the defective pipe so as not to disturb existing pipe that is still acceptable.

C. The Contractor shall carefully protect all new pipe in place from damage until backfill operations have been completed.

3.16 CLEAN UP AND REMOVAL

A. The material from excavation to be wasted shall be loaded directly into trucks during excavation; do not stockpile on the street.

B. The Contractor shall dispose of portions of any piece of material removed during installation unless retained by the Engineer.

C. Upon completion of the Rehabilitation of water piping, the Contractor shall fully clean and restore the site.

END SECTION 330130.73

SECTION 33 01 12 – INSPECTION, TESTING AND DISINFECTION OF WATER UTILITY PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing common Testing and Disinfection Procedures for Water Pipeline Utilities, including but not limited to field hydrostatic pressure testing and disinfection and purity testing of potable water system piping, fittings and valves.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to provide complete sewer utilities testing.

C. The Contractor shall meet the requirements of the Louisiana Department of Health and Hospitals (LA-DHH) for installation and disinfection of potable water mains.

D. Section Includes:

1. Hydrostatic Testing of Water Mains
2. Flushing
3. Disinfection of Water Mains
4. Bacteriological Testing
5. Tie-ins

E. Related Requirements:

1. Section 013113 Project Coordination
2. Section 013300 Submittal Procedures

1.3 PRICE AND PAYMENT PROCEDURES

A. There is no direct measurement or payment for Testing and Disinfection of Water Utilities. This work is considered incidental to respective unit bid item being tested in accordance with this specification.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Test Reports:

1. The Contractor shall submit the testing plan and testing results for each sewer line segment tested.
2. The Contractor shall submit the testing plan and testing results for manhole vacuum testing.

C. A pipeline testing and disinfection plan will be required to be submitted by the Contractor for review and approval by the Engineer a minimum of one month before testing is to start. As a minimum, the Contractor's pipeline testing and disinfection plan shall include the following:
   1. Testing schedule.
   2. Proposed equipment and chemicals.
   3. Proposed plan for water conveyance including flow rates.
   4. Proposed plan for water control.
   5. Proposed plan for water disposal including flow rates.
   6. Proposed measures to be incorporated in the project to minimize erosion while discharging water from the pipeline.
   7. Proposed plan for disinfection.
   8. Proposed plan for dechlorination of flushing water and superchlorinated disinfection water including discharge points and discharge rates.
   9. Proposed plan for testing chlorine levels throughout the length of the pipeline including test locations.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

   1. General Specifications and Standard Drawings, current edition.

B. Standard Methods for the Examination of Water and Wastewater, Nineteenth Edition

C. American Water works Association (AWWA), Latest Edition

   1. AWWA B300: Hypochlorites
   2. AWWA B301: Liquid Chlorine
   3. AWWA C600: Installation of Ductile Iron Water Mains and Their Appurtenances
   4. AWWA C605: Underground Installation of PVC Pressure Pipe and Fittings for Water
   5. AWWA C651: Disinfecting Water Mains

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Testing: Materials testing shall be based upon applicable ANSI Test Methods and AWWA Standards referenced herein. Costs of such inspection and tests shall be borne by the Contractor.

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)
B. Louisiana Administrative Code: Public Health – Sanitary Code Title 51, Part XII: Water Supplies
C. ANSI/NSF Standard 60, Drinking Water Treatment Chemicals – Health Effects

1.10 FIELD CONDITIONS

A. Testing shall not be performed until the sewer line installation and all connected sewer service laterals have been completed.

1.11 DELIVERY, STORAGE AND HANDLING

A. Transporting, storage, and handling of all disinfection products, utilized for chlorination, shall be performed in accordance with all applicable Federal, State, Local Laws and Regulations.

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

B. The Contractor shall notify the Construction Manager and any necessary S&WB Department as specified below 72 hours in advanced of any pipe testing; pipe testing shall be performed during normal business hours and shall not be performed on weekends or holidays.

1.13 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. All test equipment, chemicals for chlorination, temporary valves, bulkheads, or other water control equipment and materials shall be determined and furnished by the Contractor subject to the Engineer's review. No materials shall be used which would be injurious to the construction or its future functions.

B. All temporary thrust restraint equipment and facilities required for hydrostatic testing will be considered incidental.

2.2 MATERIALS

A. Chlorine for disinfection shall be in the form of liquid chlorine, calcium or sodium hypochlorite solution.

1. If calcium hypochlorite is used, the Contractor shall pre-mix the calcium hypochlorite into solution before application.
2. All hypochlorite raw materials must be certified as suitable for the treatment of drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 60.

B. Sodium hypochlorite and calcium hypochlorite shall be in accordance with the requirements of ANSI/AWWA B300. Liquid chlorine shall be in accordance with the requirements of ANSI/AWWA B301

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Filling Mains:

1. The Contractor shall make all necessary provisions for conveying water to the points of use and for the proper disposal of test water.
2. Water mains shall be filled under the direction of the Engineer in such a manner as to prevent excessive pressure reductions in the existing main and water hammer.

3.2 PREPARATION

A. The Contractor shall furnish all materials, equipment and labor for the purpose of setting up and performing of all testing described herein.

B. The Contractor shall ensure the pipe to be subject to testing is fully complete, cleaned and free of any dirt or debris.

3.3 HYDROSTATIC TESTING OF WATER MAINS

A. No section of pipeline shall be hydrostatically tested until all field-placed concrete, mortar, or grout has attained full strength. At the Contractor's option, early strength concrete may be used when full strength requirements conflict with schedule requirements. All such applications shall be approved by the Engineer prior to installation.

B. The Contractor shall provide and install all materials in accordance with S&WB Dwg. No. 7004-W, latest revision. The test plugs are to be caps or plugs as required and shall be secured to the pipe ends. The test plugs become the Contractor's property after their use. Prior to testing, all pipes should be filled with water a minimum of twenty-four hours prior to testing in order to minimize absorption of water by the inner surface.

C. The Contractor shall provide all equipment and labor required for filling and emptying the main and measuring the pressure and leakage. The Contractor's test setup shall include provisions for the Sewerage & Water Board to install their own pressure gage so that the Contractor's pressure readings can be verified.

D. Hydrostatic pressure tests shall be made on any valved section of all newly laid main and service pipe in the presence of the Construction Manager, unless otherwise directed by the Engineer and as specified in AWWA C600 Section 5.2, Hydrostatic Testing. All entrained air shall be expelled from the line prior to elevating the internal pressure to the specified test pressure. The test pressure shall be 100 psi. The test pressure shall be applied and maintained for a two-hour duration with no pressure loss. The allowable leakage shall not exceed values as per "AWWA C600 - Allowable Leakage."

E. Testing shall be against closed hydrants with hydrant valves open. In addition, the test shall include the service installation(s) against the closed angle meter valve with the corporation stop open.

AWWA C600
Allowable Leakage per 1000 ft (305 m) of Pipeline*--gph

NOMINAL PIPE DIAMETER -- (inches)																
Avg. Test Pressure psi (bar)	3	4	6	8	10	12	14	16	18	20	24	30	36	42	48	54
200 (14)	0.29	0.38	0.57	0.76	0.96	1.15	1.34	1.53	1.72	1.91	2.29	2.87	3.44	4.01	4.59	5.16
175 (12)	0.27	0.36	0.54	0.72	0.89	1.07	1.25	1.43	1.61	1.79	2.15	2.68	3.22	3.75	4.29	4.83
150 (10)	0.25	0.33	0.50	0.66	0.83	0.99	1.16	1.32	1.49	1.66	1.99	2.48	2.98	3.48	3.97	4.47
125 (9)	0.23	0.30	0.45	0.60	0.76	0.91	1.06	1.21	1.36	1.51	1.81	2.27	2.72	3.17	3.63	4.08
100 (7)	0.20	0.27	0.41	0.54	0.68	0.81	0.95	1.08	1.22	1.35	1.62	2.03	2.43	2.84	3.24	3.65

*If the pipeline under test contains sections of various diameters, the testing allowance will be the sum of the testing allowance for each size.

F. If the test reveals any defects, leakage in excess of the allowable, or failure, the Contractor shall furnish all labor, equipment and materials required to locate and make necessary repairs. The testing of the line (and repairing of defects, excessive leakage, and failures) shall be repeated until a test satisfactory to the Engineer has been achieved. All visible leaks shall be repaired regardless of the allowance used for testing. All costs for locating, repairing, and retesting shall be borne by the Contractor.

G. HYDROSTATIC TESTING ON HDPE LINES:
   1. Hydrostatic test shall be 1.5 times operating pressure or 1.5 times working pressure rating. Refer to PPI TN-46: Guidance for Field Hydrostatic Testing of High Density Polyethylene Pressure Pipelines.
   2. If any mechanical joint connections show signs of drip leakage or spray leakage, the Contractor shall measure the existing torque force of the bolts and re-torque an additional 10%-15% to the bolts at the center of the leak and on each side of the leak. This process will continue until the leak appears to stop and the pipeline remains sealed.
   3. The bolts shall not be loosened on a pressurized system. Refer to ASTM F2164: Standard Practice for Field Leak Testing.
   4. If the torque on the bolts reaches 150% of the specific torque value and the flange assembly still leaks, the Contractor shall stop the hydrostatic test, de-pressurize the system, and safely disassemble the flange joint.

3.4 FLUSHING

A. Prior to chlorination, the main shall receive a complete flushing of all foreign matter through all hydrants and blow-offs such that a velocity of at least 2.5 feet per second is developed in the main. If the required velocity cannot be achieved, a minimum of three (3) pipe volumes of water shall be turned over in the lines being tested. The flushing shall be accomplished during prearranged times under direction and supervision of the Engineer. If sufficient outlets are not available, a tap shall be provided large enough to develop the required velocity in the main and to allow the removal of foam swabbing "pigs". (see Table II below)

1. The Contractor is to provide, at no additional cost to Owner, hoses, temporary pipes, ditches, etc., as required to dispose of flushing water without damage to adjacent properties. No flushing water may be discharged to any public waters in the State of Louisiana.

B. All valves shall be operated through their extreme open and closed positions during flushing. Each hydrant shall be inspected after flushing to see that the entire valve operating mechanism is in good, working condition.

C. Flushing water onto the street subgrade shall not be allowed at any time. Provisions for the dechlorination and disposal of the water onto areas where no damage will be caused shall be made by the Contractor prior to any flushing operations. All flushing shall meet current regulatory requirements. Rate of operation of all valves and hydrants shall be done in a manner that avoids water hammer damage to the existing system and the improvements.

TABLE II
REQUIRED OPENINGS FOR 2.5 fps FLUSHING VELOCITY
(40 psi Pressure)

PIPE SIZE (inch)	FLOW (gpm)	ORIFICE SIZE (inch)	HYDRANT OUTLET NOZZLES
			Amount/Diameter (inches)
4	100	15/16	One 2-1/2
6	220	1-3/8	One 2-1/2
8	390	1-7/8	One 2-1/2
10	610	2-5/16	One 2-1/2
12	880	2-13/16	One 2-1/2
14	1200	3-1/4	Two 2-1/2
16	1565	3-5/8	Two 2-1/2
18	1908	4-3/16	Two 2-1/2
20	2450	4-5/8	Three 2-1/2
24	3510	5-9/16	Four 2-1/2 or One 4-1/2 and One 2-1/2
30	5500	7	Five 2-1/2 or One 4-1/2 and Two 2-1/2 or Two 4-1/2

3.5 DISINFECTION OF WATER MAINS

A. The Contractor shall not proceed with the chlorination process until successfully passing the hydrostatic pressure test and given authorization to proceed from the Engineer.

B. After testing and repairing where necessary, all potable water systems shall be thoroughly flushed, cleaned, and disinfected by the Contractor in accordance with the latest version of AWWA C651.

1. The Contractor shall use the continuous feed method of chlorination as described in AWWA C651. The tablet method and the slug method are not acceptable.
2. The Contractor shall use either sodium hypochlorite or calcium hypochlorite to provide the disinfectant for the chlorination process. If calcium hypochlorite is used, the Contractor shall pre-mix the calcium hypochlorite into solution before application. All hypochlorite raw materials must be certified as suitable for the treatment of drinking water by an accredited certification organization in accordance with ANSI/NSF Standard 60, Drinking Water Treatment Chemicals – Health Effects.

C. Potable water shall be used for disinfection, hydrostatic pressure testing, and flushing. Potable water piping shall be disinfected with a solution containing an initial minimum chlorine concentration of at least 50 mg/l. The chlorine solution shall be retained in the piping system long enough to destroy non-spore-forming bacteria. The period shall be at least 24 hours for water mains less than 30 inches in diameter, and for 48 hours for water mains greater than or equal to 30 inches in diameter. After the chlorine treated water has been retained for the required time, the chlorine residual at pipe extremities and at other representative points shall be at least 5mg/l. If the residual is less than 5mg/l, the disinfection procedure shall be repeated until the desired residual is obtained. Any additional costs incurred due to a failed test shall be borne by the Contractor.

1. The Contractor shall contact the S&WB Water Purification Department (504) 865-0572, a minimum of 72 hours prior to chlorinating the new main to schedule the sample collection.

D. Disposal of any water containing chlorine shall be performed in accordance with the latest edition of AWWA C651, and all other state and local requirements. Disposal may be made into existing sanitary sewer systems providing approvals are obtained from the respective systems owner prior to disposal.

E. The Contractor's chlorination and flushing setup shall include provisions for the S&WB to collect a sample, via a ¾" faucet without hose bib threads, on the inlet and each discharge stand pipe.

F. Results of the bacteriological testing shall be satisfactory with all DHH requirements.

3.6 BACTEROLOGICAL TESTING

A. 16 hours after final flushing, and before the new water main connection is open to the distribution system two (2) consecutive sets of bacteriological samples shall be collected from the new main. All samples obtained from the new main shall conform to the procedures set forth in accordance with the latest edition of AWWA C651-14. All samples shall be tested for bacteriological quality in accordance with *Standard Methods for the Examination of Water and Wastewater*, Nineteenth Edition by an approved laboratory certified by the Louisiana state health officer, and shall show the absence of coliform organisms. A standard heterotrophic plate count may be required as directed by the Engineer.

B. The S&WB shall collect and analyze samples for coliform bacteria, chlorine residual, and turbidity from all pipe extremities and from representative points. All samples must be free from contamination by coliform bacteria and have acceptable turbidity levels as determined by the S&WB. The Contractor shall be responsible for final flushing and coordinating sample collection by the S&WB.

C. In the event that a new water main tests positive for coliform bacteria following chlorination, the Contractor will be responsible for reflushing the main and coordinating resampling for coliform analysis. If the second set of coliform samples test positive, the Contractor shall be required to repeat the chlorination procedure. A fee may be imposed on the Contractor for the additional supervision, sampling, and analysis required of S&WB employees as the result of the necessity of resampling and/or re-chlorination.

1. No extra payment or extension of Contract time will be allowed the Contractor for the time elapsed to achieve acceptable sterilization of the pipe

D. If trench water has entered the new main during construction or, if in the opinion of the Engineer excessive quantities of dirt or debris have entered the new main, bacteriological samples shall be taken at intervals of approximately 200 feet and shall be identified by location. Samples shall be taken of water that has remained in the new main for at least 16 hours after final flushing has been completed.

E. Samples for bacteriological analysis shall be collected in sterile bottles treated with sodium thiosulfate as required by *Standard Methods for the Examination of Water and Wastewater*. No hose or fire hydrant shall be used in the collection of samples.

F. Records of all bacteriologic testing shall be provided to Engineer by the Contractor prior to final acceptance of the new lines.

3.7 TIE-INS

A. The Contractor shall tie-in the new water main within 72 hours of receiving notification of acceptable laboratory test results from the S&WB. If the Contractor fails to complete the tie-in within 72 hours, additional flushing and re-testing for coliform bacteria by S&WB shall be required. Under no circumstances will the Contractor be allowed to make a tie-in to the existing water distribution system until acceptable laboratory test results have been obtained by the S&WB. All tie-ins shall be performed under the direct supervision, and to the satisfaction, of the S&WB.

B. The tie-in shall be configured in such a manner to require 16 linear feet of pipe or less. The S&WB does not allow installation of pipe runs greater than 16 linear feet without hydrostatic pressure testing and chlorination. All pipe used in the tie-in shall be thoroughly cleaned and swabbed with a 1-5 percent hypochlorite disinfecting solution just prior to being installed, as recommended by AWWA C651.

C. The S&WB forces shall be responsible for the closure of all water valves. Contractors shall not operate S&WB valves. The S&WB cannot guarantee a water-tight closure. The Contractor must work continuously and without interruption until the new piping is tied into the existing system and services are restored.

D. Before the water service is interrupted, the Contractor shall:

1. Request a water test closure through the S&WB Networks Department (942-3891) a minimum of seven (7) working days in advance of the scheduled tie-ins.

2. Have notified all residents and the New Orleans Fire Department a minimum of forty-eight (48) hours in advance of interruption of service.

E. After the tie-in is completed, the new line will be refilled under normal S&WB water main pressure (approximately 60 pounds per square inch). Tie-in piping will then be visually inspected for leaks and if any leaks are discovered shall be repaired by the Contractor using only such methods as approved by the S&WB, at the Contractors expense.

F. The Contractor shall perform a final flush on the newly installed water main under the supervision of the S&WB Engineer to flush out the remaining free chlorine residual and fill the line with water representative of the quality in the distribution system prior to hydraulically connecting the new main to the distribution system.

3.8 MAINTENANCE (NOT USED)

3.9 FIELD QUALITY CONTROL (NOT USED)

3.10 PROTECTION (NOT USED)

3.11 CLEAN UP AND REMOVAL (NOT USED)

3.12 TESTING SCHEDULE (NOT USED)

END SECTION 330112

SECTION 330130 – OPERATION AND MAINTENANCE OF SEWER UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of performing all sewer utility flow control, cleaning, inspection and rehabilitation work as defined in the plans and as per the requirements set forth in these specifications and related requirements.

B. The contractor shall provide all supervision, labor, materials, equipment, fuel, power, water and incidentals required to perform sewer rehabilitation as per the related specifications.

C. Section Includes:

1. Schedule of Operation and Maintenance of Sewer Utilities

D. Related Requirements:

1. Section 012200 Unit Prices
2. Section 013113 Project Coordination.
3. Section 013300 Submittal Procedures

1.3 PRICE AND PAYMENT PROCEDURES

A. Refer to Section 012200, Unit Prices, for an itemized schedule of bid items applicable to operation and maintenance of sewer utilities.

B. Price and Payment Procedures for Operations and Maintenance of Sewer Utilities is detailed in the applicable sections as itemized in Section 3.1, Schedule of Operation and Maintenance of Sewer Utilities

1.4 DEFINITIONS

A. Sewer Utility Rehabilitation: Includes all work specified in the plans that requires the contractor to identify and/or make repairs and/or replace existing sanitary sewer utilities, including, but not limited to sewer flow control, cleaning, CCTV inspection, mainline sanitary sewer replacement and/or relocation, point repairs, and/or lining for mainline sewer pipelines and sewer service laterals and as well as sewer manhole cleaning, masonry and grout repairs, frame and cover adjustment and/or replacement and grout lining as required by the applicable specifications.

B. Surcharged: When the sanitary sewer collection system has a water level that is 12” or more above the top of the pipe inlet, the manhole shall be considered surcharged.

1.5 SUBMITTALS (NOT USED)

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans

1. General Specifications and Standard Drawings, current edition.
2. Sewer Condition Classification Manual, current edition.
3. Sewer Overflow Abatement Plan, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE (NOT USED)

1.9 REGULATORY REQUIREMENTS (NOT USED)

1.10 FIELD CONDITIONS

A. Sanitary Sewer Utility Rehabilitation shall not be performed during periods where the sanitary sewer system is surcharged.

1.11 DELIVERY, STORAGE AND HANDLING (NOT USED)

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.13 WARRANTY

A. See Section 017839, Project Record Documents, for general warranty requirements.

B. All work performed under Operation and Maintenance of Sewer Utilities, including all sanitary sewer utility rehabilitation as specified within Section 1.2, Related Requirements, shall include a minimum one (1) year warranty beginning on the date of Final Acceptance by the Owner, unless a longer warranty period is specified for individual products.

C. The contractor shall make corrective repairs to all defective work within the specified warranty period after the date of Final Acceptance.

D. Refer to the applicable specifications under Section 3.1 for warranty requirements specific to the sewer utilities work performed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

3.1 SCHEDULE OF OPERATION AND MAINTENANCE OF SEWER UTILITIES

A. Operation and Maintenance of Sewer Utilities for this contract includes the following specification sections. The scope of work and procedures for measurement and payment are detailed in each applicable section.

1. Section 330130.03 Sewer Flow Control.
2. Section 330130.13 Cleaning of Sewers.
3. Section 330130.16 CCTV Inspection of Sewers.
4. Section 330130.73 Rehabilitation of Sewers.
5. Section 330130.76 Cured-In-Place Pipe Lining.
6. Section 330130.79 Pipe Bursting.
7. Section 330130.83 Rehabilitation of Manholes.
8. Section 330500 Common Work Results for Utilities.
9. Section 330505 Sewer Utilities Testing.
10. Section 333111 Public Sewerage Gravity Piping.

END SPECIFICATION SECTION 330130

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SECTION 330130.03 – SEWER FLOW CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing temporary sewer flow control to accommodate sanitary sewer rehabilitation work as required in the plans.

B. The Contractor is responsible to determine the method of sewer flow control for all pipe sizes and flow quantities. **Sewer Flow information is not available during the advertisement and bid phase of the contract.** If the Contractor cannot adequately control the sanitary sewer flow as required to perform the work, then the Contractor will be required to perform Temporary Flow Diversion Pumping.

C. The Contractor shall provide all supervision, labor, materials, equipment, fuel, power, water, and incidentals required to install, maintain and remove temporary complete sewer flow control measures as required to perform work under this contract.

D. Section Includes:

1. Plugging or Blocking
2. Temporary Flow Diversion Pumping
3. Private Sanitary Service Line Shutdown

E. Related Requirements:

1. Section 013113 Project Coordination.
2. Section 013300 Submittal Procedures.
3. Section 015526 Traffic Control.

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Each: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

2. Hour: Measurement will be made on the quantity of hours above and beyond the hours included in the setup and initial hour operation, subject to the engineer's approval prior to the extended operation beyond the number of hours included in the initial setup pay item.

C. Payment:

1. Sanitary Sewer Flow Diversion, Setup & 48-hour Operation: Payment for Sanitary Sewer Flow Diversion, Setup & 48-hour Operation will be made at the respective Contract unit bid price as scheduled in Section 012200 per Each (paragraph 1.3.B.2) as authorized by the engineer and adjusted by the Construction Manager with acceptable submittals, field measurements and documentation.

2. Sanitary Sewer Flow Diversion, Beyond 48 Hours: Payment for Sewer Flow Diversion, Beyond 48 Hours will be made at the respective Contract unit bid price as scheduled in Section 012299 per Hour (paragraph 1.3.B.2) as authorized by the engineer and adjusted by the Construction Manager with acceptable field submittals, field measurements and documentation.

D. There is no direct measurement or payment for plugging or blocking of sewer lines. Contractor's cost to perform this work shall be included in the respective Contractor's unit bid item prices for sanitary sewer rehabilitation tasks.

E. There is no direct measurement and payment for pumping down of isolated lines or for diversion pumping where not authorized.

F. No measurement or payment will be made for either Sanitary Sewer Flow Diversion, Setup & 48-hour Operation or Sanitary Sewer Flow Diversion, Beyond 48 Hours without contractor's submittals, engineer's review of the submittals, written authorization to proceed and inspector's daily reports recording the hours of pump operations.

1.4 DEFINITIONS

A. Surcharged: When the sanitary sewer collection system has a water level that is 12" or more above the top of the pipe inlet, the manhole shall be considered surcharged.

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Shop Drawings:

1. Sewer Flow Control Plan: The Contractor shall submit a Sewer Flow Control Plan to the Engineer prior to the start of sanitary sewer flow control or other sanitary sewer cleaning, inspection or other rehabilitation work. The plan shall include site layout, line size, design flow, method, materials, pump information, piping plans, contingency methods, emergency response plans and emergency contact information.

C. Design Data:

1. The Contractor shall provide all the design data for the sewer flow design conditions include volumetric flow, total head, pump efficiency and required pump motor power.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans

1. General Specifications and Standard Drawings, current edition.
2. Sewer Overflow Abatement Plan, current edition.

1.7 PERFORMANCE REQUIREMENTS

A. Sewer flow control systems shall be of sufficient capacity to handle existing flows plus additional flow that may occur due to rain events and shall not adversely impact upstream or downstream flow conditions or levels.

B. Depth of Flow: For mainline sewer cleaning and CCTV, the sewer flow control systems shall maintain an approximate depth of flow in the mainline sewer as follows:

1. 6” to 10” Diameter Pipe: 10% of Pipe Diameter
2. 12” to 24” Diameter Pipe: 15% of Pipe Diameter
3. 24” Diameter Pipe or greater: 20% of Pipe Diameter

C. Flow Diversion Pumping Capacity Requirements: The Contractor is required to determine the required capacity for temporary flow diversion pumping setups. The Contractor shall also ensure the pump has sufficient head capacity to deliver the determined flow at the head conditions specific to the site setup. The Contractor will be required to fully restore sanitary sewer flow if the sewer flow control is found to be causing the sanitary sewer system to surcharge.

1.8 QUALITY ASSURANCE (NOT USED)

1.9 REGULATORY REQUIREMENTS

A. Diversion of wastewater to non-sanitary sewer facilities, e.g., storm drainage systems, on the ground or roadway surface, or natural waterways, is strictly prohibited.

1.10 FIELD CONDITIONS

A. Sewer Flow Control shall not be performed during periods where the sanitary sewer system is surcharged.

1.11 DELIVERY, STORAGE AND HANDLING (NOT USED)

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

B. The Contractor shall not request or depend on the Sewerage & Water Board to change sanitary sewer pump station operations as a method of sewer flow control.

1.13 WARRANTY (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sanitary sewer system is not surcharged prior to the start of work.

3.2 PREPARATION

A. Prepare site as required for installation of flow diversion pump and piping if required.

B. Contractor shall conform to Section 015526 “Traffic Control” for the review and submittal of all Traffic Control Plans prior to the closing of any streets. The approved traffic control plan shall be fully executed prior to the installation of the required sewer flow control system.

3.3 INSTALLATION

A. Line plugs, temporary pumps, piping and other sewer flow control appurtenances shall be installed as per the supplier’s and/or manufacturer’s instructions.

3.4 PLUGGING OR BLOCKING

A. Line plugs shall be permanently marked with a Contractor identification tag. Plugs shall be so designed that all or any portion of the flow can be released as required at any time.

B. Plugs shall be inflatable plugs constructed of specially treated industrial fabric and reinforced neoprene. Plugs shall be equipped with steel pull rings and aluminum end clamps. All plugs shall be firmly attached to a stationary object at ground level by a steel cable in order to prevent loss of plug in the pipeline.

3.5 TEMPORARY FLOW DIVERSION PUMPING

A. Flow diversion pumping is only authorized where plugging and blocking of sewer lines is insufficient to prevent surcharged lines. Written authorization from the Construction Manager or Engineer must obtained before flow diversion pumping is paid.

B. Diversion pumping shall provide continuous sanitary sewer service to the users of the sanitary sewer system while operations are in progress by diverting flow when necessary around the work location and pumping it to a downstream manhole or adjacent sanitary sewer system.

C. The Contractor shall supply the necessary pumps, conduits, and other equipment to divert the flow of wastewater around the pump station, restriction, blockage, or other structure where the work is to be performed.

D. The Contractor shall provide an experienced operator on site to monitor the operation, adjust pumping capacity, perform minor repairs, report problems and keep the equipment in proper operating condition at all times during diversion pumping operations.

E. If pumping is required on a 24-hour basis, all equipment shall be operated in a manner to keep the pump noise at a minimum.

F. Pumping shall be begin prior to the start of work each day and throughout the work day as necessary to provide a dry line to work in and a workable site. Pumping operations will be stopped at the end of each work day and sewer lines being worked on shall be returned to operational condition without bypass pumping.

3.6 PRIVATE SERVICE LINE SHUTDOWN

A. When it is necessary to shut down a private sewer service line while work is in progress and before the service lines are reconnected, the residents are to be notified by the Contractor not more than one week prior to and again not more than 24 hours immediately prior to the shutdown.

B. No sewer or water service is to remain out of service for more than a period of eight (8) hours, and not before 8:00 a.m., or after 6:00 p.m.

C. Sewage from the services or main line shall be discharged or diverted into an adjacent or downstream sewer only.

3.7 SEWER FLOW CONTROL INTERRUPTION

A. During the course of sewer flow control, the Contractor shall monitoring sanitary sewer depth in the sanitary sewer system upstream of the sewer flow control area. Should the sewer liquids encroach on into the top 3-ft of the upstream sewer manholes, the Contractor shall stop work and facilitate the discharge of the impounded sanitary sewer into the downstream sanitary sewer system, either by providing sewer tie-ins and removing plugs, by pumping or via vacuum truck operations. There will be no separate measurement, payment or compensation for this work.

3.8 MAINTENANCE

A. The Contractor shall maintain sewage flow to prevent backup or overflow onto public and private property or into storm drainage systems.

3.9 FIELD QUALITY CONTROL (NOT USED)

3.10 PROTECTION

A. Whenever flows in a sewer line are blocked, plugged, or diverted, sufficient precautions shall be taken by the Contractor to protect the sewer lines from damage that might be inflicted by excessive surcharging. Further, precautions shall be taken by the Contractor to ensure that

sewer flow control operations do not cause flooding or damage to public or private property being served by the sanitary sewers involved.

3.11 CLEAN UP AND REMOVAL

A. In the event of spillage or overflow, the Contractor shall take immediate action to arrest the spillage or overflow, clean up the area and disinfect the spillage in accordance with the Sewerage & Water Board's Overflow Abatement Plan. The Contractor shall immediately notify the Engineer and Owner of any sanitary sewer spills or overflows.

B. When flow diversion pumping operations are complete, all pumps, piping, etc. shall be drained into the sanitary sewer prior to disassembly. Sewage shall only be allowed to discharge into the sanitary sewer system.

C. In accordance with the submitted Sewer Flow Control Plan, the Contractor shall be solely responsible for executing sewer flow control operations and for damage to private and public property that may result from its operations.

D. Contractor shall remove the line plug upon completion of the sanitary sewer rehabilitation work and ensure that sanitary sewer flow has been fully restored.

E. Contractor shall fully restore any site modifications performed to accommodate the sewer flow control system.

END OF SECTION 330130.03

SECTION 33 01 30.13 – CLEANING OF SEWERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing cleaning to sewer pipelines, sewer service laterals and manholes to remove all debris, solids, grit, sand, gravel, shells, grease, etc. as required in order for the Contractor to perform work scheduled in this contract.

B. The Contractor is responsible to determine the method of sewer cleaning for all pipe sizes and manhole diameters.

C. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all cleaning of sewers.

D. Section Includes:

1. Cleaning Equipment
2. Sewer Cleaning
3. Manhole Cleaning

E. Related Requirements:

1. Section 015136 Temporary Water.
2. Section 012200 Unit Prices.
3. Section 013113 Project Coordination.
4. Section 013300 Submittal Procedures.
5. Section 330130.03 Sewer Flow Control.

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200 - Unit Prices, for unit price requirements.

B. Measurement:

1. Length Measurement: Measurements will be made as the horizontal length dimension of sewer cleaned, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Sewer Mainline Cleaning (8” – 14”): Payment for Sewer Mains Cleaning (8” – 14”) will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. Sewer Mainline Cleaning (15” – 21”): Payment for Sewer Mains Cleaning (15” – 21”) will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

3. Sewer Mainline Cleaning (24” – 27”): Payment for Sewer Mains Cleaning (24” – 27”) will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

4. Obstruction Removal: Payment for Obstruction Removal will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurement.

D. Measurement and payment for cleaning of sewers will be paid for in the following circumstances.

1. CCTV Inspection:

   a. The cleaning of sewers where CCTV inspection is scheduled in the plans within the designation of “Find and Fix” will be separately measured and paid.

   b. The cleaning of sewers where CCTV inspection is directed by the engineer will be separately measured and paid.

2. Sewer Rehabilitation: The cleaning of sewers scheduled for sewer rehabilitation by point repair in the plans will be separately measured and paid.

E. No Separate Measurement or Payment will be made for cleaning of sewers in the following circumstances.

1. Sewer Rehabilitation: The cleaning of sewers scheduled for sewer rehabilitation by full line replacement or pipe bursting in the plans will not be separately measured or paid. The costs of cleaning the sewer lines shall be included in the cost to perform the associated sewer rehabilitation.

2. Cured In Place Pipe Lining: The cleaning of sewers scheduled for CIPP lining in the plans will not be separately measured or paid. The costs of cleaning the sewer lines shall be included in the cost to install the CIPP lining.

3. Sewer Service Laterals: The cleaning of sewer service laterals will not be separately measured or paid. The costs of cleaning the sewer service laterals shall be included in with the CCTV inspection of the sewer service laterals.

4. Sewer Manholes: There will be no separate measurement taken for the cleaning of sewer manholes. The cost of cleaning sewer manholes shall be included with the applicable rehabilitation of the sewer manholes.

1.4 DEFINITIONS

A. Cleaning: Cleaning shall be defined as the use of high velocity jet nozzle cleaning equipment, bucket machines, scrapers or augers necessary to clean the line to the satisfaction of the Engineer.

B. Obstruction Removal: Obstruction Removal is defined as removal of obstructions such as roots and intruding connections. Obstruction removals may require the use of special equipment such as rodding or bucket machines, and/or expanding cutters. The Contractor will obtain authorization from the Engineer prior to conducting any obstruction removal. Authorization shall be required for each individual sewer reach. No payment shall be made for Obstruction Removal without written approval by the Engineer.

C. Find and Fix: Sewer lines designated as “Find and Fix” in the plans were not accessible to the Designer during the study and/or design phase of the sewer system evaluation. The Contractor shall locate and reveal both upstream and downstream manholes for these lines, and then perform cleaning of the sewer line in order to accommodate CCTV inspection.

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Field Inspection Records:

1. Cleaning of Sewers Logs: Contractor shall submit a proposed form, log and reports prior to the start of work for the Engineer’s review. The log, form and/or report shall be submitted on a weekly basis to document the progress of Cleaning of Sewers, inclusive of all information requested within these specifications.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans

1. General Specifications and Standard Drawings, current edition.

1.7 PERFORMANCE REQUIREMENTS

A. Selection of cleaning equipment shall be based on the conditions of the sewer lines at the time the work commences.

1. The Contractor will determine the most effective method to clean sewer lines.
2. Equipment and methods selected shall be satisfactory to the Engineer.

B. When requested by the Engineer, the Contractor shall demonstrate the performance capabilities of the cleaning equipment and method proposed for use on the project. If results obtained from the demonstration are not satisfactory to the Engineer, the Contractor shall provide other equipment or devices that will clean the sewer line to the satisfaction of the Engineer.

C. For hydraulically propelled or high velocity sewer cleaning equipment, the Contractor shall install a gauge to indicate working pressure on the discharge of high-pressure water pumps.

D. The Contractor shall use a nozzle that directs the cleaning force to the full circumference of the pipe.

1.8 QUALITY ASSURANCE (NOT USED)

1.9 REGULATORY REQUIREMENTS

A. The Contractor shall dispose of any grit, debris or other material removed from the sanitary sewer system as part of this work into a permitted facility in accordance with Section 3.09, Cleanup and Removal.

B. Disposal to non-sanitary sewer facilities, e.g., storm drainage systems, on the ground or roadway surface, natural waterways, or other unpermitted sites is strictly prohibited.

1.10 FIELD CONDITIONS

A. Cleaning of sewer lines shall not be performed if the Contractor does not have sufficient Sewer Flow Control to the depths specified in Section 330130.03.

1.11 DELIVERY, STORAGE AND HANDLING (NOT USED)

1.12 COORDINATION

A. Refer to Section 013113 Project Coordination.

1.13 WARRANTY (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sewer system is not surcharged prior to the start of work.

3.2 PREPARATION

A. Contractor shall provide Sewer Flow Control, as specified in Section 330130.03 prior to the start of Cleaning of Sewers.

B. Contractor shall conform to Section 015526 “Traffic Control” for the review and submittal of all Traffic Control Plans prior to the closing of any streets. The approved traffic control plan shall be fully executed prior to the performance of Cleaning of Sewers.

C. The Contractor shall obtain a suitable water supply to operate his cleaning equipment at the flow rates and pressures required by the equipment manufacturer.

D. The Contractor shall install a suitable sand trap, weir, dam, or suction pipe in the downstream manhole so that solids and debris are trapped for removal prior to the performance of Cleaning of Sewers.

E. The Contractor shall position his equipment and layout the site so as to not obstruct any fire hydrants or otherwise prevent its use in case of a fire in the area served by the hydrant.

3.3 CLEANING EQUIPMENT

A. All cleaning equipment must be equipped with a backflow preventer to prevent any contamination to the public water supply

1. When utilizing water from the public water supply, the Contractor shall remove water meters, fitting and piping from fire hydrants at the end of each working day, and comply with Section 015136 Temporary Water.

B. HYDRAULIC SEWER CLEANING EQUIPMENT

1. The equipment used shall be of a movable dam type and be constructed so that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer.

2. The movable dam shall be of the same diameter as the sewer line being cleaned and shall provide a flexible scraper around the outer periphery to ensure total removal of grease.

3. If sewer cleaning balls or other such equipment which cannot be collapsed are used, special precautions against flooding of the sewers and public or private property shall be taken.

C. HIGH VELOCITY WATER JET CLEANING EQUIPMENT

1. All high velocity sewer cleaning equipment shall be constructed for ease and safety of operation.
2. The equipment shall have a variety of high velocity nozzles.
3. The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines to be cleaned.
4. In addition to conventional nozzles, use a nozzle or series of nozzles which direct the cleaning force to the bottom of the pipe for sewers 18 inches and larger.
5. The equipment shall include a water tank, auxiliary engines, pumps and hydraulically driven hose reel all contained within one single unit.
6. All controls shall be located so the equipment can be operated above ground. A gauge shall be installed to indicate working pressure on the discharge of high-pressure water pumps.

D. MECHANICAL CLEANING EQUIPMENT

1. Bucket machines shall be used in pairs with sufficient power to perform the work in an efficient manner.
2. Machines shall be belt operated or have an overload device.
3. Machines with direct drive which could cause damage to the pipe shall not be used.
4. Power rodding machines shall be either sectional or continuous type capable of holding a minimum of 750 feet of rod.
5. The rod shall be heat treated steel.
6. To ensure safe operation, the machine shall have a fully enclosed body and an automatic safety release clutch or relief valve.

E. PRESSURE WASHING EQUIPMENT

1. Operating Pressure – 3,000 psi with the capability to produce a continuous flow of water at a minimum temperature of 210-degree Fahrenheit at a minimum force of 3,000 psi.

F. When requested by the Engineer, the Contractor shall demonstrate the performance capabilities of the cleaning equipment and method proposed for use on the project. If results obtained from the demonstration are not satisfactory to the Engineer, the Contractor shall provide other equipment or devices that will clean the sewer line to the satisfaction of the Engineer.

3.4 SEWER CLEANING

A. Cleaning shall be performed prior to internal inspection to preclude the buildup of debris from infiltration and inflow sources and discharges from upstream sewer line segments sections.

B. All interior surfaces of sewer lines shall be cleaned adequately to provide for a camera used in internal inspection to discern structural defects, misalignment, and infiltration and inflow sources.

C. Selection of cleaning equipment shall be based on the conditions of the sewer lines at the time the work commences. The Contractor will determine the most effective method to clean sanitary sewer lines. Equipment and methods selected shall be satisfactory to the Engineer.

D. A daily log shall be maintained to record the location of all sewer lines cleaned, lengths of lines cleaned, method of cleaning, line sizes, and number of passes.

E. If cleaning of an entire line segment cannot be successfully performed from one manhole, the equipment shall be re-setup at the manhole on the opposite end of the pipe segment being cleaned and cleaning shall be re-attempted.

3.5 MANHOLE CLEANING

A. Contractor shall clean manhole walls, trough, bench and all other interior manhole components using a pressure washer at a minimum pressure of 3,000 psi and at 210 degrees Fahrenheit.

B. Contractor shall use detergents or muriatic acid capable of removing dirt, grease, oil, and other matter which would prevent bonding of a sealing material to the manhole wall. The Contractor shall refer to the lining material specifications required by the lining manufacturer.

3.6 OBSTRUCTION REMOVAL

A. Approved Obstruction Removal shall be done by robotic equipment prior to CIPP Lining, for protruding taps, roots, or obstructions up to twelve feet in length.

B. Only partial payment will be made until pre and post lining CCTV data is submitted.

3.7 MAINTENANCE (NOT USED)

3.8 FIELD QUALITY CONTROL

A. Acceptance of sewer cleaning work is contingent upon the successful completion of the television inspection.

1. If television inspection shows debris, solids, sand, grease or grit remaining in the line, the cleaning is considered unsatisfactory.

2. The Contractor, at no additional cost to the Owner, shall repeat the cleaning, inspection, and televising of the sewer line until cleaning is acceptable by the Construction Manager.

3.9 PROTECTION

A. The Contractor shall take necessary precautions to protect sewer line segments and manholes from damage that may be imposed by the improper selection of the cleaning or improper use of the equipment.

B. When using hydraulically propelled devices, the Contractor shall take necessary precautions to ensure that the water pressure created does not cause damage or flooding to public or private property.

3.10 CLEAN UP AND REMOVAL

A. The Contractor is responsible for the disposal of waste from cleaning operations at a permitted disposal site.

1. The Sewerage and Water Board's East Bank Sewage Treatment Plant is available for disposal of waste from cleaning operation under this Contract.

2. The Contractor shall abide by the operational policies and normal administrative working hours for the East Bank Sewage Treatment Plant when used for disposal.

3. The Contractor shall notify the Construction Manager in writing if other permitted sites are utilized for disposal.

4. The Owner will maintain ownership responsibilities of the waste from cleaning operations disposed properly in permitted, regulated facilities.

B. The Contractor shall remove sludge, dirt, sand, rocks, grease, roots, and other solid or semi-solid material resulting from the cleaning operation at the downstream manhole of the section being cleaned.

1. Passing debris from one sewer main to another sewer main is not allowed.

2. The Contractor shall load debris from the manholes into an enclosed container that is permitted for liquid waste hauling.

3. The Contractor shall not accumulate debris, liquid waste, or sludge on the site except in totally enclosed containers approved by the Construction Manager and in accordance with local zoning ordinances.

4. The Contractor shall remove solids or semi-solids resulting from cleaning operation from the site and dispose of it at the end of each workday or otherwise store it in an approved liquid tight storage container.

C. Sewer Flow Control shall be removed and sewer flow shall be normalized in accordance with Section 330130.03.

END OF SECTION 33 01 30.13

SECTION 330130.16 – CCTV INSPECTION OF SEWERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing CCTV inspection sanitary sewer pipelines and sanitary sewer service laterals.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all CCTV inspection activities.

C. Section Includes:

1. CCTV Inspection Equipment
2. Pipe Inspection Camera Equipment
3. Lateral Inspection Camera
4. Camera Operation
5. CCTV Inspection Schedule

D. Related Requirements:

1. Section 013113 “Project Coordination”
2. Section 012200 “Unit Prices”
3. Section 013300 “Submittal Procedures”
4. Section 330130.03 “Sewer Flow Control”
5. Section 330130.13 “Cleaning of Sewers”

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200 - Unit Prices, for unit price requirements.

B. Measurement:

1. Length Measurement: Measurements will be made as the horizontal length dimension of sewer CCTV inspected, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Sanitary Sewer Main Line CCTV Inspection: Payment for Sanitary Sewer Main Line CCTV Inspection will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. Sanitary Sewer Service Lateral CCTV Inspection: Payment for Sanitary Sewer Service Lateral CCTV Inspection will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and C.

D. No Separate Measurement or Payment will be made for CCTV Inspection of Sewers where rehabilitation work is scheduled in the plans for the sanitary sewer line or sanitary sewer service lateral. The Contractor shall include the cost of CCTV Inspection of Sewer Pipelines in the associated scheduled rehabilitation method for the sanitary sewer line and sanitary sewer service laterals.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Field Inspection Reports:

1. The Contractor shall maintain a master copy of all DVD's and CCTV Inspection Reports until the Final Acceptance of the Contract.

2. All submitted DVD's and CCTV Inspection Reports are property of the Owner and will not be returned to the Contractor.

3. Where defect coding is required, the Contractor shall also submit the Microsoft Access Database including the defect coding for all lines inspected to date.

4. The Contractor shall provide video recordings with audio comments in the DVD format, recorded at Standard Play (SP).

5. Complete sewer line segments shall be included on the same video recordings (i.e., CCTV inspections for sewer line segments shall not be divided among DVD's).

6. The video format shall be an MPEG-1 compressed video, and resolution video format shall be QSIF (Quarter-size Standard Image Format) of 176 x 112 pixels for NTSC video format.

7. The Contractor shall submit documentation that the CCTV inspection equipment to be utilized meets the requirements in these specifications.

8. The Contractor shall complete a Television Inspection Report covering the television inspection work and the information acquired, as described in the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

9. The same television inspection code sheet shall be used throughout the Contract. The code sheet shall include abbreviations for specific defects as detailed in the Sewer Condition Classification Manual. Submit all electronic data files for the previous week's work to the Engineer weekly CD-ROM. Include hard copy printouts of the correlating inspection reports with each submittal. Submit electronic files on CD-ROM and DVD's for corresponding lines concurrently. Submit all electronic data files in a Microsoft Access database format provided by the Owner. The manual and data entry database are available for review at the office of the Construction Manager.

10. At the start of each line segment video recording, record and report the measured length of the sewer line being inspected. Begin with zero at the inside face of the start manhole, and end at the inside face of the end manhole.

11. At the start of each line segment video recording, electronically generate and clearly display, on the viewing monitor and video recording, a record of data in alphanumeric form containing the following information:

    a. Size and Length of Line;
    b. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero;
    c. Type of pipe material;
    d. Upstream manhole name and downstream manhole name;
    e. Date of inspection;
    f. Road name or line segment location description;
    g. Direction of inspection (upstream or downstream);
    h. Starting time of the inspection.

12. Once the survey of the sewer line is under way, continuously display specific data on the viewing monitor and video recording. The size and position of the data display shall not interfere with the main subject of the picture yet shall be easily readable when the recording is replayed. At a minimum, the following data should be displayed:

    a. Automatic update of the camera's position, in feet and tenths, in the sewer line from adjusted zero.
    b. Upstream manhole name and downstream manhole name.

13. Each sewer length, i.e. the length of sewer between two consecutive manholes, shall be entered on a separate coding sheet. Thus, where a Contractor elects to "pull through" a manhole during a CCTV Survey, the Contractor shall start a new coding sheet at the manhole "pulled through" and shall re-set the distance to zero on the coding sheet.

14. All CCTV Inspection Records shall be submitted in batch on a weekly basis.

15. The Contractor shall provide the Board with monthly readings of water consumption for billing purposes.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans
    1. General Specifications and Standard Drawings, current edition.

2. Sewer Condition Classification Manual, current edition.
3. Sewer Overflow Abatement Plan, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Contractor is responsible to ensure the camera and lighting system is operable without recording lens distortions, inadequate lighting, dirty lens, blurred or hazy recordings or unsteady camera.

1.9 REGULATORY REQUIREMENTS (NOT USED)

1.10 FIELD CONDITIONS

A. CCTV Inspection of sewer lines shall not be performed in the Contractor does not have sufficient Sewer Flow Control to the depths specified in Section 330130.03 of the sewer pipelines have not been sufficiently cleaned as per Section 330130.13.

1.11 DELIVERY, STORAGE AND HANDLING (NOT USED)

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.13 WARRANTY (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sanitary sewer system is not surcharged prior to the start of work.

3.2 PREPARATION

A. Contractor shall provide Sewer Flow Control, as specified in Section 330130.03 Sewer Flow Control prior to the start of CCTV Inspection of Sewers.

B. Contractor shall submit a Traffic Control Plan to the approving authority (DPW, DOTD, etc) for review and approval prior to the closing of any streets. The approved traffic control plan shall be fully executed prior to the performance of CCTV Inspection of Sewers.

C. The Contractor shall provide adequate sewer line cleaning as specified in Section 330130.13 Cleaning of Sewers prior to the start of CCTV Inspection of Sewers.

D. The Contractor shall position his equipment and layout the site so as to not obstruct any fire hydrants or otherwise prevent its use in case of a fire in the area served by the hydrant.

3.3 CCTV INSPECTION EQUIPMENT

A. The Contractor shall select and use closed-circuit television equipment that will produce color video recordings.

B. The Contractor shall supply camera skids and floating skids or rafts as required to complete pre- and post- rehabilitation CCTV inspection as required in the Contract.

1. The Contractor shall inspect sewer lines with pan and tilt conventional television equipment.

2. The operation of the television equipment shall be controlled by a skilled technician or supervisor who shall be located at the control panel in the mobile television studio.

3. The CCTV equipment including reels and the television studio are to be contained within a single vehicle.

4. The camera system shall be able to navigate around minor objects, roots and debris.

5. The camera cable shall be retracted to remove slack and to ensure an accurate footage reading.

3.4 PIPE INSPECTION CAMERA EQUIPMENT

A. The television camera used for the sewer line inspection shall be one specifically designed and constructed for sewer pipeline inspection. The camera shall be waterproof and shall be operative in any conditions that may be encountered in the inspection environment. The camera shall be operative in 100% humidity conditions. The Contractor shall produce video recordings using a pan-and-tilt, radial viewing pipe inspection camera that pans ±275 degrees and rotates 360 degrees.

B. If television inspection of an entire line segment cannot be successfully completed from one manhole; a reverse set-up must be performed to obtain a complete television inspection. If successful televising of the entire line segment cannot then be accomplished, the inspection effort shall be abandoned. The Contractor will be paid for the inspection of the actual length of line segment televised. There will be no additional payment for reverse set-ups.

C. The camera shall be moved through the line segment in either direction at a rate not to exceed 30 feet per minute. Any means of propelling the camera through the sewer line which would produce non-uniform or jerky movement of the camera, will not be acceptable. Stop the camera at all defects so that a clear picture of the defect remains on the video screen for the operator to verbally describe the defect on the tape. Record a full 360 degree pan view at all service lateral lines.

D. When manually operated winches are used to pull the television camera through the line segment, radios or other suitable means of communication shall be set up between the two manholes of the line segment being inspected to ensure good communications between members of the crew.

E. Wherever prevailing conditions allow, the CCTV camera head shall be positioned to reduce the risk of picture distortion. In circular sewers, position the television camera lens centrally (in prime position) within the sewer. In non-circular sewers, camera location shall be at mid-height of the sewer, unless otherwise agreed, and centered horizontally. In all instances, orient the camera along the longitudinal axis of the sewer when in prime position. A positioning tolerance of plus or minus 10% of the vertical sewer dimension shall be allowed when the camera is in prime position.

F. The adjustment of focus and iris shall provide a minimum focal range from 2 inches in front of the camera's lens to infinity. The distance along the sewer in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer. The illumination must be such as to allow an even distribution of the light around the sewer perimeter without the loss of contrast, flare out of picture, or shadowing.

G. The Contractor shall use a camera with camera height adjustment so that the camera lens is always centered at one-half the inside diameter or higher in the pipe being televised. The Contractor shall provide remote and/or automatic focus and aperture control.

H. The television inspection equipment shall be of such high quality as to enable the following to be achieved:

1. Color: With the monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance.

2. Resolution: The live picture must be displayed on a monitor capable of providing a clear, stable image free of electrical interference with a minimum horizontal resolution not less than 450 lines.

I. The Closed Circuit Television monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the distance along the line from the cable calibration point to the center point of the camera. The Contractor shall use a suitable metering device that enables the cable length to be accurately measured; this shall be accurate to ±2%. The Contractor shall demonstrate that the tolerance is being complied with, by tape measurement between manholes on the surface. This taped measurement must be included on each television inspection log both written and electronic. If the Contractor fails to meet the required standard of accuracy, the Engineer shall instruct the Contractor to re-survey those lengths of sewer at no additional cost to the Owner.

J. Video recording shall be in DVD format at standard play speed. Video recordings shall be high quality. The video recording shall reproduce clearly discernable sound and video information on the television monitor. The recording shall be free of interference and shall produce a clear, stable image.

K. The audio portion of the recording shall be clear and complete, and easily discernible. The audio portion shall record the location or identification of the line segment, the manhole-to-manhole direction of travel, and the distance traveled on the specific inspection. The audio portion shall record and identify all visible defects and include the information required by the Sewerage and Water Board of New Orleans' Sewer Condition Classification Manual, latest edition.

L. The video recording equipment shall be continuously connected to the television inspection and monitoring equipment. The video recording and monitoring equipment shall have the built-in capability to allow the Engineer and the Contractor to instantly evaluate both the audio and video quality of the video recording at all times during the television survey. Playback speed shall be continuously adjustable from one-third normal speed for slow-motion viewing to normal playback speed. Video recordings shall be enclosed in plastic containers which shall clearly indicate the date the tape was recorded, the designated section(s) of sewer lines contained on the tape, and the referenced sewer inspection report covering the sections of the sewer lines so included.

3.5 LATERAL INSPECTION CAMERA EQUIPMENT

A. The television camera used for the lateral inspection shall be one specifically designed and constructed for lateral survey inspection. The Contractor shall provide a portable “mini-cam” CCTV inspection system. Lighting for the camera shall be suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions. The camera, television monitor, and other components of the video system shall provide a minimum of 700 line resolution color video satisfactory to the Engineer and contain footage readings displayed on the monitor and videotape at all times.

B. The camera system shall be able to inspect 3-, 4-, and 6-inch lateral connections up to 100 feet from the sewer mainline (continuous inspection). The launcher shall be mounted on a tread tractor that moves through main sewers and positions the inspection camera launcher opposite the lateral line connection.

C. The camera system shall have a mini black and white or color, fixed position, "positioning" camera to observe and place the mini color, push, "inspection" camera at the lateral. The inspection camera shall be attached to an 100-foot long push cable with a fiberglass rod core for cable rigidity. The camera head shall point forward while traveling through the sewer mainline.

3.6 CAMERA OPERATION

A. Throughout all CCTV inspections, the camera equipment shall be positioned with the camera directed along the longitudinal axis of the sewer. All efforts should be made to prevent damage to the sewer conduit during the television inspection. In the case where damage is caused by the Contractor, for any reason, such as would be caused by incorrect deployment of camera system or retrieval of lodged equipment, the cost of repair or remedy shall be absorbed by the Contractor and shall be considered an incidental part of the Work. No separate measurement or payment will be made.

B. The CCTV operator shall accomplish simultaneous video and audio recording of defects, services, on site.

C. The camera shall be moved through the line in either direction at a uniform rate, stopping when necessary to ensure proper documentation of the sewer’s condition. Manual winches, power winches, TV cable, powered rewinds, and crawler devices or other devices that do not obstruct the camera view and do not interfere with proper documentation of the sewer conditions shall be used to move the camera through the entire sewer line section. The Contractor shall reposition his equipment as necessary so that the inspection can be performed from manhole on the opposite end of the pipe segment being viewed.

D. Whenever non-remote powered and controlled or manually operated winches are used to pull the television camera through the line, telephones or other suitable means of communication shall be employed by the Contractor to ensure good communications between members of the crew.

E. The lateral inspection camera video shall contain the forward and backward movement of the camera up to the mainline and back to the cleanout. If an attempt to video the service lateral line cannot be completed to the sewer main line, the blockage will be reported to the Engineer in writing and the service lateral line CCTV inspection will be abandoned.

F. When utilizing a lateral camera launcher system from the mainline, a maximum of 100 linear feet of the lateral or to the property cleanout, whichever is closer to the sewer main line, shall be inspected. Actual footage inspected may vary depending on lateral condition, bends, roots, launcher limitations, etc.

3.7 PRE-REHABILITATION CCTV INSPECTION

A. The Contractor shall perform Pre-Rehabilitation CCTV Inspection as per the schedule in section 3.13 below.

B. The Contractor shall provide defect coding as part of Pre-Rehabilitation CCTV Inspection.

1. Where the CCTV Inspection requires defect coding, the defect coding shall be performed in accordance with the Sewerage & Water Board of New Orleans Sewer Condition Classification Manual.

C. The Contractor shall note and record the locations of all sanitary sewer lateral services, by line station numbering, orientation, service line diameter, material and condition.

D. The Engineer will make the final determination of rehabilitation for line segments identified as find and fix line segments.

E. The Contractor shall determine if a change or addition in the rehabilitation method(s) is necessary for line segments identified to receive a full length CIPP liner. If the Contractor determines that a change or addition in the rehabilitation method(s) is necessary, the Contractor shall provide the pre-rehabilitation CCTV inspection, DVD and inspection report to the Engineer for review and approval.

3.8 POST REHABILITATION CCTV INSPECTION

A. The Contractor shall perform Post-Rehabilitation CCTV Inspection as per the schedule in section 3.13 below.

B. The Contractor is not required to provide defect coding as part of Post-Rehabilitation CCTV Inspection.

C. The Contractor shall note and record the locations of all sanitary sewer rehabilitation, by line station numbering and condition.

3.9 MAINTENANCE (NOT USED)

3.10 FIELD QUALITY CONTROL

A. Acceptance of CCTV Inspection of Sewers is contingent upon the successful submittal of a complete television inspection of a clean sanitary sewer line and an inspection free of camera distortions, inadequate lighting, dirty lens, blurred or hazy images or an unsteady video.

1. If the television inspection shows debris, solids, sand, grease or grit remaining in the line, the cleaning and CCTV inspection is considered unsatisfactory.
2. If the television inspection produces camera distortions, inadequate lighting, dirty lens, blurred or hazy images or an unsteady video, the CCTV inspection is considered unsatisfactory.
3. The Contractor, at no additional cost to the Owner, shall repeat the cleaning, inspection, and televising of the sewer line until cleaning and CCTV inspection is acceptable by the Engineer.

B. The distance between manholes shall be verified by measuring tape as per the applicable paragraph on 'Measurement' in section 1.4 above.

1. If the counter distance and the taping distance differ by more than 2 feet per 100 feet, the Contractor shall be re-televised by CCTV Inspection.

3.11 PROTECTION

A. The Contractor shall take necessary precautions to protect sewer line segments and manholes from damage that may be imposed by the improper use of the CCTV inspection equipment.

3.12 CLEAN UP AND REMOVAL

A. Upon completion of the CCTV Inspection, the Contractor shall fully clean and restore the site.

B. Sanitary Sewer Flow Control shall be removed and sanitary sewer flow shall be normalized in accordance with Section 330130.03.

3.13 CCTV INSPECTION SCHEDULE

A. Pre-rehabilitation CCTV

1. Sewer line segments identified as find and fix line segments, at direct measurement and pay.
2. Sewer line segments to be rehabilitated by point repair, at direct measurement and pay.
3. Sewer line segments to be rehabilitated by full-length lining, at **NO** direct measurement and pay. If excavated point repairs are determined after this video the contractor will be reimbursed as per sub-paragraph 2.
4. Service laterals to be rehabilitated by CIPP lining, at direct measurement and pay.

B. Post-rehabilitation CCTV

1. Sewer line segments repaired by full-length replacement, at **NO** direct measurement and pay.

2. Sewer line segments rehabilitated by full-length CIPP lining, at **NO** direct measurement and pay.
3. Sewer line segments rehabilitated by excavated point repair, at **NO** direct measurement and pay.
4. Service laterals rehabilitated by CIPP lining, at **NO** direct measurement and pay.

C. The Contractor, upon written request of the Engineer, shall perform CCTV inspections for line segments and/or service laterals in addition to this schedule, at direct measurement and pay.

END OF SECTION 330130.16

SECTION 330130.73 – EXCAVATED REHABILITATION OF SEWERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of the rehabilitation of sewer pipelines and sewer service laterals by means of excavation, including full line replacement, partial line replacement (point repair) and line relocations.

B. Sewer pipeline rehabilitation may include replacement or repair of, but shall not be limited to, cracked pipe, broken pipe, faulty tap, protruding tap, sheared joint, dropped joint, faulty manhole connection, or other similar conditions. All necessary material will be furnished and installed by the Contractor to ensure proper sewer services after work is completed.

C. All materials and workmanship required by this section shall be performed in accordance with the applicable specification sections below.

D. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required for rehabilitation of all sewers utilities.

E. Section Includes:

1. Utility Location, Protection And Relocation
2. Sequencing of Work
3. Sewer Pipe Removal
4. Sewer Pipe Installation
5. Sewer Line Replacement
6. Sewer Line Relocation
7. Sewer Line Point Repair
8. Sewer Service Lateral Replacement
9. Sewer Manhole Connections

F. Related Requirements:

1. Section 012200 Unit Prices
2. Section 013300 Submittal Procedures
3. Section 312319 Dewatering
4. Section 330130 Operation and Maintenance of Sewers Utilities
5. Section 330130.03 Sewer Flow Control
6. Section 330130.13 Cleaning of Sewers
7. Section 330130.16 CCTV Inspection of Sewers
8. Section 330500 Common Work Results for Utilities
9. Section 330505 Sewer Utilities Testing
10. Section 330509 Piping Specialties for Sewer Utilities

11. Section 333111 Public Sewerage Gravity Piping

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Length Measurement: Measurements will be made as the horizontal length dimension of material installed, excluding overlap, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Install New Sewer Mains: Payment for Install New Sewer Mains will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Install New Sewer Mains is broken down into specific pay-items based on nominal pipe diameter and average depth of sewer pipe invert as per the unit price schedule in Section 012200 Unit Prices.

2. Sewer Point Repair: Payment for Sewer Point Repair will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Sewer Point Repair is broken down into specific pay-items based on nominal pipe diameter and average depth of sewer pipe invert as per the unit price schedule in Section 012200 Unit Prices.

3. Sewer Point Repair, Beyond: Payment for Sewer Point Repair, Beyond will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.
   a. Sewer Point Repair, Beyond is broken down into specific pay-items based on nominal pipe diameter and average depth of sewer pipe invert as per the unit price schedule in Section 012200 Unit Prices.

4. Replace Existing Sewer House Connection from New Main to Back of Curb: Payment for Replace Existing Sewer House Connection from New Main to Back of Curb will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

5. Replace Existing Sewer House Connection Beyond Back of Curb: Payment for Replace Existing Sewer House Connection Beyond Back of Curb will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

D. There is no direct measurement or payment for removal of existing sewers (including excavation and disposal of all subsurface organic and inorganic materials, obstructions, existing sewer service laterals, fittings and appurtenances), or for the installation of sewers repair couplings, service connection fittings (wyes or tees), saddle fittings (wyes or tees) or manhole connections. This work is considered incidental to the rehabilitation of sewers and the cost of this work shall be included in the unit item bid price for the associated work included within this section.

E. Sewer Point Repairs shall include all excavation, trenching, sheeting, shoring, pipework bedding, backfill and compaction, and traffic maintenance aggregate. Pavement sawcutting and removal, base course, pavement and sod restoration are not included in this work.

1.4 DEFINITIONS

A. House Connection: House Connections shall refer the sewer service laterals and fittings necessary to connect from the sewer main line to a building (house or other) sewer cleanout.

B. Lateral Replacement: The replacement of a sewer service lateral and connections from the sewer main line to the public property side of a building cleanout (including all fittings).

C. Point Repair: The repair of a defective length of an existing sewers line with defined limits as per the plans or adjustments in the field, inclusive of tie-ins to the upstream and downstream sewer line and/or manholes and includes the replacement of any existing sewers service lateral tie-ins with the use of wyes and/or tees.

D. Replacement: The replacement of an existing sewer line from the upstream manhole to the downstream manhole complete with new manhole tie-ins and new sewer service laterals, fittings and connectors.

E. Wye Cards: Wye Cards are the official Owner record of house connections for all water and sewer utilities, on file by the Owner's Department of House Connections, and filed by address block. The cards provide sewer house connection location information and shall be used to field locate sewer service laterals prior to saw cutting, pavement removal and/or excavation.

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Product Data:

1. The Contractor shall submit the product data for the piping, joints, fittings and appurtenances documenting the manufacturer's name, pipe dimensional sizing and minimum pipe stiffness.

C. Certifications:

1. The Contractor shall submit pipe manufacturer's certification of compliance with these Specifications.

2. The Contractor shall submit documentation that the pipe manufacturer has certified the workmen who will be jointing pipe.

D. Manufacturer’s Instructions:

1. The Contractor shall submit the pipe manufacturer's printed recommendations for handling, storing, and installing pipe.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM A 240: Standard Specifications for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications.
2. ASTM C 425: Standard Specification for Compression Joints Vitrified Clay Pipe Fittings.
3. ASTM C 1173: Standard Specification for Flexible Transition Couplings for Underground Piping Systems.
4. ASTM D 1784: Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
5. ASTM D 3212: Standard Specifications for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
6. ASTM D 5926: Standard Specification for Poly (Vinyl Chloride) (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems
7. ASTM F 477: Standard Specifications for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
8. ASTM F 679: Standard Specification for Polyvinyl Chloride (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.

B. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition.
2. Sewer Overflow Abatement Plan, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Testing: Materials testing shall be based upon applicable ASTM Test Methods and AWWA Standards referenced herein. Costs of such inspection and tests shall be borne by the Contractor.

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)

1. CFR 29, Part 1910.146: Permit Required Confined Spaces
2. CFR 29, part 1926, Subpart P: Excavations

1.10 FIELD CONDITIONS

A. Sewers Rehabilitation shall not be performed if the Contractor does not have sufficient Sewer Flow Control to completely perform the work without spill as per Section 330130.13 Sewer Flow Control.

1.11 DELIVERY, STORAGE AND HANDLING, AND INSPECTION

A. Refer to Sections 333111 Public Sewerage Gravity Piping and 330509 Piping Specialties for Sewer Utilities for Delivery, Storage and Handling, and Inspection requirements for all PVC pipe, accessories, and related materials for this Contract.

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.13 WARRANTY

A. The Contractor shall furnish an extended warranty for Sewers line repairs for a period of one (1) year from the date of Final Acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS (NOT USED)

2.2 DESIGN CRITERIA (NOT USED)

2.3 ASSEMBLIES (NOT USED)

2.4 MATERIALS

A. PVC Pipe and Fittings

1. All Pipe and Fittings used for the Rehabilitation of Sewers Pipelines shall be in accordance with Sections 333111 Public Sewerage Gravity Piping and 330509 Piping Specialties for Sewer Utilities.

B. Bedding Material:

1. All bedding material shall conform to the S&WB General Specifications and Standard Drawings, current edition and Section 312323 Fill, Backfill and Compaction: Bedding Course (Paragraph 2.2.G) and Bedding (Paragraph 3.5).

2.5 ACCESSORIES

A. All Accessories used for the Rehabilitation of Sewers Pipelines shall be in accordance with Sections 333111 Public Sewerage Gravity Piping and 330509 Piping Specialties for Sewer Utilities

2.6 SOURCE QUALITY CONTROL

A. Complete records of inspections, examinations and tests shall be kept and submitted to the Engineer.

B. The Engineer reserves the right to perform any of the inspections set forth herein where deemed necessary to assure that material and services conform to the prescribed requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. All necessary Examination prior to the Rehabilitation of Sewers Pipelines shall be conducted in accordance with Section 333111 Public Sewerage Gravity Piping.

3.2 PREPARATION

A. All necessary Preparation prior to the Rehabilitation of Sewers Pipelines shall be conducted in accordance with Section 333111 Public Sewerage Gravity Piping.

B. Dewatering operations shall comply with Section 312319.

3.3 UTILITY LOCATION, PROTECTION AND RELOCATION

A. Where it is necessary for the proper accomplishment of the work to repair, move, and/or replace any such utility or structure, do so in accordance with the provisions set forth herein.

B. The Contractor shall locate any and all utilities on site that may require protection and/or relocation. The contractor is solely responsible for verifying the location of and scheduling any relocation of all conflicting utilities.

1. Where service connections or lines from water or gas mains or sewers to the user's premises are disconnected, broken, damaged, or otherwise rendered inoperative by the Contractor for any reason, the Contractor shall, at Contractor's own expense, arrange with the respective utility company for any repairs or relocation of lines under their jurisdiction, or for any lines not within their jurisdiction; the Contractor shall repair or replace same and restore service to the premises.

C. The Contractor shall obtain the S&WB "Wye Cards" and shall field mark the locations of all service laterals that are located within or adjacent to the limits of rehabilitation.

3.4 SEQUENCING OF WORK

A. The Contractor's crew shall complete all rehabilitation required on a single sewer line segment, defined by the limits of the upstream manhole and downstream manhole, before the crew can move to another location.

B. The laying of new pipe in finished trenches shall begin at the lowest point, with the spigot ends pointing in the direction of flow.

C. Extreme care shall be exercised to keep pipe in exact alignment and elevation.

1. New/replacement sewer lines and/or service laterals shall be installed at the same existing elevations and grades unless otherwise directed by the Engineer.

2. At any time during a repair, the Engineer may make field judgments that shall govern over the repair.

D. Pipe laying shall not precede backfilling by more than 100 feet without approval by the Engineer.

E. The Contractor shall not leave any excavation/trenches open overnight.

F. No sewer service laterals or main lines shall be left open overnight; all uncompleted work shall be furnished with temporary closed tie-ins and manhole plugs shall be removed.

3.5 SEWER PIPE REMOVAL

A. After defective pipe has been exposed, uncover only as much additional pipe as is necessary to allow space for workmen and the installation of the new pipe.

B. Cut out the defective pipe in such a way that the ends are straight and smooth and free of chips or cracks.

C. Remove and dispose of the defective pipe from the trench, and excavate the former bedding material of any nature to 12-inches below the pipe grade.

D. There is no direct measurement or payment for the removal of Sewers piping, service laterals or bedding.

3.6 INSTALLATION

A. Sewer pipe installation shall be performed in accordance with the manufacturer's instructions and in accordance with the applicable specification section for the sewer pipeline material specification.

B. Installation of PVC sewer pipelines for rehabilitation include pipe replacement, point repairs and/or replacement of sewer service laterals, shall be performed in accordance with Section 333111, Public Sewerage Gravity Piping.

3.7 SEWER LINE REPLACEMENT

A. Work shall include the complete removal of all existing sewer pipelines and service laterals for the schedule line within the limits of the upstream and downstream manholes in accordance with Section 3.5.

B. Installation of new PVC sewer pipelines in accordance with Section 3.6.

C. All sewer service laterals shall be replaced from the main sewer pipeline to the private property line in accordance with Section 3.10 below.

D. A sewer repair coupling shall be provided at the limits of work for each sewer service lateral located at the property line and in accordance with Section 330509 Piping Specialties for Sewer Utilities.

E. The sewer service fitting shall be included with sewer pipeline replacement in accordance with Section 330509 Piping Specialties for Sewer Utilities.

F. New manhole tie-in connections shall be provided at both the upstream and downstream manholes in accordance with Section 3.13.

3.8 SEWER LINE RELOCATION

A. Where the rehabilitation schedule requires an existing line to be relocated, the Contractor shall layout the work in order to maintain the existing upstream and downstream invert elevations.

B. Installation of new PVC sewer pipelines in accordance with Section 3.6.

C. All sewer service laterals shall be replaced from the main sewer pipeline to the private property line in accordance with Section 3.10 below.

1. Where service laterals have to be replaced, the Contractor shall hold the invert grades at the property line and regrade the service laterals at a minimum of 2 percent from the property line toward the new sewer line alignment.

D. Upon completion of sewer pipeline relocations and tie-in of all service laterals, the Contractor shall abandon in place the existing sewer pipeline using flowable fill in accordance with Section 330500, Common Work Results for Utilities, at no additional cost to the Owner.

3.9 SEWER LINE POINT REPAIR

A. The Contractor is responsible for verifying locations in reference to the main sewer pipeline (distance from the upstream and downstream manholes) as shown on the plans.

B. For clay, cement and concrete type sewer pipelines, the limits of the starting and ending stations for the point repair shall be field adjusted to match existing pipe joints.

C. Work shall include the complete removal of all existing sewer pipelines and service laterals located within the limits of the point repair and in accordance with Section 3.5.

D. Installation of new PVC sewer pipelines in accordance with Section 3.6.

E. All sewer service lateral shall be replaced from the main sewer pipeline to the private property line in accordance with Section 3.10 below.

F. A sewer repair coupling shall be provided at each of the point repair in accordance with Section 330509 Piping Specialties for Sewer Utilities.

G. A sewer repair coupling shall be provided at the limits of work for each sewer service lateral located at the property line and in accordance with Section 330509 Piping Specialties for Sewer Utilities.

H. The sewer service fitting shall be included with sewer pipeline point repair in accordance with Section 330509 Piping Specialties for Sewer Utilities.

I. When the limits of the point repair are within four (4) feet of a sewer manhole, the point repair shall be extended to include the manhole and the manhole connection shall be replaced in accordance with section 3.13.

J. The Contractor shall inspect the sewer pipeline at the repair location to determine that all pipe requiring replacement within 10 feet of the repair has been replaced before reconnecting the sewer line and backfill operations begin.

3.10 SEWER SERVICE LATERAL REPLACEMENT

A. Sewer service laterals are to be replaced from the main sewer pipeline to the property line as indicated on the plans, any time a wye or tee connection is replaced as part of a sewer pipeline repair or replacement or otherwise as directed by the Engineer.

B. Sewer house service connections shall be six-inch pipe.

C. Service line point repairs are performed only on those portions of service lines that are located in an easement or right-of-way; no repairs to service lines shall be performed on private property.

D. The limits of the service connections shall be determined or verified by the Engineer in the field.

E. Service laterals shall be installed to match existing elevations and grade.

1. Service laterals with an existing grade flatter than 2 percent shall be re-graded, where possible, at a minimum slope of 2 percent or as approved by the Engineer; the Contractor shall match the existing elevation at the property line and re-grade the service lateral towards the main sewer pipeline.

F. Existing service laterals scheduled for replacement shall be removed in accordance with Section 3.5.

G. Installation of new service laterals shall be in accordance with Section 3.6.

H. The new service lateral shall be re-connected with the private house connection using a sewer repair coupling in accordance with Section 330509 Piping Specialties for Sewer Utilities.

I. The Contractor shall complete re-connection of all service lines within 24 hours.

3.11 SEWER REPAIR COUPLINGS

A. Refer to Section 330509 Piping Specialties for Sewer Utilities.

3.12 SEWER SERVICE FITTINGS

A. Refer to Section 330509 Piping Specialties for Sewer Utilities.

3.13 SEWER MANHOLE CONNECTIONS

A. Sewer Manhole Connections shall be made and conform to Section 333111 Public Sewerage Gravity Piping 3.7.

B. A flexible manhole adapter, conforming to Section 330509 Piping Specialties for Sewer Utilities, shall be fitted onto the PVC pipe and inserted into the manhole opening.

3.14 MAINTENANCE (NOT USED)

3.15 FIELD QUALITY CONTROL

A. Lay no pipe except in the presence of an inspector representing the Engineer.

B. Each time the work on the sewer is halted for more than one (1) hour, the ends of the pipe shall be sealed with a temporary plug, approved by the Engineer, to prevent foreign material from entering the pipe.

C. Do not allow water to run or stand in the trench while pipe laying is in progress or before the trench has been backfilled.

D. Do not at any time open up more trench than available pumping facilities are able to dewater.

E. Testing and Inspection:

1. After complete rehabilitation of sewer pipelines by means of full line replacement, including all connection sewer service laterals, the pipe shall be tested for acceptance in accordance with Section 330505, Sewer Utilities Testing.

2. After complete rehabilitation of sewer pipelines by any means, the work shall be CCTV inspected in accordance with Section 330130.16 CCTV Inspection of Sewers.

3. Repairs of any pipe segment not fully conforming to these Specifications must be immediately brought to the Engineer’s attention.

4. The Contractor shall furnish a written proposed method of correction within 24 hours for approval by the Engineer.

3.16 PROTECTION

A. The Contractor shall carefully protect all existing sewers, water lines, gas lines, sidewalks, curbs, gutters, pavements, electric lines, or other utilities or structures in the vicinity of the work from damage at all times.

B. The Contractor shall take reasonable care during the initial excavation of the defective pipe so as not to disturb existing pipe that is still acceptable.

C. The Contractor shall carefully protect all new pipe in place from damage until backfill operations have been completed

3.17 CLEAN UP AND REMOVAL

A. The material from excavation to be wasted shall be loaded directly into trucks during excavation; do not stockpile on the street.

B. The Contractor shall dispose of portions of any piece of material removed during installation unless retained by the Engineer.

C. Upon completion of the Rehabilitation of Sewers, the Contractor shall fully clean and restore the site.

D. Sewers Flow Control shall be removed and sewer flow shall be normalized in accordance with Section 330130.03.

END SECTION 330130.73

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SECTION 330130.76 – CURED-IN-PLACE PIPE LINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing Cured-In-Place Pipe (CIPP) Liners for rehabilitation of sewer pipelines and sewer service laterals.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all CIPP activities.

C. Section Includes:

1. Cured-In-Place Pipe Liner Installation
2. Post CIPP Liner Installation
3. Reinstatement of Sewer Service Laterals
4. Cured-In-Place Pipe Liner Service Lateral Installation

D. Related Requirements:

1. Section 015136 Temporary Water.
2. Section 012200 Unit Prices.
3. Section 013300 Submittal Procedures.
4. Section 330130.03 Sewer Flow Control.
5. Section 330130.13 Cleaning of Sewers.
6. Section 330130.16 CCTV Inspection of Sewers.
7. Section 330130.73 Rehabilitation of Sewers.
8. Section 330505 Sewer Utilities Testing.

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200, Unit Prices, for unit price requirements.

B. Measurement:

1. Length Measurement: Measurements will be made as the horizontal length dimension of material installed, excluding overlap, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Pipe Liner, CIPP: Payment for Pipe Liner, CIPP will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

    a. Pipe Liner, CIPP is broken down into specific pay-items based on nominal pipe diameter as per the unit price schedule in Section 012200 Unit Prices.

2. Service Lateral Liner, CIPP: Payment for Pipe Liner, CIPP will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications. There is no additional allowance for service laterals longer than typical.

    a. Service Lateral Liner, CIPP is broken down into specific pay-items based on nominal pipe diameter of the service lateral and the nominal pipe diameter of the sewer mainline as per the unit price schedule in Section 012200 Unit Prices.

3. Cut Liner to Restore Existing House Connection: Payment for Pipe Liner, CIPP will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

D. Abandonment of CIPP Lining

1. If pre-installation CCTV inspection reveals that no CIPP Lining is required in the pipe segment between manholes, then CIPP Lining shall be abandoned at no compensation to the Contractor. The Contractor will instead be measured and paid in accordance with Section 33 01 30.13, Sewer Line Cleaning and in accordance with Section 33 01 30.16, CCTV Inspection of Sewers.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300, Submittal Procedures.

B. Product Data:

1. A safety plan and MSDS sheets (Material Safety Data Sheets) for all hazardous chemicals used or expected to be on-site including resin, catalyst, cleaners and repair agents.
2. The Contractor’s written warranties for the duration specified.

C. Shop Drawings:

1. Shop drawings, plans, equipment catalog data, and written descriptions detailing short and long-term properties (providing all supporting test data) of all component materials and composite materials, and:

a. CIPP lining supplier's name and a list of material manufacturers.
b. CIPP lining schedules including field-verified lengths and diameters for all CIPP linings and appurtenances required. Plans should include map(s) showing insertion points, equipment and storage locations, and field wet-out locations for all CIPP installations.
c. Detailed installation procedures including CIPP lining production schedule, acceptable inversion heads and pressures, inversion procedures, curing and cool-down procedures and temperatures, and times for each process stage.
d. If a field wet-out procedure will be used for liner impregnation, submit a complete description of the proposed wet-out procedure with detailed information on equipment and material storage locations, resin volumes and/or weights, liner length, start times, finish times, resin injection locations, and any other pertinent data documenting the wet-out procedure.
e. Procedure and materials to reinstate connecting sewers and laterals.
f. Detailed method for addressing CIPP sampling requirements including location and size of each sample, method of removal, and method of liner repair and procedure for testing CIPP Liner.
g. A complete list of service laterals, including relevant footage and diameter shall be submitted to the Owner and Engineer prior to initiating CIPP lining.

D. Design Data:

1. The Contractor shall calculate and submit to the Engineer for review after field verification of sizes and prior to ordering any material from the manufacturer, the required minimum thickness for the CIPP to be installed in each pipe reach based on the internal inspection data and the CIPP manufacturer's specifications.

2. Design data and specification data sheets listing all parameters used in the CIPP liner design and thickness calculations based on ASTM F 1216.

3. The contractor shall submit to the Engineer for review the lining manufacturer's complete design calculations for the liner, signed and sealed by a Professional Engineer registered in the State of Louisiana and certified by the manufacturer as to the compliance of his materials to the values used in the calculations. The buckling analysis shall account for the combination of dead load, live load, hydrostatic pressure and grout pressure (if any). The liner side support shall be considered as if provided by soil pressure against the liner. The existing pipe shall not be considered as providing any structural support. Modulus of soil reaction shall be 1000, corresponding to a moderate degree of compaction of bedding and a fine-grained soil as shown in AWWA Manual M45, Fiberglass Pipe Design.

4. Hydraulic Capacity - Overall, the hydraulic profile shall be maintained as large as possible. The CIPP shall provide at least 100 percent of the flow capacity of the original pipe before rehabilitation. In lieu of actual measurements, calculated capacities may be derived using commonly accepted equations and values of the Manning flow coefficients (designated "n" coefficients). The original pipe material and condition at the time of reconstruction will determine the Manning coefficient used in the host pipe. A Manning coefficient of 0.009 for a jointless, relatively smooth-wall cured-in-place pipe will be used for the lateral CIPP flow calculation.

A. Certifications:

1. Certification showing the Contractor (or lining Subcontractor) is currently licensed by the appropriate licensor to perform CIPP installation. All certifications shall be submitted to the Engineer before any materials are ordered.

    a. Contractor shall provide his references of previous project lists going back 3-years including his customer's names, owner's contact name, phone number, owner's project number, owner's project name and the list must include the number of laterals rehabilitated as well as the number and type of connection seals installed.
    b. The Contractor shall employ a minimum of 1 foreman and 2 crew members with experience of at least 50 liner installations.

2. Certification stating CIPP tube has been manufactured in accordance with ASTM F 1216 and resin is suitable for its intended use.

3. The Contractor shall provide certification that he has the required equipment to reinstate the service connections as specified herein.

B. Test Reports:

1. Provide manufacturer’s test reports of CIPP sample(s).
2. Copies of previous physical properties tests as well as chemical resistance tests.

C. Manufacturer’s Instructions

1. Manufacturers’ shipping, storage, and handling recommendations for all CIPP system components.
2. Manufacturer’s Instructions for temperature control, CIPP handling, insertion, curing, trimming and finishing, and QA/QC procedures.
3. Technical procedure or information regarding the control and mitigation of shrinkage and wrinkling during installation and cure of CIPP liner.

D. Sampling Procedures:

1. Sampling Procedures and locations for obtaining representative samples of the finished liner shall be provided by the Contractor before acceptance.

E. Field Inspection Records

1. Pre-installation and post-installation CCTV Inspection reports as specified herein.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM D 543: Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.
2. ASTM D 638: Standard Test Method for Tensile Properties of Plastics.
3. ASTM D 790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
4. ASTM D 2990: Standard Test Method for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics.

5. ASTM D 5813: Standard Specification for Cured-In-Place Thermosetting Resin Sewer Piping Systems.
6. ASTM F 1216: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
7. ASTM F 1743: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pull-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP).
8. ASTM F 2019: Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP).

B. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition.
2. Sewer Overflow Abatement Plan, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. The Contractor shall have a minimum of two (2) years' experience in sewer line repairs by CIPP liner installation. The CIPP liner product manufacturer shall have a minimum installation history of two (2) years and 100,000 linear feet of furnished product including the sizes applicable for this project. Verifiable experience shall be submitted to the Owner upon request.

B. All CIPP linings shall be from a single manufacturer. The Engineer and/or Owner may inspect the CIPP lining after delivery and reject any or all of the lining products if they fail to meet the requirements specified herein.

C. The Contractor shall furnish on-site on a continuous basis one (1) additional operational robotic cutter assembly train and key spare components as a "stand-by" unit in the event of primary equipment breakdowns.

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)

1. CFR 29, Part 1910.146: Permit Required Confined Spaces

1.10 FIELD CONDITIONS

A. CIPP Lining shall not be installed if the Contractor does not have sufficient Sewer Flow Control to eliminate all sewer flow from the pipe for the required duration of pipe installation and curing or if the sewer pipelines have not been sufficiently cleaned as per Section 330130.13, Cleaning of Sewers.

1.11 DELIVERY, STORAGE AND HANDLING

A. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions.

B. The Contractor shall comply with the pipe manufacturer's printed recommendations for delivery, storage, and handling of all products.

C. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

D. The Contractor shall exercise adequate care during transportation, handling and installation to ensure the CIPP material is not torn, cut, or otherwise damaged. If any part or parts of the CIPP material becomes torn, cut or otherwise damaged before or during insertion, it shall be repaired or replaced in accordance with the manufacturer's recommendations and approval by the Engineer before proceeding at no additional cost to the Owner.

E. If the flexible tube is impregnated with resin at the factory, it shall be transported, installed, and cured before expiration of the shelf life.

F. The CIPP lining shall be maintained at a proper temperature in refrigerated facilities and protected from ultraviolet light at all times prior to installation to prevent premature curing. Any CIPP lining showing evidence of premature curing shall be rejected for use and immediately removed from the site.

1.12 WARRANTY

A. The Contractor shall furnish an extended warranty for liner materials from the liner manufacturer for a total of five (5) years from the contractual date of Final Acceptance.

1. If, at any time during the warranty period, any leakage, cracking, loss of bond, or other discontinuity is identified, the contractor shall make repairs acceptable and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS (NOT USED)

2.2 DESIGN CRITERIA

A. The liner shall be designed in accordance with the procedures of ASTM F 1216. All material properties used in design calculations shall be long-term (time-corrected) values.

B. The liner shall be structurally designed for a fully deteriorated host pipe/direct bury condition with no bonding to the existing pipe, prism loading, and live traffic loading. The liner shall be designed for the following conditions:

1. Minimum Service Life: 50 years
2. Soil Density: 120 pounds per cubic foot (pcf)
3. Groundwater Depth: 3 feet below existing grade (ft)
4. Live Loadings: AASHTO HS-20-44 live loading due to traffic, unless more stringent live loadings are applicable.
5. Soil Modulus: 1,000 pounds per square inch (psi)
6. Minimum Safety Factor: 2.0
7. Ovality Factor: 2.0%

8. Maximum Deflection: 5.0% in vertical axis
9. Long Term Modulus Reduction Factor: 50%

C. The fully cured liner shall inherit the following minimum structural parameters:

1. Minimum structural standards:

a. Flexural Strength, ASTM D 790, 4,500 psi
b. Flexural Modulus of Elasticity, Short-Term, ASTM D 790, 250,000 psi
c. Flexural Modulus of Elasticity, Long-Term (50 year), ASTM D 790, 125,000 psi

D. The design for the CIPP shall recognize any non-uniform cross section and the liner bifurcation present at the spring line of the pipe. Accounting for this condition by the use of an ovality reduction factor alone is unacceptable.

2.3 ASSEMBLIES

A. All CIPP lining products shall comply with the latest versions of ASTM F 1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube, or ASTM F 1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP).

B. Wall thickness of the CIPP liners shall be the thickness calculated by the manufacturer in accordance with ASTM F 1216 or the minimum thicknesses indicated in the following listing:

1. 6-inch to 8-inch diameter sewer

a. Depth of Sewer to Top of Pipe 3-ft to 20-ft: 6 mm thickness

2. 10-inch diameter sewer

a. Depth of Sewer to Top of Pipe 3-ft to 15-ft: 6 mm thickness
b. Depth of Sewer to Top of Pipe 15-ft to 20-ft: 7.5 mm thickness

3. 12-inch diameter sewer

a. Depth of Sewer to Top of Pipe 3-ft to 10-ft: 6 mm thickness
b. Depth of Sewer to Top of Pipe 10-ft to 17-ft: 7.5 mm thickness
c. Depth of Sewer to Top of Pipe 17-ft to 20-ft: 9 mm thickness

4. 15-inch diameter sewer

a. Depth of Sewer to Top of Pipe 3-ft to 10-ft: 7.5 mm thickness
b. Depth of Sewer to Top of Pipe 10-ft to 15-ft: 9 mm thickness
c. Depth of Sewer to Top of Pipe 15-ft to 20-ft: 10.5 mm thickness

5. 18-inch diameter sewer

a. Depth of Sewer to Top of Pipe 3-ft to 10-ft: 9 mm thickness
b. Depth of Sewer to Top of Pipe 10-ft to 15-ft: 10.5 mm thickness
c. Depth of Sewer to Top of Pipe 15-ft to 20-ft: 12 mm thickness

6. 21-inch diameter sewer

    a. Depth of Sewer to Top of Pipe 3-ft to 10-ft: 10.5 mm thickness
    b. Depth of Sewer to Top of Pipe 10-ft to 20-ft: 15 mm thickness

7. 24-inch diameter sewer

    a. Depth of Sewer to Top of Pipe 3-ft to 10-ft: 12 mm thickness
    b. Depth of Sewer to Top of Pipe 10-ft to 20-ft: 15 mm thickness

8. 27-inch diameter sewer

    a. Depth of Sewer to Top of Pipe 3-ft to 10-ft: 12 mm thickness
    b. Depth of Sewer to Top of Pipe 10-ft to 20-ft: 18 mm thickness

9. 30-inch diameter sewer

    a. Depth of Sewer to Top of Pipe 3-ft to 10-ft: 15 mm thickness
    b. Depth of Sewer to Top of Pipe 10-ft to 20-ft: 21 mm thickness

10. 36-inch diameter sewer

    a. Depth of Sewer to Top of Pipe 3-ft to 20-ft: 24 mm thickness

C. Chemical Resistance:

1. The liner shall be fabricated from materials which, when complete, are chemically resistant to and will withstand internal exposure to domestic sewage having a pH range of 5 to 11 and temperatures up to 125-degrees Fahrenheit.

2. CIPP liners shall meet the minimum chemical resistance requirements in accordance with ASTM F 1216.

2.4 MATERIALS

A. General

1. The Contractor shall be responsible for control of all materials and process variables to provide a finish CIPP possessing the minimum properties specified in ASTM F 1216, and as required herein.

B. Liner

1. The flexible tube shall be one or more layers of needled felt or equivalent non-woven material manufactured under quality controlled conditions set by the manufacturer, and be capable of holding resin and withstanding installation pressures and curing temperatures. The tube shall be compatible with the resin system used, and shall contain no intermediate layers that delaminate after resin curing.

2. The outside layer of the tube shall be coated with an impermeable material compatible with the resin and fabric.

3. Tube material shall be able to stretch to fit irregular pipe sections and negotiate bends. The tube shall be fabricated to a size so that, when installed, it will fit snugly inside the circumference and length of the existing sewer and produce the required thickness after the resin is cured.

4. The minimum length of the flexible tube shall be as necessary to effectively and fully span the distance between manholes, with allowance for proper stretching or shrinkage due to pressure or expansion.

5. The tube shall contain no intermediate layers that may delaminate after resin curing. It shall not be possible to separate any layers with a probe or knife blade such that the layers separate cleanly or the probe or knife blade moves freely between the layers.

6. Allowance should be made for circumferential stretching during the installation and shrinkage of resin during curing and aging so that the final cured product is snug against the wall of the host pipe and free of fins and buckles.

7. The wall color of the interior pipe surface of the liner shall be of a light color with reflective nature to allow proper CCTV inspection.

8. The textile tube and sheet shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe segments.

C. Resin

1. The felt tubing shall be vacuum impregnated with a thermosetting resin system. The resin used shall be compatible with CIPP system used, and designated for use in sewers.

2. The resin shall be able to cure in the presence of water and the initiation temperature for cure shall not be more than 180^{o} F.

3. The resin shall be a general purpose thermosetting polyester, vinyl ester, or epoxy resin and catalyst system that provides the cured physical strengths and properties specified herein. The resin shall not contain fillers, except those required for viscosity control or fire retarding.

4. The resin used to impregnate the tube shall produce a cured tube which shall be resistant to abrasion from solids, grit, and sand in wastewater. The resin shall have proven resistance to the municipal wastewater environment.

5. The resin/liner system shall conform to ASTM D 5813 and ASTM F 1216.

D. Expanding Hydrophilic Rubber End Joint Seal

1. The rubber end joint seal shall be an extended hydrophilic rubber compounded from chloroprene (Neoprene) rubber and hydrophilic resin, which expands on contact with water.

2. The rubber joint seal shall be bonded with adhesive on one face to hold it in place during assembly.

3. On contact with water, the rubber shall swell a minimum of 8 times its original volume, if necessary, and mold itself to completely fill any gaps and exert pressure evenly to ensure the seal. High compression or bolt up forces shall not be necessary to effect a complete and watertight seal.

E. Chemical Grout

1. The chemical grout shall be a hydrophilic liquid that is water reactive and will change from a free-flowing liquid to a water impermeable elastomeric solid upon injection to stop excessive infiltration at the point where the CIPP liner enters the manholes. A reaction (curing) which produces a chemically stable and non-biodegradable, tough, flexible gel. The chemical grout shall be a urethane liquid in uncured form suitable for pumping with a moderate viscosity and variable gelling and curing times. The polyurethane chemical grout shall be Scotch-Seal 5610 by 3M, Avanti Av-254, or approved equal.

2. Acceptable urethane base gel chemical sealing materials shall meet or exceed the following requirements:

a. The liquid shall have a solids content of 80% and a specific gravity of 1.04 to 1.11.
b. The liquid shall have a viscosity of 300 to 1,000 centipoise at 70° F.
c. The water used to react to the pre-polymer should have a pH of 5 to 9.
d. Gel times shall be in accordance with the manufacturer's recommendations.
e. The grout shall have the ability to increase viscosity, density, gel strength and resistance to shrinkage by the use of additives in the reaction water.

3. A reinforcing agent shall be added to the reaction water at the manufacturer's suggested rate. This agent is intended to increase the polyurethane gel's resistance to wet/dry cycles, freeze/thaw cycles, and solid movement stresses. The reinforcing agent shall be appropriate for the specific grout product that is to be used.

4. Additional chemical grout additives such as catalysts or accelerators as needed to make the grout function properly shall be as manufactured by 3M, Avanti, or approved equal and shall be used in a manner approved by the manufacturer.

2.5 ACCESSORIES (NOT USED)

2.6 SOURCE QUALITY CONTROL

A. The outside reach of CIPP liner tube shall be labeled by the liner manufacturer with the location of the liner manufacturer, the name of the project, the liner thickness, the liner diameter, the liner length, and the location where it is to be installed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sewer system is not surcharged prior to the start of work.

C. Examination of service laterals on main sewer lines to be CIPP lined.

1. All lines scheduled for CIPP Installation under this Contract shall include CCTV inspection of all later service connections, excluding later service connections replaced under this contract, and shall include CIPP lining of all non-PVC lateral service connections.

2. Contractor shall inspect all service laterals via pre-CCTV inspection and determine which service laterals are abandoned and are not to be reinstated for service or lined.

3. A service connection shall be considered abandoned under the following conditions:

   a. The connection does not connect to any building or surface drains.
   b. The connection has been capped or otherwise purposefully blocked.

4. In the event that the status of a connection is inconclusive, the Contractor shall introduce dye from a sanitary or drain fixture and witness the travel path of the dye using both the lateral and mainline cameras.

5. In the event that a service connection is identified as being cross-connected, the Engineer shall be notified immediately, and the location of the cross-connection shall be determined using dye testing and shall then be clearly marked and labeled on the surface using paint.

6. The Contractor shall indicate the location of the service connections as follows:

   a. In the event no inspection chamber or cleanout is present at property line, the Contractor shall, by using a sonde/locator, clearly mark by staked hub (in grassed areas) or by PK nail (in roadways or concreted areas) and paint, where the service connection crosses at the property line.
   b. In the event a junction is present on the service connection, the location of the junction(s) shall be clearly marked and labeled on the surface with paint. All branches of the service connection shall be inspected, if possible, up to the property line.

7. In the event a collapse or blockage is present preventing further movement of the camera, or that may otherwise prevent use of trenchless rehabilitation equipment, the location of such shall be clearly marked and labeled on the surface with paint

3.2 PREPARATION

A. Contractor shall provide Sewer Flow Control, as specified in Section 330130.03, Sewer Flow Control prior to the start of CIPP Lining of Sewer for the duration of the liner installation and curing periods.

B. Contractor shall submit a Traffic Control Plan to the approving authority (DPW, DOTD, etc.) for review and approval prior to the closing of any streets. The approved traffic control plan shall be fully executed prior to the performance of CIPP Lining.

C. The Contractor shall provide adequate sewer line cleaning as specified in Section 330130.13, Cleaning of Sewers prior to the start of CIPP Lining.

1. It shall be the responsibility of the Contractor to remove all internal debris such as solids and roots and clean the existing sewer line prior to installation of the liner

2. Upon written approval from the Engineer the Contractor may receive payment for Obstruction Removal per each item removed as specified in Section 330130.13 Cleaning of Sewers.

D. The Contractor shall perform a Pre-Rehabilitation CCTV inspection in accordance with Section 330130.16, CCTV Inspection of Sewers to record sewer line defects requiring repair prior to the installation of the CIPP Liner as well as to note the location, station and orientation, and size of all active sewer service laterals to be reinstated.

1. Any sewer pipeline defects noted during the CCTV inspection that require repair prior to the installation of the CIPP Liner shall be approved by the Engineer and/or Owner and performed in accordance with Section 310130.73, Rehabilitation of Sewers.

2. The Contractor shall clear the line of obstructions such as solids, protruding gaskets, dropped joints, protruding service connections or collapsed pipe that will prevent the insertion of the liner, as noted during pre-rehabilitation CCTV inspection. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment in accordance with Section 330130.13, Cleaning of Sewers, the Contractor, upon approval from the Engineer, shall make a point repair to uncover and remove or repair the obstruction in accordance with Section 310130.73, Rehabilitation of Sewers prior to lining.

3. CCTV inspection of service connections must be from inside the main line sewer up into the lateral. Inspection from cleanouts, excavations, or other access points is not permitted, unless prior approval is obtained from the Engineer. All lateral inspections shall extend from the mainline to the property line, or until the camera is unable to proceed further

4. Service connection inspections shall be recorded on the same DVD as the mainline recording.

5. A service connection shall be considered abandoned only if the connection has been capped or otherwise purposefully blocked. Connections not connecting to any building or surface drains shall not be assumed abandoned without confirmation from the Owner.

6. In the event that the status of a connection is inconclusive, the Contractor shall introduce dye from a sanitary or drain fixture and witness the travel path of the dye using both the lateral and mainline cameras.

7. In the event that a service connection is identified as being cross-connected, the Engineer shall be notified immediately, and the location of the cross-connection shall be determined using dye testing and shall then be clearly marked and labeled on the surface using paint.

8. The Contractor shall indicate the location of the service connections as follows:

   a. In the event no inspection chamber or cleanout is present at property line, the Contractor shall, by using a sonde/locator, clearly mark by staked hub (in grassed areas) or by PK nail (in roadways or concreted areas) and paint, where the service connection crosses at the property line.
   b. In the event a junction is present on the service connection, the location of the junction(s) shall be clearly marked and labeled on the surface with paint. All branches of the service connection shall be inspected, if possible, up to the property line.

c. In the event a collapse or blockage is present preventing further movement of the camera, or that may otherwise prevent use of trenchless rehabilitation equipment, the location of such shall be clearly marked and labeled on the surface with paint.

E. The Contractor shall obtain and setup temporary water, if required, in accordance with Section 015136, Temporary Water.

F. The Contractor shall position his equipment and layout the site so as to not obstruct any fire hydrants or otherwise prevent its use in case of a fire in the area served by the hydrant.

G. The Contractor shall carry out his/her operations in accordance with all OSHA and manufacturer's safety requirements. Particular attention is drawn to those safety requirements involving the entering of confined spaces.

H. The Contractor shall take field measurements to verify the existing pipe diameter, ovality and length prior to manufacturing liners. The manufacturer shall incorporate these measurements into the manufacturing process of the liner. The outside of the flexible tube shall be marked along its full length at regular intervals not to exceed five (5) feet.

I. If the invert of a sewer is eroded more than 2 inches, it shall be filled with grout to match the surrounding pipe surface.

J. The Contractor shall trim protruding laterals so the service connection is flush to within ¼ inch of the internal pipe wall. Lateral cutting shall be documented by internal inspection methods.

1. The Contractor shall ensure that the host pipe is not damaged during lateral trimming operations and document each location subjected to lateral trimming in the (CCTV) inspection.

2. Protruding service connections that cannot be trimmed shall be replaced with approval of the Engineer and/or Owner in accordance with Section 310130.73, Rehabilitation of Sewers prior to lining.

3.3 CURED IN PLACE PIPE LINER INSTALLATION

A. Installation shall be accomplished by inversion or winched-in-place methods and cured in place by ambient temperature or circulating hot water or steam to produce a hard, jointless, impermeable pipe repair.

B. Installation procedures shall be in accordance with the latest versions of ASTM F 1216 - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube or ASTM F 1743 - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP), and the manufacturer's recommendations.

C. The Contractor shall designate a location where the reconstruction tube will be vacuum impregnated prior to installation. The Contractor shall allow the Engineer to inspect the materials and "wet out" procedure. Sufficient excess resin shall be used in accordance with

the latest version ASTM F 1216. A roller system shall be used to uniformly distribute the resin throughout the tube.

D. Before installation begins, the tube manufacturer shall provide the minimum pressure required to hold the tube tight against the existing conduit, and the maximum allowable pressure so as not to damage the tube. Once the installation has started the pressure shall be maintained between the minimum and maximum pressures until the installation has been completed.

E. The Contractor shall install a Hydrophilic Rubber End Seal at each pipe end prior to installing the uncured CIPP lining. The Engineer will require verification that the hydrophilic seals are being properly installed.

F. The curing of the CIPP must take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of soil). The post-cure temperature should be held for a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the head source to maintain the temperature continues.

G. The bond between all CIPP layers shall be strong and uniform. All layers, after cure, shall be completely saturated with resin.

H. The CIPP shall be cooled to a temperature below 100 degrees F before relieving the hydrostatic head. Care should be taken in release of the static head so that a vacuum will not be developed that could damage the newly installed liner.

I. Where practicable, liners can be installed in continuous runs through manholes where there are two of more continuous sewer segments requiring lining, especially to connect several short segments with continuous lining.

J. The temperature of water discharged to the sewer system from processing liners shall not exceed 125 degrees F maximum, or the level allowed by State or local standards if less than 125 degrees F.

K. Cut and trim the new lining at each manhole wall. Seal the lining to the manhole wall with a sealant material.

L. The Contractor shall furnish on-site on a continuous basis one (1) additional operational robotic cutter assembly train and key spare components as a “stand-by” unit in the event of primary equipment breakdowns.

3.4 POST CIPP LINING INSTALLATIOIN

A. After installation of the liner in a full segment pipe, a minimum of one (1) inch of the liner material shall be left to protrude from the wall of the entrance and the exit manhole.

B. The Contractor shall install a joint seal at all manhole inlet and outlet connections to seal the area where the line enters or leaves each manhole. The Contractor shall use chemical grout to dress up around the end of the liner. This space may be sealed with a mechanical seal, chemical seal, or combination of both. The method used shall be as approved by the Engineer.

C. The upstream and downstream manholes shall be inspected and any holes or voids in the manhole wall immediately surrounding the new liner shall be sealed with a hydrophilic rubber joint seal and chemical grout as specified herein. The Engineer shall approve the seal.

D. Where liners of any type are installed in two or more continuous manhole segments, the liner invert through the trough of intermediate manholes shall be left intact. Final finishing of the installation in those intermediate manholes shall require removal of the top of the exposed liner and neat trimming of the liner edge where it touches the lip of the manhole bench.

E. Portions of any piece of liner material removed during installation shall be available for inspection and retention by the Engineer. Any unrestrained samples shall not be used for testing purposes.

3.5 REINSTATEMENT OF SEWER SERVICE LATERALS

A. The Contractor shall reinstate openings for all drop assemblies after lining the mainline sewer.

B. The Contractor shall reinstate all sewer service laterals except for those shown on the plans as "Abandoned". Services that are abandoned, but reinstated, shall be plugged in a manner acceptable to the Engineer and at no additional expense to the Owner.

C. The Contractor must keep prepare and maintain an Excel spreadsheet listing of all services that have been reinstated. The listing shall be organized by line segment ID and provide the distance and clock position for each service reinstatement.

D. Service connections shall be reinstated without excavation, utilizing a remotely controlled cutting device monitored by a CCTV camera.

E. After the liner has been installed, in the event that the Contractor chooses to temporarily reinstate service lines, all active existing services may be temporarily reinstated by punching through the liner from the interior of the pipeline. Temporary reinstatements shall allow normal flow from the service line into the mainline.

F. Final reinstatement of all active services within a rehabilitated line segment shall be performed internally using a robotic cutter within 48 hours of curing and buffed to a minimum of 95% of the original service opening size. The finished opening shall contain no jagged edges.

G. All coupons shall be recovered at the downstream manhole and removed.

3.6 CURED IN PLACE PIPE LINER INSTALLATION – SEWER LATERAL

A. Lateral Liner Tube

1. The exterior of the lateral liner tube shall be laminated with an impermeable, translucent flexible membrane. Longitudinal seams in the tube shall be stitched and thermally sealed. The lateral tube will be continuous in length. The lateral tube will be capable of conforming to offset joints, bends, bells, disfigured pipe sections and pipe diameter transitions.

B. Mainline Connection

1. The main tube and lateral tube shall form a one-piece assembly by stitching the lateral tube to the mainsheet aperture. The connecting end of the lateral tube shall be shaped to match the aperture and curvature of the main tube. The lateral tube and main tube shall be sealed by use of a flexible UV cured adhesive/sealant. The main/lateral tube assembly shall take the shape of a "TEE" or "WYE" with corresponding dimensions such as a curved circle or a curved elliptical opening in the pipefitting. Submittals for the liner assembly must include the manufacturer's assembly methods and test protocol for the main/lateral liner assembly to be certified as airtight prior to resin saturation. Each liner assembly must include this test data and be certified by the manufacturer to be airtight prior to resin saturation.

C. Plugging

1. The upstream side of the cleanout shall be plugged during insertion and curing of the liner assembly ensuring no flows enter the pipe and no air, steam or odors will enter the building. When required, the main pipe flows will be by-passed. The pumping system shall be sized for peak flow conditions. The upstream manhole shall be monitored at all times and an emergency deflating system will be incorporated so that the plugs may be removed at any time without requiring confined space entry.

D. Line Obstructions

1. The existing lateral pipe shall be clear of obstructions that prevent the proper insertion and expansion of the lining system. Changes in pipe size shall be accommodated, if the lateral tube is sized according to the pipe diameter and condition. Obstructions may include dropped or offset joints of no more than 20% of inside pipe diameter.

E. Resin Impregnation

1. The liner assembly is encapsulated within the translucent bladder (liner/bladder assembly), the entire liner including the flat sheet shall be saturated with the resin system (wet-out) under controlled vacuum conditions. The volume of resin used shall be sufficient to fill all voids in the textile lining material at nominal thickness and diameter. The volume shall be adjusted by adding 5% to 10% excess resin for the change in resin volume due to polymerization and to allow for any migration of resin into the cracks and joints in the original pipe. No dry or unsaturated area in the mainline sheet or lateral tube shall be acceptable upon visual inspection.

F. Liner Insertion

1. The lateral tube and inversion bladder shall be inserted into the launching hose. The main bladder and flat textile sheet (main liner tube) shall be wrapped around a "T" launching device, formed into a tube and secured by use of rubber bands. A seamless molded flange shaped gasket shall be attached to the main liner tube by use of stainless steel snaps. The flanged gasket shall be inserted into the lateral pipe at the main/lateral juncture so that the brim of the flanged gasket is firmly seated against the mainline pipe liner. An O-ring end seal shall be positioned 6-inches from the terminating end of the lateral liner tube. The launching device is inserted into the pipe and pulled to the point of repair. The pull is complete when the lateral tube is exactly aligned with the lateral

pipe connection. The lateral tube is completely protected during the pull. The mainline liner is supported on a rigid "T" launcher that is elevated above the pipe invert through the use of a rotating skid system. The liner assembly shall not be contaminated or diluted by exposure to dirt or debris during the pull.

G. Bladder

1. The main bladder shall be inflated causing the main sheet to unwrap and expand; pressing the main tube firmly into contact with the main pipe and embedding the flange shaped gasket between the main tube and the main pipe at the lateral opening. The lateral tube is inverted through the main tube aperture by the action of the lateral bladder extending into the lateral pipe to a termination point that shall be no less than 2-feet from the exterior cleanout. The bladder assembly shall extend beyond each end of the liner, so the liner remains open-ended and no cutting shall be required

H. Curing

1. After the liner has been fully deployed into the lateral pipe, pressure is maintained pressing the liner firmly against the inner pipe wall until the liner is cured at ambient temperatures or by a suitable heat source. The heating equipment shall be capable of delivering a mixture of steam and air throughout the liner bladder assembly to a uniform raise the temperature above the temperature required to cure the resin. The curing of the CIPP shall take into account the existing pipe material, the resin system, and ground conditions (temperature, moisture level, and thermal conductivity of the soil). The heat source temperatures shall be monitored and logged during the cure and cool down cycles. The manufacturer's recommended cure schedule shall be submitted and followed

I. CIPP Processing

1. Curing shall be done without pressure interruption with air or a mixture of air and steam for the proper duration of time per the resin manufacturer's recommendations. The curing process is complete when the temperature of the CIPP reaches 100 degrees Fahrenheit or less.

J. The finished CIPP shall be a homogenous CIPP liner assembly located within a lateral service pipe for a specific length, and extending into the main pipe to renew 16-inches of the main pipe at the main/lateral service connection. The CIPP shall be smooth with minimal wrinkling and shall increase flow rate. The CIPP shall be free of dry spots, lifts, and delamination. The CIPP shall include a textile taper at each end providing a smooth transition to the host mainline liner for accommodating video equipment and maintaining proper flow in the mainline. The finished product shall provide a verifiable non-leaking connection between the mainline liner and the CIP-Lateral liner.

3.7 MAINTENANCE (NOT USED)

3.8 FIELD QUALITY CONTROL

A. Testing

1. After complete curing of the CIPP liner and during cooling, the Contractor shall test the liner in accordance with Section 330505, Sewer Utilities Testing.

2. After completing lining and service reinstatement, every liner shall be CCTV inspected in accordance with Section 330130.16, CCTV Inspection of Sewers.

3. Segments not fully conforming to these Specifications must be immediately brought to the Engineer's attention.

4. The Contractor shall furnish a written proposed method of correction within 24 hours for approval by the Engineer.

B. Inspection

1. The Board will have a certified independent testing lab analyze finished liner samples taken from the restrained sample located at the manhole invert. The Contractor shall furnish samples directly to the Construction Manager within 2 days after installation.

    a. A minimum of one (1) sample shall be taken from every four (4) segments installed. The restrained samples shall be a minimum of one (1) foot in length. The Contractor shall place a sample mold aligned with and the same size as the existing sewer in such a manner as to allow the installation of the liner material through the restraining sample mold. This sample mold shall be made of SDR 35 PVC, C900 PVC or a Construction Manager approved equal.
    b. The resin-impregnated tube shall be installed and cured through this restraining mold in order to obtain a liner sample representative of the actual liner physical characteristics. All samples shall be labeled with the project number, date of installation, pertinent manhole numbers, nominal thickness, flow direction, and location of installation. The Contractor and Construction Manager shall acknowledge receipt and transfer of all samples.
    c. Tests in accordance with the latest versions of the ASTM standards for flexural strength, flexural modulus and wall thickness will be conducted by the independent testing lab.
    d. A sample will be provided by the Contractor to the Construction Manager for all CIPP installation over 18" inches in diameter to be tested in accordance with ASTM standards.

2. CCTV inspection of service connections must be from inside the main line sewer up into the lateral. Inspection from cleanouts, excavations, or other access points is not permitted, unless prior approval is obtained from the Engineer. All lateral inspections shall extend from the mainline to the property line, or until the camera is unable to proceed further

3. Service connection inspections shall be recorded on the same video as the mainline recording (where possible). A written report of the condition of each service connection shall include:

    a. Identification and approximate location of any pipe defects.
    b. Approximate location and description of inflow/infiltration and root intrusion.
    c. The type and condition of the lateral connection.
    d. Whether the lateral is in active use or abandoned.

C. Acceptance of Work

1. The finished CIPP liner shall be fully rounded and free from visible defects, including but not limited to damage, deflection, holes, delamination, ridges, cracks, uncured resin, foreign inclusions or other objectionable defects as determined by the Construction Manager.

2. There shall be no visible infiltration through the liner, or around the liner at manhole or service line connections. The Contractor shall be required to repair any visible leaks in a manner approved by the Construction Manager.

3. The Contractor shall refrain from removing the sewer flow bypass pumping system until both the Construction Manager and Owner have formally notified the Contractor that the work and finished product is accepted.

4. Correction of failed CIPP or CIPP deemed defective from post-installation inspection or test reports for structural values, thickness, etc., shall be repaired at no extra cost to the Owner. Method of repair, which may require field or workshop demonstration, shall be approved by the Owner.

D. Non-Conforming Work

1. If either the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP liner are less than 80% of the approved design values, the product is considered unacceptable. A method of repair or replacement shall be submitted for review and approval by the Construction Manager. All work required to remedy non-conforming work shall be at no additional expense to the Owner.

2. For all instances, as described in this Subsection, other than thickness, flexural strength, and flexural modulus of elasticity, where the CIPP liner is deemed unacceptable, the Contractor shall submit a method of repair or replacement for review and approval by the Construction Manager. All work required to remedy non-conforming work shall be at no additional expense to the Owner.

3. Where post-installation thickness measurements and/or physical property testing is performed, payment for installed cured-in-place pipe shall be made in accordance with the following:

    a. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are 90% or greater than the approved design values, full payment shall be made accordingly.
    b. If the thickness, flexural strength, or flexural modulus of elasticity of the installed CIPP are between 90% and 80% of the approved design values, with all at least 80% of the approved design values, payment shall be based on:

        i. Adjusted Unit Price = Unit Price Bid x Value Factor, where:

            - Value Factor = [* thickness + * flexural strength + * flexural modulus of elasticity] / 3.

◊ * Insert actual measured or tested result expressed as a percentage of specified value. Maximum allowable percentage is 100%.

4. If a defect repair is required after the liner has cured, a short segment tube shall be used to splice across the defect repair. The overlap on each defect shall be twice the diameter, or 12 inches, whichever is greater.

3.9 PROTECTION

A. The Contractor shall take necessary precautions to protect sewer line segments and manholes from damage that may be imposed by the improper installation of the CIPP Liner.

3.10 CLEAN UP AND REMOVAL

A. Upon completion of the CIPP Lining, the Contractor shall fully clean and restore the site.

B. Sewer Flow Control shall be removed and sewer flow shall be normalized in accordance with Section 330130.03, Sewer Flow Control.

END OF SECTION 330130

SECTION 330130.79 – PIPE BURSTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of replacing an existing sewer line with a new high-density polyethylene (HDPE) sewer line by means of pipe bursting and includes the excavation and restoration of sewer service laterals.

B. The contractor is responsible for the excavation and restoration of receiving and insertion pits, including the removal and replacement of existing manholes.

C. The contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to perform all pipe bursting activities.

D. Section Includes:

1. Pipe Joining
2. Pipe Bursting
3. Service Connections

E. Related Requirements:

1. Section 012200 Unit Prices
2. Section 013300 Submittal Procedures
3. Section 330130 Operation and Maintenance of Sewer Utilities
4. Section 330130.03 Sewer Flow Control
5. Section 330130.16 CCTV Inspection of Sewers
6. Section 330505 Sewer Utilities Testing
7. Section 330509 Piping Specialties for Sewer Utilities
8. Section 333111 Public Sewerage Gravity Piping

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200 Unit Prices, for unit price requirements.

B. Measurement:

1. Length Measurement: Measurements will be made as the horizontal length dimension of material installed, excluding overlap, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Pipe Bursting: Payment for Pipe Bursting will be made at the respective Contract unit bid price as scheduled in Section 012200 per linear foot (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurement.
   a. Pipe Bursting is broken down into specific pay-items based on nominal pipe diameter as per the unit price schedule in Section 012200 Unit Prices.

2. Fuse Service Tee and Drill Pipe to Replace Existing Connection: Payment for Fuse Service Tee and Drill Pipe to Replace Existing Connection will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurement.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Product Data:

1. The Contractor shall submit catalog cuts, specifications, dimensioned drawings, installation details and sketches, and other pertinent information for the HDPE pipe installation work. All materials provided shall be fully in accordance with these specifications.

C. Shop Drawings:

1. Shop drawings, plans, equipment catalog data, and written descriptions detailing short and long-term properties (providing all supporting test data) of all component materials and composite materials.

D. Certifications:

1. The Contractor shall furnish a certified affidavit of compliance for all HDPE pipe and fittings furnished confirming that the materials supplied fully conform to the requirements specified herein.

E. Field Inspection Records:

1. A pipe condition inspection report provided by the Contractor shall be filed with and approved by the Engineer prior to installation.

2. The Contractor shall perform trial fusion welds in the field for both main line and lateral connections and submit samples to the Engineer for review prior to installation of the pipe.

Full penetration welds shall provide a homogeneous material across the cross section of the weld. The fusion machine employed for the trial welds shall be the same machine to be utilized for the complete project installation work.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM D 1248 - Polyethylene Plastics Molding and Extrusion Materials
2. ASTM F 2620 - Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings
3. ASTM D 3035 - Polyethylene Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter
4. ASTM D 3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
5. ASTM D 3350 - Polyethylene Plastic Pipe and Fittings Materials
6. ASTM F 714 - Standard Specification for Polyethylene Plastic Pipe Based on Outside Diameter
7. ASTM F 1055 – Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing

B. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition.
2. Sewer Overflow Abatement Plan, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Pipe Bursting insertion equipment shall be operated only by technicians who have a minimum of 2 years' experience in the installation of the polyethylene pipe, using pipe bursting lining technology as specified herein. The technician's experience and references shall be documented in the HDPE pipe submittal.

B. Fusion equipment shall be operated only by technicians who have been certified by the pipe manufacturer or supplier and who have a minimum of 2 years' experience of fusion welding 8 inches or larger diameter pipelines. The technician's experience and verifiable references shall be documented in the HDPE pipe submittal.

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)

1. CFR 29, Part 1910.146: Permit Required Confined Spaces
2. CFR 29, Part 1926, Subpart P: Excavations

1.10 FIELD CONDITIONS

A. Pipe bursting shall not be performed if the Contractor does not have sufficient Sewer Flow Control to eliminate all sewer flow from the pipe for the required duration of pipe installation and curing or if the sewer pipelines have not been sufficiently cleaned as per Section 33 01 30.13, Sewer Flow Control.

1.11 DELIVERY, STORAGE AND HANDLING

A. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions.

B. The Contractor shall protect pipe from damage during the unloading, handling, and storage to prevent cutting, gouging, scoring, or other damage.

1. Any pipe segment, which has cuts in the pipe wall exceeding 10 percent of the wall thickness, shall be cut out and removed from the site at the Contractor's cost.

C. The pipe shall be stored so that it is not deformed axially or circumferentially, which may hinder pipe installation.

D. After the unloading of any pipe material delivered to the project site and before installation of the pipe, the Contractor shall inspect all pipe to verify its condition prior to installation with the Engineer and/or the project inspector. Provide inspection report as required under Submittals above.

E. All polyethylene pipe, without an ultraviolet inhibitor, shall not be stored unprotected against the outside elements.

1.12 COORDINATION

A. Refer to Section 01 31 13, Project Coordination.

1.13 WARRANTY

A. The Contractor shall furnish an extended warranty for sewer pipeline repairs for a period of one (1) year from the date of Final Acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS (NOT USED)

2.2 DESIGN CRITERIA (NOT USED)

2.3 ASSEMBLIES (NOT USED)

2.4 MATERIALS

A. Pipe

1. Pipe shall be high molecular weight, high-density polyethylene pipe (HDPE)

a. Plastic Pipe Institute (PPI) with a designation of PE 3408 with a minimum cell classification of 345434C, D, or E (inner wall shall be light in color) as described in ASTM D3350.
b. The pipe material shall meet the requirements for Type III, Class B or C, Category 5, Grade P34 material as described in ASTM D 1248.
c. All pipe shall be made from virgin grade material. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material pipe.

2. Pipe (excluding black colored pipe) stored outside shall not be recycled.

3. Butt fittings shall conform to ASTM D 3261 and ASTM F 714.

4. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects with uniform density and other physical properties.

5. Pipe Color:

a. Inside: The inner wall shall be soft white only (Opticore or equal).
b. Outside: The outer wall shall be black only.

6. Pipe Dimensions:

a. Nominal Diameter: As specified, 8" minimal
b. SDR: Minimum 17.
c. The pipe shall be made to diameter and tolerances in accordance with ASTM D 3035.
d. The minimum ratio of orthogonal diameters prior to installation shall be 0.95.

B. Electrofusion Sewer Saddles:

1. Electrofusion Sewer Saddles (wyes and tees) shall conform to ASTM F 1055.

2. Butt fittings shall conform to ASTM D 3261 and ASTM F 714.

3. Plastic Pipe Institute (PPI) with a designation of PE 3408 as per in ASTM D3350.

4. Gasketed service socket shall accommodate a 6-inch service laterals as specified in Section 33 31 11, Public Sewerage Gravity Piping.

2.5 ACCESSORIES

A. For flexible repair couplings and manhole adapters, refer to Sections 333111 Public Sewerage Gravity Piping and 330509 Piping Specialties for Sewer Utilities.

2.6 SOURCE QUALITY CONTROL

A. Pipe materials shall be legibly marked by the pipe manufacturer. The following shall be printed on the pipe:

1. Name and trademark of manufacturer.

2. Nominal pipe size.

3. Dimension ratio.

4. The letters PE followed by the polyethylene grade per ASTM D1248, followed by the Hydrostatic Design Basis in hundreds of psi.

5. Manufacturing Standard Reference.

6. A production code from which the date and place of manufacture can be determined.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sanitary sewer system is not surcharged prior to the start of work.

3.2 PREPARATION

A. Contractor shall provide Sewer Flow Control, as specified in Section 330130.13 prior to the start of Pipe Bursting for the duration of the installation period.

B. Contractor shall submit a Traffic Control Plan to the approving authority (DPW, DOTD, etc) for review and approval prior to the closing of any streets. The approved traffic control plan shall be fully executed prior to the performance of Pipe Bursting.

C. The Contractor shall perform a Pre-Rehabilitation CCTV inspection in accordance with Section 330130.16 to record a sanitary sewer line defects requiring repair prior to performance of Pipe Bursting as well as to note the location, station and orientation, and size of all active sanitary sewer service laterals to be reinstated.

1. Any sanitary sewer pipeline defects noted during the CCTV inspection that require repair prior to the performance of pipe bursting shall be approved by the Engineer and/or Owner and performed in accordance with Section 310130.73, Rehabilitation of Sewers.

2. Sags in the existing line found to be greater than 50% of the existing pipe diameter shall be eliminated by re-grading the existing pipe to a uniform grade in line with the existing pipe upstream and downstream of the sag, at no additional compensation.

D. The Contractor shall position his equipment and layout the site so as to not obstruct any fire hydrants or otherwise prevent its use in case of a fire in the area served by the hydrant.

E. The Contractor shall construct a pipe staging trench only if required due to the pipe diameter and stiffness of the pipe. The trench shall be excavated to the smallest depths permitted, including by grading the trench and in accordance with Section 312316 Excavation and Trenching.

3.3 PIPE JOINING

A. Sections of polyethylene pipe shall be joined into continuous lengths on the jobsite above ground, or in a trench when required by worksite conditions.

1. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations.

2. Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, fusion temperature, alignment and fusion pressure.

3. Electrofusion may be used for field closures as necessary when appropriate fusion equipment cannot be utilized in a trench type environment.

B. A fire-retardant bag or suitable enclosure shall be used with the heater plate to facilitate control of heating process and to protect the heater plate surfaces from dirt and other debris when not in use.

C. The heater plate surfaces shall be cleaned regularly as needed to prevent accumulation of fusion welding residues or other substances that may result in faulty pipe joining.

D. Butt fusion shall conform to ASTM D2657 and pipe manufacturer's criteria for the type of joining. Joint strength shall be equal to that of the adjacent pipe.

E. The inside and outside of pipe ends shall be cleaned with a cotton or nonsynthetic cloth to remove dirt, water, grease, and other foreign materials. The pipe ends shall be cut square and carefully aligned just prior to heating.

F. After achieving the proper melt pattern, the pipe ends shall brought together in a firm, rapid motion applying sufficient pressure to form a pipe bead (1/8 inch to 3/16 inch in height) around and inside the entire circumference of the pipe.

3.4 PIPE BURSTING

A. The Contractor shall excavate, expose, and isolate all sewer service connections prior to replacing the existing sewer.

1. The existing service connections may be encased in mortar, concrete, or reinforced concrete.

2. There will be no additional compensation for demolition of this concrete.

B. The Contractor shall prepare the insertion and receiving pits at his discretion.

1. The Contractor may utilize existing manholes where practical.

2. Location of pits outside of existing manholes should be considered as replacement of existing manholes that are not designated to be replaced shall be at the sole cost of the Contractor.

3. Manhole inverts and benches and channels shall be removed to permit access for installation equipment as appropriate.

4. When installing through an existing manhole, the input and output pipe openings shall be enlarged as appropriate to accommodate to the maximum OD size of the bursting device.

5. At no time shall the bursting device and/or the installation process put any undue stress on the existing surface.

6. Benches and channels shall be reconstructed to proper elevations after the new pipe is in–place.

C. The Contractor shall install the pipe by utilizing a constant tension system with a hydraulic or pneumatic bursting device that breaks away the existing pipe.

1. A static "cone cracking" method may be used, but only by advancing the mole bursting head with a "solid steel tow rod" pulled by a constant tension hydraulic pulling wrenching system.

2. The advancement of the bursting mole head with a "chain" shall be prohibited. The void created by the bursting device shall be sufficient in size to accommodate the HDPE pipe, which shall be installed immediately after the void has been formed.

3. The Contractor shall be responsible to provide adequately designed pipe bursting equipment to accomplish the replacement of the existing pipe under all adverse conditions.

D. The Contractor shall secure the pipe to the sewer manholes after the pipe has been installed along the length of sewer replaced by the use of Manhole Adapters and in accordance with Section 333111, Public Sewerage Gravity Piping.

3.5 SERVICE CONNECTIONS

A. The contractor shall install Electrofusion Saddle Fittings at the locations of each sewer service connection. All sewer service connections not deemed "abandoned" shall be reconnected, whether active or not, unless otherwise directed by the Engineer.

B. Electrofusion saddle tees shall be used for sewer service connections located at the 12:00 o'clock position. Electrofusion saddle wyes shall be used for sewer service connections at any other clock position. Fittings shall be installed in accordance the manufacturers recommendations.

C. All sewer service laterals shall be fully replaced from the main pipeline sewer to the property line, including the installation of the repair couplings, in accordance with Section 333111, Public Sewerage Gravity Piping.

3.6 MAINTENANCE (NOT USED)

3.7 FIELD QUALITY CONTROL

A. Testing and Inspection:

1. After the completion of pipe bursting, but prior to the cutting out and restoring of service connections, the Contractor shall perform Air Pressure Testing in accordance with Section 330505, Sewer Utilities Testing.

2. After complete restoration of all service connections, the Contractor shall perform a Post-rehabilitation CCTV inspection in accordance with Section 330130.16 CCTV Inspection of Sewers.

3. Repairs of any pipe segment not fully conforming to these Specifications must be immediately brought to the Engineer's attention.

4. The Contractor shall furnish a written proposed method of correction within 24 hours for approval by the Engineer.

3.8 PROTECTION

A. The Contractor shall protect existing and new facilities including utilities, road pavement, and private property from damage by forces generated by the pipe bursting equipment.

1. Any damage to any existing facilities as a result of the pipe bursting operation shall be the responsibility of the Contractor.

2. If it is found that the damage is a result of the pipe bursting operation, the cost to repair or replace the damage facility shall be the responsibility of the Contractor.

3.9 CLEAN UP AND REMOVAL

A. Upon completion of the Pipe Bursting, the Contractor shall fully clean and restore the site.

B. Sanitary Sewer Flow Control shall be removed and sanitary sewer flow shall be normalized in accordance with Section 330130.03.

END SPECIFICATION SECTION 330130.79

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SECTION 330130.83 – REHABILITATION OF MANHOLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of the rehabilitation of manholes for the purpose or restoring structural integrity, eliminating water infiltration, and providing corrosion protection by means of grout repairs to walls and benches, infiltration control, vertical and horizontal adjustment of frames and covers and cementitious lining of the interior wall.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required for rehabilitation of manholes.

C. Section Includes:

1. Rehabilitation of Manhole Structures
2. Rehabilitation of Manhole Covers and Frames
3. Removal of Flush Valves
4. Installation of Manhole Structural Cementitious Liners
5. Isolation Pads

D. Related Requirements:

1. Section 013113 Project Coordination
2. Section 012200 Unit Prices
3. Section 013300 Submittal Procedures
4. Section 330130.03 Sewer Flow Control
5. Section 330130.13 Cleaning of Sewers
6. Section 330500 Common Work Results for Utilities
7. Section 330505 Sewer Utilities Testing
8. Section 330581 Metallic Castings for Utility Structures

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200 Unit Prices, for unit price requirements.

B. Measurement:

1. Length Measurement: Measurements will be made as the horizontal length dimension of material installed, excluding overlap, and measured in linear feet. Irregular horizontal lengths will be measured as a summation of equivalent non-overlapping lines, arc lengths, or other applicable geometry.

2. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

3. Vertical Foot Measurement: Measurements will be made as the vertical height dimension of material installed, excluding overlap, and measured in vertical foot height. Irregular vertical heights will be measured as a summation of equivalent non-overlapping lines or other applicable geometry.

C. Payment:

1. Manhole Repair and Adjustment, Up to 6", Reusing the Existing Casting: Payment for Manhole Repair and Adjustment, Up to 6", Reusing the Existing Casting will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. Manhole Repair and Adjustment, Over 6", Reusing the Existing Casting: Payment for Manhole Repair and Adjustment, Over 6", Reusing the Existing Casting will be made at the respective Contract unit bid price as scheduled in Section 012200 per vertical foot (Paragraph 1.3.B.3) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

3. Manhole Repair and Adjustment, Up to 6", Excluding the Existing Casting: Payment for Manhole Repair and Adjustment, Up to 6", Excluding the Existing Casting will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

4. Manhole Repair and Adjustment, Over 6", Excluding the Existing Casting: Payment for Manhole Repair and Adjustment, Over 6", Excluding the Existing Casting will be made at the respective Contract unit bid price as scheduled in Section 012200 per vertical foot (Paragraph 1.3.B.3) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

5. Manhole, Replace Frame: Payment for Manhole, Replace Frame will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

6. Manhole, Replace Cover: Payment for Manhole, Replace Cover will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

7. Inspection and Removal of Flush Valve Device: Payment for Inspection and Removal of Flush Valve Device will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in

accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

8. Location and Selective Removal of Water Line from Main to Manhole: Payment for Location and Selective Removal of Water Line from Main to Manhole will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

9. Manhole Rehabilitation, Cementitious Liner, Partial Depth: Payment for Manhole Rehabilitation, Cementitious Liner, Partial Depth will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurement.

10. Manhole Rehabilitation, Cementitious Liner, Full Depth: Payment for Manhole Rehabilitation, Cementitious Liner, Full Depth will be made at the respective Contract unit bid price as scheduled in Section 012200 per vertical foot (Paragraph 1.3.B.3) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

D. There is no direct measurement or payment for Rehabilitation of Manhole Structures. This work is considered incidental to the rehabilitation of manholes and the cost of this work shall be included in the unit item bid price for the associated work included within this section.

E. Measurement and Payment for Isolation Pads will be made under the respective specifications sections for site pavement removal and installation.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

1. Manufacturer’s Certifications verifying qualification of liner installer.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM C 109: Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
2. ASTM C 293: Standard Test Method for Flexural Strength of Concrete (Using Simple Beam With Center-Point Loading)
3. ASTM C 321: Standard Test Method for Bond Strength of Chemical-Resistant Mortars
4. ASTM C 403: Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance
5. ASTM C 496: Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
6. ASTM C 596: Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement

7. ASTM C 990: Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants

B. Department of Public Works, City of New Orleans (DPW), current edition.

1. General Specifications for Street Paving, current edition.
2. Standard Drawing MC2, current edition.

C. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition.
2. Sewer Overflow Abatement Plan, current edition.
3. Standard Drawing 3143-E-1, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE (NOT USED)

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)
1. CFR 29, Part 1910.146: Permit Required Confined Spaces

1.10 FIELD CONDITIONS

A. Manhole Rehabilitation shall not be performed if the Contractor does not have sufficient Sewer Flow Control to completely perform the work without spill as per Section 330130.03.

1.11 DELIVERY, STORAGE AND HANDLING

A. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions.

B. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

C. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.13 WARRANTY

A. The Contractor shall furnish an extended warranty for manhole rehabilitation for a period of one (1) year from the date of Final Acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS (NOT USED)

2.2 DESIGN CRITERIA (NOT USED)

2.3 ASSEMBLIES (NOT USED)

2.4 MATERIALS

A. Manhole Frames and Covers shall comply with Section 330581 Metallic Castings for Utility Structures.

B. Structural Cementititous Liner

1. The material applied to the surface of the manhole shall be a lightweight structurally reinforced cementitious blend of siliceous aggregates, non-metallic fibers and other additives. The material shall produce a monolithic liner that is impervious to the flow of water, resistant to sulfide attack, and restores structural integrity to the existing manhole walls.

2. The material shall be Permacast MS-10,000, Quadex QM-1s, SCM Reliner MSP, Strong Seal MS-2A, or approved equal

3. The material shall meet the following physical property requirements:

a.	Compressive strength (28 day)	ASTM C 109	3,000 psi
b.	Flexural Strength	ASTM C 293	600 psi.
c.	Bond strength (1hr)	ASTM C 321	130 psi.
d.	Tensile Strength	ASTM C 496	300 psi.
e.	Shrinkage	ASTM C 596	0%

4. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

5. The material shall be designed for the selected method of application.

2.5 ACCESSORIES

A. Hydraulic Cement:

1. The hydraulic cement shall be a fast-setting, volume-stable, waterproofing, cementitious plugging material. The material shall consist of hydraulic cement, graded silica aggregates, and special plasticizing/accelerating agents. It shall not contain chlorides, gypsum, plasters, iron particles, aluminum powder or gas-forming agents, nor shall it promote the corrosion of steel.

2. The material shall meet the following physical property requirements:

a.	Compressive strength (1hr)	ASTM C 109	1,000 psi
b.	Bond strength (1hr)	ASTM C 321	50 psi.
c.	Set time (max)	ASTM C 403	60 to 90 sec
d.	Shrinkage	ASTM C 596	0%

3. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

B. Hydraulic Cement for Patching:

1. The hydraulic cement shall be a premixed non-shrink, cement-based, patching material. The material shall consist of hydraulic cement, graded silica aggregates, special plasticizing/accelerating agents, which has been formulated for vertical or overhead use. It shall not contain chlorides, gypsums, plasters, iron particles, aluminum powder, or gas-forming agents, nor shall it promote the corrosion of steel.

2. The material shall meet the following physical property requirements:

a.	Compressive strength (1hr)	ASTM C 109	800 psi
b.	Compressive strength (28 day)	ASTM C 109	3,000 psi
c.	Set time (max)	ASTM C 403	30 min
d.	Shrinkage	ASTM C 596	0%

3. The product must be factory blended requiring only the addition of water at the job site and shall not include any basic ingredient that exceeds the maximum allowable EPA limit for any heavy metal. Water used to mix product shall be clean and potable.

C. Chemical Grout:

1. The chemical grout shall be a hydrophilic liquid that is water reactive and will change from a free flowing liquid to a water impermeable elastomeric gel upon injection to stop excessive infiltration to a manhole. The reaction (curing) shall produce a chemically stable and non-biodegradable, tough, flexible gel. The chemical grout shall be a urethane liquid in uncured form with a moderate viscosity suitable for pumping and variable curing times.

2. The polyurethane chemical grout shall be Scotch-Seal 5610 by 3M, Avanti AV-254, or approved equal.

3. The material shall meet or exceed the following requirements:

   a. The liquid shall have a solids content of 80% and a specific gravity of 1.04 to 1.11.
   b. The liquid shall have a viscosity of 300 to 1000 centipoise at 70^{o} F.
   c. Gel times shall be in accordance with the manufacturer's recommendations.
   d. The grout shall have the ability to increase viscosity, density, gel strength and resistance to shrinkage by the use of additives in the reaction water.

4. A reinforcing agent shall be added to the reaction water at the manufacturer's suggested rate. This agent is intended to increase the polyurethane gel's resistance to wet/dry cycles,

freeze/thaw cycles, and solid movement stresses. The reinforcing agent shall be appropriate for the specific grout product that is to be used.

5. Additional chemical grout additives, such as catalysts or accelerators, needed to make the grout function properly shall be as manufactured by 3M, Avanti, or approved equal and shall be used in a manner approved by the manufacturer.

D. Manhole Casting Embedment Sealant:

1. The sealant shall be a premium, extruded, bituminous, tacky rubber sealant in rope form for use on manholes as an embedment material for the frame to adjusting brick/mortar corbel.

2. Sealant shall conform to the latest version of ASTM C990 and Federal Specification SS-S-210A – Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints, Type I.

3. The material shall meet the following physical property requirements:

a. Elongation, min, Initial	300%
b. Elongation, min, at two weeks in total water immersion	300%
c. Service Temperature Range	-20 to 200º F
d. Storage Life	Indefinite

2.6 SOURCE QUALITY CONTROL

A. Complete records of inspections, examinations and tests shall be kept and submitted to the Engineer.

B. The Engineer reserves the right to perform any of the inspections set forth herein where deemed necessary to assure that material and services conform to the prescribed requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sewer system is not surcharged prior to the start of work.

C. Manholes Containing Flow Monitoring Equipment:

1. Drawings may not show locations of flow monitoring equipment.

2. If a manhole contains any mechanical hardware or electrical flow monitoring equipment, the Contractor shall immediately notify the Engineer.

3. Work in such manholes shall be rescheduled at no additional cost to the Owner until the Owner has removed the equipment and the Contractor has been given further instructions.

4. Any damage to installed equipment, resulting from the Contractor's failure to adhere to the above, shall be repaired by the Owner at the Contractor's expense.

D. Field Location of Manholes

1. The Contractor shall be responsible for locating and uncovering all manholes.

2. If the Contractor is unable to locate a manhole after due diligence with measuring tapes, metal detectors, and probing, the Contractor shall notify the Engineer in writing for Owner assistance.

3. The Contractor is cautioned that manholes that are not part of the sanitary sewer system being rehabilitated may be located within the project limits.

4. No payment will be made to the Contractor for work in manholes not indicated on the drawings or as directed in writing by the Engineer.

3.2 PREPARATION

A. The Contractor shall provide Sewer Flow Control, as specified in Section 330130.13, Sewer Flow Control prior to the start of Rehabilitation of Manholes for the duration of the rehabilitation work.

B. The Contractor shall submit a Traffic Control Plan to the approving authority (DPW, DOTD, etc) for review and approval prior to the closing of any streets. The approved traffic control plan shall be fully executed prior to the performance of Rehabilitation of Manholes.

C. Any and all pavement saw cutting and removal shall be in accordance with Section 024113 Selective Site Demolition. The minimum pavement area to be saw cut, removed and replaced for manhole frame adjustments and/or replacements is 6-ft by 6-ft.

D. The Contractor shall position his equipment and layout the site so as to not obstruct any fire hydrants or otherwise prevent its use in case of a fire in the area served by the hydrant.

E. The Contractor shall carry out his/her operations in accordance with all OSHA and manufacturer's safety requirements. Particular attention is drawn to those safety requirements involving the entering of confined spaces.

F. Manholes shall be cleaned as per the requirements in Section 330130.13, Cleaning of Sewers. Where applicable, cleaning methods and products shall be in accordance with the manufacturer's written instructions for any products installed.

3.3 REHABILITATION OF MANHOLE STRUCTURES

A. Rehabilitation of manhole structures shall be performed on manholes scheduled for frame adjustment, frame replacement, partial liner or a full liner.

B. Manhole Steps

1. All existing non stainless steel manhole steps shall be cut smooth with the wall or be removed completely prior to lining.

C. Infiltration Control

1. After surface preparation and prior to the application of mortars and coatings, infiltration shall be stopped by use of an approved chemical grout.

2. All large holes or voids around steps, joints or pipes, all spalled areas and all holes caused by missing or cracked brick shall be patched and all missing mortar shall be patched using hydraulic cement for patching.

    a. Any loose bricks, mortar, grout or other materials shall be removed and the area mechanically cleaned, exposing a sound sub-base for patching application.

3. All cracks not subject to movement and greater than 1/16 inch in width shall be grouted with approved hydraulic cement.

D. Manhole Benches And Channels

1. The Contractor shall remove obstructions and all loose grout and rubble and other materials from benches, troughs and pipe inverts prior to shaping the channel.

2. The Contractor shall form a smooth, U-shaped channel having a minimum depth of one-half exiting pipe diameter and connecting the inlet and exiting pipes of the manhole using an approved manhole rehabilitation material.

3. The Contractor shall make finished benches and channels smooth and without defects which would allow for accumulation of debris.

4. The Contractor shall rebuild channel if required by reshaping, repairing slope of shelves or benches.

5. Work shall include aligning inflow and outflow ports in such a manner as to prevent the deposition of solids at the transition point.

6. All inverts shall follow the grades of the pipe entering the manhole.

7. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit, but will be shaped to allow easy entrance of maintenance equipment including buckets, CCTV, etc.

3.4 REHABILITATION OF MANHOLE COVERS AND FRAMES

A. Rehabilitation of manhole covers and frames shall be performed where scheduled and shall be performed prior to the installation of a manhole structural liner.

B. The Contractor shall adjust and reset manhole frames horizontally and vertically to proper grade.

C. This adjustment shall include the removal and delivery of existing metal or plastic adjusting rings to the Owner.

D. The top of the frame shall be flush with the natural ground in unpaved areas.

E. In paved areas, the frame shall be set at a grade and slope that is consistent with the adjoining pavement, allowing for a smooth transition in all directions from pavement to frame and cover.

F. The Contractor shall apply an approved Manhole Casting Embedment Sealant between the top adjustment ring and the manhole frame.

G. An approved hydraulic cement for patching material shall be applied between the adjustment rings and patching the chimney up to 6" below the bottom of the casting to fill voids and cracks.

3.5 REMOVAL OF FLUSH VALVES

A. The Contractor is required to investigate each of the flush valve manholes listed to determine if a water service line is present, ensure that the water service line is disconnected from the water main and then remove all flush valve hardware and water piping from the manhole, repair the manhole wall as needed and restore the site to pre-construction condition in accordance with the restoration specifications in this contract.

B. If present, the water line shall be removed from the manhole, including the spigot, wall penetration and the service line for a length of 2-ft outside the manhole. The water line penetration shall be grouted closed from both inside and outside the manhole.

C. If the water line service is live, the contractor shall locate the connection at the water main and physically disconnect the service from the main. Contractor shall refer to the S&WB unit sheets to facilitate in locating the water line.

D. At the water main, the connection may or may not be connected to the main with a corporation cock. If a corporation cock is present, the corporation cock should be turned off and the connection removed from the cock. The cock should be inspected to determine if it is leaking. If there is no corporation cock, or if the corporation cock is leaking it will be necessary to shut down the main, remove the direct connection or leaking corporation cock and seal the tap hole with a full circular stainless steel repair clamp approved by the Engineer.

E. The remainder of the water service line shall be abandoned in place.

F. Once the water connection is determined to be dead, the contractor shall remove the flush valve and water piping within the manhole and seal any holes in the manhole wall or invert with a non-shrink grout.

3.6 INSTALLATION OF STRUCTURAL CEMENTITIOUS LINER

A. The cementitious lining system shall result in a monolithic structure conforming to the interior shape and contour of the existing manhole and covering all interior surfaces. The lining system shall be completely watertight and free of any joints or openings other than pipe inlets, pipe outlets, and the rim opening. The junction of the lining material with the pipe material at the inlets and outlets shall be watertight.

B. The lining system shall be installed in accordance with the manufacturer's recommendation to withstand groundwater pressures.

1. Full depth cementitious lining shall be applied to manhole wall, bench and channel surfaces where scheduled.
2. All cementitious linings shall have a minimum thickness of 5/8 inch.
3. All multi-component polymeric lining shall have a minimum thickness of 1/2 inch.

C. Manholes requiring lining shall be cleaned no more than 2 hours before lining.

1. The surface prior to lining shall be damp without noticeable free water droplets or running water.
2. Materials shall be applied to a minimum uniform thickness insuring that all cracks, crevices, and voids are filled and a smooth surface remains after light troweling.

D. For spray applied lining, the first application shall take an initial set (disappearance of surface sheen which could be 15 minutes to 1 hour depending on ambient conditions) before the second application, if necessary, to assure a minimum total finished thickness of 5/8 inch.

1. For centrifugally cast lining, the rotating casting applicator shall be positioned to evenly apply the material and shall be withdrawn at a rate to ensure a final minimum thickness of 5/8 inch.
2. A depth gauge shall be used during application, at various locations, to verify the required thickness.

E. The Contractor shall apply light troweling to compact the material into voids and set the bond.

1. The surface shall be troweled to a smooth finish with care taken not to over trowel and bring additional water to the surface.

F. The bench covers used to catch debris shall be removed and the bench and channel lined to produce a gradual slope from the walls to the channel with the thickness at the edge of the channel being no less than 5/8 inch.

1. The wall and channel intersection shall be rounded to a uniform radius along the circumference of the intersection.

G. No application shall be made to a frozen surface or if freezing is expected to occur within the manhole for 24 hours after application.

1. If ambient temperatures are in excess of 90^{o} F, precautions shall be taken to keep the mix temperature at the time of application below 90^{o} F.

H. The application shall have a minimum cure time as recommended by the manufacturer before being subjected to active sewer flow.

I. Liner samples shall be taken by the Board assigned testing laboratory on a weekly basis or as directed by the Engineer.

J. Structural Cementitious Liner Schedule

1. Partial Depth Liners shall include the application of a structural cementitious liner for two (2) vertical feet beginning at the top of the wall, below the bottom of the frame (including below spacers and adjustment rings) and extended vertically downward for two feet.

2. Full Depth Liners shall include the application of a structural cementitious liner for the full height of the manhole beginning at the top of the wall, below the bottom of the frame (including below spacers and adjustment rings) and extended vertically downward to include application onto the bench and trough.

3.7 ISOLATION PADS

A. All manholes within concrete paving areas shall be isolated (boxed out) in accordance with Section 321313 Concrete Paving 3.13.A.

3.8 MAINTENANCE (NOT USED)

3.9 FIELD QUALITY CONTROL

A. Testing and Inspection:

1. After complete rehabilitation of manholes by means of full depth liner, the manhole shall be tested for acceptance in accordance with Section 330505, Sewer Utilities Testing.
2. Repairs of any manhole lining not fully conforming to these Specifications must be immediately brought to the Engineer's attention.
3. The Contractor shall furnish a written proposed method of correction of any defects within 24 hours for approval by the Engineer.

3.10 PROTECTION

A. The Contractor shall carefully protect all existing sewers, water lines, gas lines, sidewalks, curbs, gutters, pavements, electric lines, or other utilities or structures in the vicinity of the work from damage at all times.

B. The Contractor shall not allow sand, debris, or runoff to enter the sewer system.

3.11 CLEAN UP AND REMOVAL

A. Manhole covers, frames, and adjusting rings from abandoned, broken, or adjusted castings shall remain the property of the Owner. The Contractor shall deliver salvaged items at a time and to a property location designated by the Owner.

B. The Contractor may dispose of sludge, sand, debris, grit, and liquid wastes resulting from performance of operations in this contract at the East Bank Sewage Treatment Plant (6501 Florida Avenue).

1. There will be no charge for disposal at this location.
2. The Contractor may utilize and coordinate other licensed disposal sites at no additional cost to the Owner, upon approval by the Engineer.

C. Upon completion of the Rehabilitation of Manholes, the Contractor shall fully clean and restore the site.

D. Sewer Flow Control shall be removed and sewer flow shall be normalized in accordance with Section 330130.03.

END OF SECTION 330130.83

SECTION 330500 – COMMON WORK RESULTS FOR UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing Common Work Results for Utilities as described herein.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to provide all common work results for utilities.

C. Section Includes:

1. Flowable fill.
2. Piped utility demolition.
3. Piping Installation.
4. Piping Joint Construction.

D. Related Requirements:

1. Section 013113 Project Coordination.
2. Section 024113 Selective Site Demolition
3. Section 330130.03 Sewer Flow Control
4. Section 330572 Masonry Structures

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200 Unit Prices, for unit price requirements.

B. Measurement:

1. Volume Measurement: Measurements will be made as the product of horizontal width, length dimensions and depth of material installed, measured in cubic yards. Irregular surface areas will be measured as a summation of equivalent non-overlapping rectangles, triangles, circles, partial circles, fillets, or other applicable geometry multiplied by the average nominal depth.

C. Payment:

1. Flowable Fill: Payment for Flowable Fill will be made at the respective Contract unit bid price as scheduled in Section 012200 per cubic yard (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

1.4 DEFINITIONS

A. Flowable Fill: Low-strength-concrete, flowable-slurry mix, shall be designed as a permanent material, not designed for future removal.
B. PE: Polyethylene plastic.
C. PVC: Polyvinyl chloride plastic.

1.5 SUBMITTALS (NOT USED)

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM C 33: Standard Specification for Concrete Aggregates
2. ASTM C 94: Standard Specification for Ready-Mixed Concrete
3. ASTM C 150: Standard Specification for Portland Cement
4. ASTM C 618: Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
5. ASTM D 3212: Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

B. Sewerage and Water Board of New Orleans

1. General Specifications and Standard Drawings, current edition.
2. Sewer Overflow Abatement Plan, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE (NOT USED)

1.9 REGULATORY REQUIREMENTS (NOT USED)

1.10 FIELD CONDITIONS

A. Sanitary Sewer Rehabilitation shall not be performed if the Contractor does not have sufficient Sewer Flow Control to completely perform the work without spill as per Section 330130.13.

1.11 DELIVERY, STORAGE, AND HANDLING

A. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer’s identification and printed instructions.

B. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

C. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

D. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

E. Store plastic pipes in area protected from direct sunlight. Adequately block and support stored pipe to prevent sagging and bending.

1.12 COORDINATION

A. Coordinate and cooperate with other contractors and agencies performing work in close proximity to the Work on this project.

1.13 WARRANTY (NOT USED)

PART 2 - PRODUCTS

2.1 FLOWABLE FILL

1. Refer to Section 312323 Fill, Backfill and Compaction for excavatable and non-excavatable flowable fill requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

3.2 PIPED UTILITY DEMOLITION

A. Refer to Section 024113 Selective Site Demolition for general demolition requirements and procedures.

B. Disconnect, demolish, and remove piped utility systems, equipment, and components indicated to be removed.

1. Piping to be removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
2. Piping to be abandoned in place: Drain piping. Fill abandoned piping with flowable fill, and cap or plug piping with same or compatible piping material.
3. Equipment to be removed: Disconnect and cap services and remove equipment.

C. If pipe or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.3 PIPING INSTALLATION

A. Install piping according to the following requirements and utilities Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, and in compliance with Owners' standard drawings.

C. Install piping at indicated slopes, where indicated on plans.

1. In cases where piping is being rehabbed by excavation, match existing inverts on each end of the work and install the pipe straight with uniform slope and horizontal alignment.

2. In cases of existing sewer lines being replaced and/or relocated, the Contractor shall establish a new vertical and horizontal alignment, ensuring uniform slope between each manhole. Inverts on existing manholes shall be maintained unless otherwise indicated on the drawings.

D. Install piping free of sags and bends.

E. Install fittings for changes in direction and service connections.
1. Use Wye fittings for 6” lateral service connections
2. Use Tee fittings for 6” vertical stack service connections
3. Use S&WB Standard Manholes for 8” and larger service connections.
4. Use S&WB Standard Manholes for changes in slope or horizontal alignment.

3.4 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and utilities sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

3.5 SEWER MANHOLE

1. Refer to Section 330572 Masonry Structures.

3.6 MAINTENANCE (NOT USED)

3.7 FIELD QUALITY CONTROL (NOT USED)

3.8 PROTECTION

A. The Contractor shall use care that his performance in Common Work Results for Utilities does not cause damage to existing utilities to remain or newly installed utilities to be commissioned.

3.9 CLEAN UP AND REMOVAL

A. The Contractor shall maintain a clean and safe work space on a daily basis.

B. Contractor shall fully restore any site modifications performed to accommodate the sewer flow control system.

END OF SECTION 330500

SECTION 33 05 05 – SEWER UTILITIES TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing common Testing Procedures for Sewer Utilities.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to provide complete sewer utilities testing.

C. Section Includes:

1. Air Pressure Testing
2. Mandrel Deflection Testing
3. Rigid Metal Bar Deflection Testing
4. Manhole Vacuum Testing
5. Testing Schedule

D. Related Requirements:

1. Section 013113 Project Coordination
2. Section 013300 Submittal Procedures
3. Section 330130.16 CCTV Inspection of Sewers

1.3 PRICE AND PAYMENT PROCEDURES

A. There is no direct measurement or payment for Sewer Utilities Testing. This work is considered incidental to respective unit bid item being tested in accordance with this specification.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Test Reports:

1. The Contractor shall submit the testing plan and testing results for each sewer line segment tested.
2. The Contractor shall submit the testing plan and testing results for manhole vacuum testing.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM D 3034: Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
2. ASTM F 1417: Standard Practice for Installation Acceptance of Plastic Non-pressure Sewer Lines Using Low-Pressure Air

B. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Testing: Materials testing shall be based upon applicable ASTM Test Methods and AWWA Standards referenced herein. Costs of such inspection and tests shall be borne by the Contractor.

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)

1. CFR 29, Part 1910.146: Permit Required Confined Spaces
2. CFR 29, Part 1926, Subpart P: Excavations

1.10 FIELD CONDITIONS

A. Testing shall not be performed until the sewer line installation and all connected sewer service laterals have been completed.

1.11 DELIVERY, STORAGE AND HANDLING (NOT USED)

1.12 COORDINATION

A. Refer to Section 013113, Project Coordination.

B. The Contractor shall notify the Construction Manager 24 hours in advanced of any pipe testing; pipe testing shall be performed during normal business hours and shall not be performed on weekends or holidays.

1.13 WARRANTY (NOT USED)

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sewer system work is complete, clean and ready for testing.

C. Contractor shall determine the current groundwater depth prior to conducting air pressure testing.

3.2 PREPARATION

A. The Contractor shall furnish all materials, equipment and labor for the purpose of setting up and performing of all testing described herein.

B. The Contractor shall ensure the pipe to be subject to testing is fully complete, cleaned and free of any dirt or debris.

3.3 MAINTENANCE (NOT USED)

3.4 AIR PRESSURE TESTING

A. Perform this test only on sewer mains that have been fully replaced from manhole to manhole or lined via Cast-In-Place liners. Testing is limited to pipe diameters of 15" or smaller.

B. The Contractor shall furnish all materials, equipment, and labor for making an air test. Air test equipment shall be approved by the Construction Manager.

C. The Contractor may conduct an initial air test of the sewer main line after densification of the backfill but prior to installation of the service laterals. Such tests will be considered to be for the Contractor's convenience and need not be performed in the presence of the Construction Manager.

D. Each section of sewer shall be tested between successive manholes by plugging and bracing all openings in the pipe and the upper ends of all service laterals. Prior to insertion in the sewer, each plug shall be checked with a soap solution to detect any air leakage. If any leaks are found, the air pressure shall be released and the leaks eliminated or the plug replaced.

E. The test of the pipe and service laterals shall be conducted in the presence of the Construction Manager. Testing of pipe, regardless of the pipe material, shall be performed in accordance with ASTM F 1417.

F. Air pressure in the sewer line shall be increased to 4.0 psi above groundwater pressure (1.0 psi for each 2.3 feet of water elevation above the highest point of the pipe). Do not allow the pressure at any point in the pipe to reach 9 psi under any circumstances. Allow the pressure to stabilize for 5 minutes, then reduce the pressure to 3.5 psi above groundwater pressure and start the test. Stop the air release and record the decrease in pressure over time.

G. Pass/Fail Criterion: The time taken for the pressure to decrease from 3.5 to 2.5 psi above groundwater pressure shall be equal to or greater than the time below.

Nominal Pipe Diameter, inches	Minimum Time, min:sec	Length for Minimum Time, ft	Increased Time for Longer Lengths, seconds per foot
4	3:46	597	.0380
6	5:40	398	0.854
8	7:34	298	1.520
10	9:26	239	2.374
12	11:20	199	3.418
18	17:00	133	7.692
24	22:40	99	13.674
30	28:20	80	21.366
36	34:00	66	30.768

H. Testing criteria of pipe 12-inches and larger may be adjusted if the Construction Manager approves. The air pressure decrease may be 0.5 psi instead of 1.0 psi, and the corresponding minimum times will be one-half of the tabulated times.

I. For sewer service lateral lines 6” to 8” the contractor is required to air test, a minimum of 10% of the laterals rehabilitated on this project. The Contractor shall note that based on the judgment of the Engineer, additional tests may be requested. The Air tests must be done in bunches of at least five (5) at a time. The air test must be completed within two (2) weeks of the installation of the liner being tested; the air test shall consist of the following:

1. That Contractor shall install a plug at the sanitary sewer temporary lateral access point, and at the main sewer main connection.
2. Air should be added to the plugged section of the lateral until air pressure reaches 4.0 psi.
3. Allow at least two (2) minutes for the air temperature to stabilize, adding air to maintain the initial pressure.
4. Shut off the air supply after stabilizing the temperature.
5. Air test failures shall be defined as failure to maintain as least 3.5 psi for three (3) minutes. If a lateral does not pass the air test the contractor is required to repair the liner until it can pass the test.
6. The air testing is at the discretion of the Engineer and the Engineer reserves the right to require additional testing for a failed test, at no cost to the Owner

J. If the time is less than the allowable time, the pipe will be considered defective and shall be repaired and retested and the Contractor’s expense.

3.5 GRAVITY PIPE LEAKAGE TESTING

A. Perform this test only on sewer mains that have been fully replaced from manhole to manhole or lined via Cast-In-Place liners. Testing is limited to pipe diameters larger than 15” and up to 36”.

B. The Contractor shall furnish all materials, equipment, and labor for making the gravity pipe leakage test. Water shall be potable.

C. The test of the pipe and service laterals shall be conducted in the presence of the Construction Manager. Testing of pipe, regardless of the pipe material, shall be performed in accordance with ASTM F 1216.

D. Testing shall be performed prior to the reinstatement of lateral sewers when being performed after a CIPP installation. The pipe shall be plugged at both ends and an inversion standpipe shall be installed at a location convenient to the contractor. All air shall be bled from the pipe prior to the start of the test.

E. Hydrostatic water pressure in the sewer line shall be established as 2-ft above grade.

F. The minimum length of testing shall be 1 hour.

G. Pass/Fail Criterion: The leakage volume shall be converted to “US gallons per inch internal diameter per mile length of pipe per day”. The maximum allowable leakage of the CIPP liner is 50 US gallons per inch internal diameter per mile length of pipe per day.”

H. If the pipe fails the test criteria, the contactor shall repair or replace the pipe at no additional cost to the Owner.

3.6 MANDREL DEFLECTION TESTING

A. Perform this test only on sewer mains that have been fully replaced via excavation from manhole to manhole.

B. The Contractor shall furnish all materials, equipment, and labor for making a mandrel deflection test.

C. The Contractor shall test all PVC pipe 30-inches and smaller for deflection, joint displacement, and other obstructions by passing the mandrel through the pipe not less than 30 days after completion of the trench backfill, but prior to final acceptance testing of the pipe.

D. The Owner shall have the option of passing the mandrel at any time after installation and final backfill of the trenches and before final acceptance.

E. Mandrel testing shall conform to the latest version of ASTM D-3034.

F. The outside diameter of the mandrel shall taper out to 95% of the inside diameter of the pipe. For the purpose of determining the mandrel diameter, the inside diameter of the pipe shall be the average outside diameter of the pipe minus 2 minimum wall thicknesses for OD controlled pipe and shall be the average inside diameter for ID controlled pipe, all dimensions in

accordance with the respective pipe standards. Statistical or "tolerance packages" shall not be considered in mandrel sizing.

G. The Contractor shall fabricate a ½-inch thick, 3-inch wide steel bar proving ring. The steel bar shall be bent to a circle 0.02-inches larger than the mandrel diameter calculated above. The Contractor shall furnish the proving ring to the Engineer before any pipe is installed. The Contractor shall pass the mandrel through the proving ring at any time determined by the Owner. The mandrel shall pass through the proving ring with no greater than 0.02-inch clearance, and if it does not, the mandrel will be considered defective and shall be replaced at no additional cost to the Owner.

H. Pipe with a diameter less than the mandrel will be considered defective and the Contractor shall replace it at no additional cost to the Owner.

I. The number of repairs needed to the sewer main will determine the required repair techniques:

1. 1 to 2 separate repairs to the sewer main, using hard sleeve PVC connections, will be allowed with no other rehabilitation to the sewer main.

2. 3 to 4 separate repairs to the sewer main, using hard sleeve PVC connections, will required the main to be CIPP lined from MH to MH.

3. 5 or more separate repairs to the sewer main will be rejected by S&WB and require complete removal and replacement of the sewer main from MH to MH.

3.7 RIGID METAL BAR TEST

A. Perform this test only on sewer mains that have been fully replaced from manhole to manhole.

B. The Contractor shall furnish all materials, equipment, and labor for making a rigid metal bar deflection test.

C. The Contractor shall test PVC pipe larger than 30-inches for deflection, joint displacement, and other obstructions by utilizing a rigid metal bar or other method approved by the Engineer. The test shall be conducted prior to final acceptance testing of the pipe but not less than 30 days after completion of the trench backfill.

D. The average inside diameter shall be measured before the pipe is installed and backfilled.

E. The length of the rigid metal bar shall be 90% of the measured average inside diameter.

F. The Contractor shall take one (1) measurement at the mid-point of each installed pipe segment.

G. Deflection is defined as the difference between vertical inside diameter in the pipe before and after installation and backfilling. Pipe with a vertical inside diameter less than the length of the rigid metal bar will be considered defective and the Contractor shall replace it at no additional cost to the Owner.

3.8 MANHOLE VACUUM TESTING

A. Install the vacuum test head on top of the manhole. Install and brace sealing devices on influent and effluent pipes

B. With a vacuum pump, draw a vacuum of 10 inches of mercury, deactivate the pump, and measure the time in seconds for the vacuum to drop to 9 inches of mercury.

C. Compare the time to the table below.

Minimum Time, min: sec				
Manhole Depth, ft	Manhole Diameter, inches			
	36	48	60	72
8	0:14	0:20	0:26	0:33
10	0:18	0:25	0:33	0:41
12	0:21	0:30	0:39	0:49
14	0:25	0:35	0:48	0:57
16	0:28	0:40	0:52	1:7
18	0:32	0:45	0:59	1:13
20	0:35	0:50	1:5	1:21
22	0:38	0:55	1:12	1:30
24	0:42	0:59	1:18	1:37
26	0:46	1:4	1:25	1:45
28	0:49	1:9	1:31	1:53
30	0:53	1:14	1:38	2:1

D. If the time is less than the time in the table, the manhole is defective, and it shall be repaired and retested until it is acceptable at no additional cost to the Owner.

3.9 FIELD QUALITY CONTROL (NOT USED)

3.10 PROTECTION (NOT USED)

3.11 CLEAN UP AND REMOVAL (NOT USED)

3.12 TESTING SCHEDULE

A. Sewer Line Point Repairs

1. Post-Installation CCTV Inspection in accordance with Section 330130.16, CCTV Inspection of Sewers

B. Sewer Line Replacements less than 30 inches in diameter

1. Air Pressure Testing
2. Mandrel Deflection Testing
3. Post-Installation CCTV Inspection in accordance with Section 330130.16, CCTV Inspection of Sewers

C. Sewer Line Replacements greater than 30 inches in diameter

1. Air Pressure Testing
2. Rigid Metal Bar Deflection Testing
3. Post-Installation CCTV Inspection in accordance with Section 330130.16, CCTV Inspection of Sewers

D. Sewer Lining less than or equal to 15 inches in diameter

1. Air Pressure Testing
2. Post-Installation CCTV Inspection in accordance with Section 330130.16, CCTV Inspection of Sewers

E. Sewer Lining greater than 15 inches in diameter but less than or equal to 36 inches in diameter

1. Gravity Pipe Leakage Testing
2. Post-Installation CCTV Inspection in accordance with Section 330130.16, CCTV Inspection of Sewers

F. Sewer Lining greater than 36 inches in diameter

1. Post-Installation CCTV Inspection in accordance with Section 330130.16, CCTV Inspection of Sewers

G. Sewer Lateral Lining

1. Air Pressure Testing, 10% of lines as specified in Paragraph 3.4.J
2. Post-Installation CCTV Inspection in accordance with Section 330130.16, CCTV Inspection of Sewers

H. Sewer Manhole Full Depth Liners

1. Manhole Vacuum Testing

END OF SECTION 330505

SECTION 33 05 07.13 – UTILITY DIRECTIONAL DRILLING

PART 1 -- GENERAL

1.01 SUMMARY

A. This Specification covers the installation of pipe or conduit by horizontal directional drilling. Horizontal directional drilling is a trenchless excavation method which is accomplished in three phases. The first phase consists of drilling a small diameter pilot hole following the design alignment and profile. The second phase consists of enlarging the pilot hole to a diameter suitable for installation of the pipe or conduit. The final phase consists of pulling the pipe or conduit(s) into the enlarged hole. Horizontal directional drilling is accomplished using a specialized horizontal drilling rig with ancillary tools and equipment.

B. The Contractor shall furnish all labor, equipment, and materials necessary to install High Density Polyethylene (HDPE) pipeline by horizontal directional drilling (HDD) as indicated on the Project Drawings.

1.02 GLOSSARY AND ABBREVIATIONS

Term	Definition
Horizontal Directional Drilling (HDD)	A surface-to-surface pipeline installation technique used to install pipelines or conduits along pre-determined straight and curved alignments in soil and rock environments. The installation technique is comprised of four primary stages including pilot bore drilling, reaming pass(es), swab pass, and product pipe installation. Tracking of the drilling string is achieved using downhole wireline survey tools that may be augmented with an energized wire grid at the ground surface.
Pilot Bore	The first stage of the installation process whereby a guided and steerable pilot bore is drilled along a planned alignment from an entry location to an exit location.
Bent Sub	A bent sub is a section of drill pipe behind the cutting tools that is inclined at an angle from the axis of the bore in the desired direction of steering. The bent sub allows steering while rotating the cutting tools.
Reaming Pass(es)	The second stage of the installation process whereby a reamer(s) is used to increase the diameter of the bore to its final diameter. This shall include multiple reaming passes/diameters where necessary.
Annular Space	The space between the excavated HDD final reamed bore diameter and the product pipe or the space between product pipe and conductor casing.
Swab Pass	The third stage of the installation process whereby the reamed hole is prepared for product pipe installation by making a pass through the hole with tooling to collect residual cuttings and loose materials in the hole that may impede pipe installation.
Conductor Casing	A steel casing pipe installed at the entry and/or exit locations of the borehole to stabilize the borehole
Product Pipe Installation	The final stage of the installation process whereby the product pipe is installed within the bore.
Drilling Fluid/Mud	A mixture of water, bentonite and/or polymers specially designed for HDD operations and continuously pumped through the drilling equipment to facilitate the installation process and stabilize the bore.
Frac-out	The fracturing or failure of the soil around the bore hole as a result of excessive drilling fluid pressure generally resulting in drilling mud being released to the surface.

Term	Definition
Settlement Point	A point with elevation and spatial location established prior to construction and re-surveyed periodically to monitor ground movements. The point may be a nail, pin, subsurface settlement rod or borehole extensometer.
Pullback Loads	The tensile load or force that is applied to the drill string and product pipe and required to install the product pipe.
API	American Petroleum Institute
ARO	Abrasion Resistant Overcoat
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
Aavg	Total Change in Inclination over LDrilled
EDR	Electronic Drill Recorder
EPP	Environmental Protection Plan
FBE	Fusion Bonded Epoxy
HDD	Horizontal Direction Drilling
LDrilled	Length drilled over three joints of drill pipe
MSDS	Material Safety Data Sheet
SMYS	Specified Minimum Yield Strength

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Reference Specifications

00 21 13.3	Qualifications of Bidders
01 32 00	Construction Progress Schedule
01 33 00	Contractor Submittals
33 05 33.23	Polyethylene Pressure Pipe (AWWA C901)

B. Reference Standards

Installation of Pipelines by Horizontal Directional Drilling: An Engineering Design Guide (2008). Pipeline Research Council International, PR-227-03110.
Installation of Pipelines Beneath Levees Using Horizontal Directional Drilling (1998). US Army Corp of Engineers, Construction Productivity Advancement Research (CPAR) Program, CPAR-GL-98-1.
Horizontal Directional Drilling Good Practices Guidelines, 2008, 2004, 2001, HDD Industry Consortium, 300pp.
ASCE Manual of Practice No. 108 Pipeline Design for Installation by Horizontal Directional Drilling.
API Bulletin 130, 1985. Bulletin on the Rheology of Oil-Well Drilling Fluids, Second Edition, Dallas, Texas, American Petroleum Institute.
API Recommended Practice 13B-1, 1990. Standard Procedures for Field Testing Water-Based Drilling Fluids, First Edition, Dallas, Texas, American Petroleum Institute.

ASTM F 1962 Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings.
Installation of Pipelines Beneath Levees Using Horizontal Directional Drilling, US Army Corps of Engineers, Waterways Experiment Station, Final Report, CPAR-GL-98-1, April 1998.
API Specification 13A, 1993. Specification for Drilling Fluid Materials, Fifteenth Edition, Dallas, Texas. American Petroleum Institute.
IADC Drilling Manual, 1992. Eleventh Edition, Houston, Texas, International Associated of Drilling Contractors.
Pressure Pipeline Design for Water and Wastewater, American Society for Civil Engineers, 2nd ed., 1992.
Tables for Hydraulic Design of Pipes and Sewers, American Society for Civil Engineers, 5th ed., 1990.

1.04 SUBMITTALS

A. Submit the following in accordance with the requirements of Section 01 33 00-Submittal Procedures, providing sufficient detail to allow determination of whether the proposed equipment, materials, and procedures meet the Contract requirements. Review of submitted details and data will be based on consideration of requirements for the completed work, utilities, and the possibility of unnecessary delays in the execution of the Work to be constructed under this Contract. Review and acceptance of the submittals shall not be construed in any way as relieving the Contractor of its responsibilities under this Contract.

B. All procedure or material descriptions requiring Engineer approval shall be submitted not less than three weeks prior to commencing any horizontal directional drilling activities at the crossing location.

C. Horizontal Directional Drilling Work Plan: Submit an HDD Work Plan complete with drawings and written description identifying all details of the proposed method of construction and the sequence of operations to be performed during construction. The work plan shall also include details of the proposed method of construction for the conductor/starter casing (if used), and sequence of operations. A separate work plan shall be submitted for each individual bore.

D. Environmental Protection Plan: When required the Contractor shall prepare and submit an environmental protection plan specifying any environmental requirements regarding containment of lubricants, fuel and drilling fluids, and any spill containment measures and collection equipment to be on site in the event in inadvertent release of drilling fluids.

E. Qualifications: Contractor shall provide resumes of key personnel including site superintendent(s), drill rig operator(s), project manager and guidance/steering hand in accordance with submittal requirements herein.

F. Shop Drawings: The drawings shall include all equipment, equipment setup areas, pipe layout areas, access routes, and any excavations or mud recirculating pits. The Contractor shall confirm that all operations shall be completely contained within the temporary construction easement shown on the Drawings.

G. Schedule: In accordance with 01 32 00- Construction Progress Schedule, the Contractor shall submit a detailed schedule for each HDD bore installation showing all major construction activities and durations, with starting and completion dates shown. The schedule shall be updated at least every 2 weeks or more frequently, and include:

1. Calling 811, or other Local/Regional utility location service for utility location requests and visual confirmation of a crossing utilities and all parallel utilities within 20 ft laterally of the bore centerline.

2. Site preparation.

3. Rig mobilization and setup.

4. Conductor casing, installation, where applicable.

5. Coil installation / Calibration of locate system

6. Pilot bore drilling.

7. Pre-reaming and reaming.

8. Layout and welding of pipe.

9. Pressure testing of pipe prior to pullback.

10. Swab pass

11. Pullback of pipe.

12. Post installation testing (e.g., sizing plate, pressure test), if applicable.

13. Cleanup, surface restoration, and demobilization.

H. Description of Methods, Equipment and Materials: The Contractor shall submit detailed descriptions of all methods, equipment, and materials to be used for the pipeline installation. Descriptions of drilling fluid additives shall be accompanied by Materials Safety Data Sheets (MSDS) and manufacturers' descriptions and warranties. Descriptions of equipment shall include manufacturers' specifications, calibrations, appropriate drawings, photographs, and descriptions of any modifications since manufacture.

I. Surveying, Equipment and Procedures: The Contractor shall submit records of equipment calibrations and certifications for all equipment used for downhole surveys and tracking of the drill head. Procedures for operating the downhole survey tools shall be described, including measures to verify the accuracy of the equipment readings.

J. If surface coil is required, the Contractor will submit a surface coil placement shop drawing.

K. Drilling and Reaming Rates: The Contractor shall submit maximum anticipated drilling and reaming rates for pilot bore and each reaming pass and confirm that pump capacity is adequate for these anticipated drilling rates for the drilling fluid weights anticipated.

L. Pipe Filling Methods: The Contractor shall submit methods and procedures for filling the pipe with clean potable water during pull back (‘buoyancy control’ plan). The submittal shall also include methods and procedures for disposal of any water drained from the filled pipe.

M. Equipment Layout: The Contractor shall submit dimensioned sketches depicting the layout and locations of equipment within the rig side work area and pipe side work area, including any proposed drilling fluid containment and recirculation pits.

N. Calculations for Pullback: The Contractor shall submit calculations for pullback loads for the conditions and operating practices anticipated. All assumptions used in the calculations shall be provided. These calculations shall be made and stamped by a licensed Professional Engineer registered in the region in which the project take place.

O. Pipe Stress Calculations: The Contractor shall submit calculations for pipe stresses expected to result from the pullback, bending, fluid buckling loads, earth loads, groundwater loads, break-over stresses during entry into the bore, and any other installation and service loads expected to be exerted on the pipe. All assumptions used in the calculations shall be provided. These calculations shall be made and stamped by a licensed Professional Engineer registered in the region in which the project take place.

P. Calculations of Maximum Allowable Drilling Fluid Pressure: The Contractor shall submit calculations identifying the critical downhole pressure that would cause hydrofracture (Frac-Out) or inadvertent drilling fluid returns. The calculations shall identify the critical points in the alignment. The calculations shall identify all parameters used and state all assumptions made. The Contractor shall submit an annular pressure diagram for the length of the alignment based on the drill path depth, anticipated pumping rate, anticipated return drilling fluid viscosity, and the diameter of the borehole. The pressure diagram shall show upper and lower bound pressures indicating maximum allowable pressure and minimum pressure required for maintaining fluid circulation through the borehole. The calculations shall be sealed and stamped by a licensed Professional Engineer registered region in which the project take place.

Q. Downhole Fluid Pressure and Pullback Load Monitoring: The Contractor shall submit information for the down-hole fluid pressure monitoring device including: equipment calibrations, pressure limits and certifications, and list of HDD projects where the pressure tool has been used.

R. Frac-Out and Surface Spill Contingency Plan: The Contractor shall submit a Frac-Out and Surface Spill Contingency Plan describing procedures for preventing drilling fluid losses or spills into water ways and/or fluid returns to the surface. The plan shall address roles and responsibilities of involved parties, monitoring, prevention, containment, cleanup, and documentation procedures, and observations to be made and plans for containment and cleanup, if spills or hydrofracture occur. The plan shall also address changes that may be required to Contractor's operations to avoid recurrences. Containment and cleanup equipment shall be provided at both entry and exit locations and shall include at a minimum:

1. Sand bags

2. Shovels

3. Geotek filter bags

4. Splash board

5. Several 5-gallon hard plastic pails

6. Heavy duty push brooms and several flat blade shovels.

7. Silt fence (minimum 50 ft) and T post (minimum 8)

8. Straw logs

9. Portable pumps (2 minimum)

10. Hoses (at least 100 ft)

11. Vacuum truck (available for response within 1 hour of a frac out event)

S. Rig Capacity: The Contractor shall submit details on the capacity of the drill rig verifying that the pullback capacity is greater than the required pullback calculated and submitted by the Contractor with a minimum safety factor of 2.0.

T. Power Supply: The Contractor shall submit details on the power supply/generators to be used for the entry site. Including manufacturer’s specifications, capacity, noise, and emissions data.

Separation plant for drilling fluid returns: The Contractor shall submit details on the mud pump, shaker screens and hydrocyclones. Include dimensions, manufacturer's specifications, pump capacity, noise rating, and soundproofing details on the system.

1. Mud supply pump capacity should be specified for water at sea level elevation and adjusted for actual elevation and fluid viscosity.

2. Provide details on the generator, including dimensions, noise ratings at 25 ft, and soundproofing.

3. Provide manufacturer-rated cleaning capacity of the mud separation plant in gallons per minute (gpm).

U. Radius of Curvature: The Contractor shall confirm that the bore can be completed using the radius of curvature shown on the Drawings along with calculations showing that installation stresses do not exceed allowable pipe stresses. Verify minimum allowable drill radius based on pipe material, specified by manufacturer.

V. Plans for Disposal of Spoils and Drilling Fluids: The Contractor shall submit plans for disposal of waste materials resulting from the pipeline construction, including drilling fluids, cuttings, waste oil, fuel, discharge water, etc. The Contractor shall identify the disposal site and submit a letter indicating willingness and legal authority to accept the described and anticipated waste products.

W. Contingency Plans for Potential Problems: The Contractor shall submit contingency plans for remediation of potential problems that may be encountered during the drilling operations. The contingency plans shall address the observations that would lead to the discovery of the problem and the methods that would be used to mitigate the problem. Potential problems that shall be addressed include:

1. Natural and man-made obstructions encountered (such as boulders, etc.).

2. Utility strike.

3. Loss of circulation or decreased drilling fluid circulation.

4. Deviation from planned bore path in excess of allowable tolerances.

5. Inability to advance drill or product pipe.

6. Loss of tooling downhole.

7. Hydrolock.

8. Drill or product pipe twisted off or broken off in borehole.

9. Pipe collapses or pipe deformations exceed maximum allowable tolerances.

10. Excessive ground settlement/heave or formation of a sink hole above/in proximity to the alignment.

11. Pulling force exceeding 80 percent of the product pipe allowable pull force.

12. Frac-out.

X. Survey Measurements: Survey measurements of points shall be submitted to the Engineer by noon of the day following the shift for which the measurements were taken. Measurements shall be made at least once per day or as required by the project permits and included here.

Y. Protection of Adjacent Structures: Provide details on measures to be taken to monitor and protect adjacent utilities, structures, and roadways.

Z. Safety Plan: The Contractor shall submit a Safety Plan, including the name of the Site Safety Representative, emergency telephone numbers for medical facilities, and precautions for handling and disposal of any hazardous or flammable materials. The Safety Plan shall include a code of safe practices and an emergency plan in accordance with OSHA.

AA. The following shall be submitted as construction progresses and at the completion of construction.

1. Daily Logs and Records: The Contractor shall submit complete, legible, written daily logs and records as required herein, by noon of the following day to which the records correspond.

2. Variations in Plan and Profile: The Contractor shall document any variations between the actual plan and profile of the bore path and the location shown on the Drawings and specifications herein. The Contractor shall notify the Engineer immediately upon discovery of any deviations that exceed design tolerances. Design tolerance is plus or minus 10 ft horizontally, plus 5 ft vertically and minus 10 ft vertically.

3. Mud Properties: The Contractor shall submit measured drilling fluid viscosity and density at least 3 times per shift with at least 2 hours between readings, using calibrated Marsh funnel and mud balance. Measurements shall be made during each stage of the drilling process. Additional measurements shall be made when changes in the soil formation are suspected or when changes are made to the mud mix. These measurements shall be included in daily logs submitted to the Engineer. The Contractor shall document modifications to the drilling fluids, by noting the types and quantities of drilling fluid additives and the dates and times when introduced. The reason for the addition of drilling fluid additives or other modifications shall be documented and reported.

4. Pipe Pressure Test Records: The Contractor shall submit all pipe pressure test records for all tests within 48 hours of any tests.

5. Pilot Bore As-Built Profile: The Contractor shall submit a digital as-built profile of the pilot bore to the Engineer for review within 24 hours of completion of the pilot bore. The profile shall be in the form of an AutoCAD file or approved equal. Design stations and corresponding elevations shall be used in the as-built file.

1.05 EXISTING FACILITIES AND UTILITIES

A. Contractor shall undertake the following steps prior to commencing drilling operations in this project location that contains existing underground facilities.

B. Contact the utility location/notification service, for the construction area.

C. Positively locate and stake all existing lines, cables, or other underground facilities including exposing any facilities which are located within 15 ft on either side of the designed drilled path.

D. Modify drilling practices and downhole assemblies to prevent damage to existing facilities.

E. Contractor shall be responsible for locating any and all underground facilities regardless of any previous efforts in this regard. Contractor shall be responsible for all losses and repairs occasioned by damage to underground facilities resulting from drilling operations.

1.06 QUALITY ASSURANCE

A. Qualifications and Experience of Personnel: The Contractor shall have met the minimum experience qualifications established within the contract documents. The Contractor shall employ skilled, experienced superintendent(s), drillers, steering hands/locators and personnel. Contractor personnel shall have met the experience qualifications established within section 00 21 13.3 – Qualifications of Bidders.

B. Contractor shall prepare and maintain a quality assurance/quality control plan and document management plan throughout the project. All applicable documentation and records shall be compiled in accordance with provisions of this plan.

C. Daily Logs and Records:

1. Daily logs and records shall be maintained by the Contractor and shall include drilling lengths, location of drill head/reamer, installation loads, drilling fluid pressures and flow rates, annular pressure readings, drilling fluid losses, inadvertent returns, drilling times required for each pipe joint, any instances of retraction and re-drilling of the pilot bore or segments thereof, and any other relevant observations, including any hard drilling zones, steering problems, circulation problems, observed settlement, heave, frac-outs, or surface spills.

2. The drilling and installation readings shall be measured and recorded at the entry point for the entire length for all phases of the pilot bore and any pilot re-bore, and recorded at least once per drill pipe length or every 30 ft, whichever is more frequent.

3. Drilling fluid annular pressures shall be continuously recorded and monitored for the duration of the pilot bore. These records shall be maintained and provided daily. The position of the drill head shall be continuously tracked during the pilot bore and recorded by a downhole wireline tracking locator system (or another approved guidance system) Where feasible utilize an energized wire grid at the surface.

4. During the pilot bore, reaming passes, and pipe pullback the Contractor shall electronically record the following information once per drill pipe or every 30 ft, whichever is more frequent.

    a. Rate of Penetration

    b. Rotational Torque

    c. Thrust/Pullback

    d. Pump Rates

    e. Calculated Depth

    f. Annular Pressure (pilot bore only)

    g. Flow (Meter Returns in Supply Line)

    h. If torque and thrust are recorded as gage pressures, the conversion factors for pound-feet of torque and pounds force of thrust/pullback shall be provided.

5. The information shall be submitted to the Engineer by noon of the day following the shift for which the records were taken.

6. Contractor shall sign and date the information provided and certify that to the extent of his knowledge, the information is true and accurate, and that the supervisory personnel for the HDD operations will be directly involved with this project for the duration.

7. Contractor shall provide adequate personnel to supervise all aspects of the directional drilling process. Owner has the right to reject any supervisory personnel changes during construction. Contractor shall submit 72 hour notification of any supervisory personnel changes during construction to Owner for prior approval.

D. Advance Notice and Inspections: The Contractor shall provide written notice at least 48 hours in advance of the planned inception of major drilling activities, including conductor casing (if applicable), beginning the pilot bore, , reaming, swabbing, and pipe pullback. The Contractor shall immediately notify the Engineer, in writing, when any significant problems are encountered or if ground conditions are considered by the Contractor to be materially and significantly different from those represented within the Contract Documents. All work by the Contractor shall be performed in the presence of the Engineer unless Engineer grants prior written approval to perform such work in Engineer's absence.

E. Pipe: The drill pipe shall be certified by the Contractor as meeting all requirements of the specifications. The fabricated pipe shall be hydrostatically tested by the Contractor prior to pullback.

1.07 DESIGN CRITERIA

A. Equipment: The Contractor shall provide all equipment, materials, and personnel necessary for completing the installation as shown on the Drawings and specified herein. The equipment and materials shall include but are not limited to:

1. Directional drilling rig with all ancillary equipment, including drill pipe, drilling fluid, cutting tools, reaming bits, swivels, expanders, downhole motors, generator, pumps, hoses, mixing equipment, drilling fluid processing equipment (cuttings separation equipment), downhole survey equipment, energized surface grid, fluid pressure and flow rate monitoring equipment, spare parts, pipe handling equipment, crane, backhoe, roller, side boom tractors, control cabin, control equipment, and office equipment.

2. Drilling fluids, water, fuel, lubricant, polymers, or other additives.

3. Any other expendable or reusable materials, supplies, and equipment needed for the installation.

B. The drilling equipment shall be capable of advancing through the geologic conditions to be encountered at the site as depicted in the Geotechnical Report and as anticipated by the Contractor.

C. The rig anchor shall be sufficient to allow the full capacity of the HDD rig during drilling operations. The HDD rig thrust block shall be fully removed upon completion of the installation process

D. Contractor shall use an Owner approved tracking system (for example, ParaTrack II, Slimdril gyroscopic tooling, or equivalent) and an approved downhole steering system. The Contractor shall provide technicians and directional drillers experienced in the operation of the above equipment. The Contractor shall also provide sufficient spares for the above equipment to maintain directional capability at all times.

E. Any clearing, grubbing or other ground preparation for the guidance system shall be solely the responsibility of the Contractor. All such surface preparations shall be in accordance with the Contract Documents and shall require Owner approval. The drilling fluid shall be designed for the geologic conditions to be encountered at the site as depicted in the Geotechnical Report and as anticipated by the Contractor.

F. The capacity of the directional drilling rig used by the Contractor to pull back the pipe shall be adequate to install the specified pipeline, with adequate factor of safety

G. The pump used by the Contractor shall be adequate to always supply the required flow rate and pressures at the anticipated drilling fluid viscosity. Drilling speeds shall not exceed pump capacity.

H. The drilling system shall include a fluid pump and separation plant that can achieve the rates of drilling fluid pumping, spoil separation, and slurry cleaning required by the Contractor to achieve planned production rates for the soils anticipated by the Contractor. Shaker screens, hydrocyclones, and centrifuges may be required for efficient separation of spoils. The Contractor is advised that the separation plant must fit within the allowable work areas shown on the Drawings.

I. All spoil and slurry must be contained in trucks, tanks, approved recirculation pits, or other containers at all times. Dumping of spoil or slurry on the ground, discharge into sewers, or discharge into the water bodies shall not be permitted. All spoils shall be transported and disposed of off-site at an approved disposal facility.

J. Perform all work within work areas shown on the Drawings.

K. Any deviation to the radii of curvatures or entry and exit angles shown on the Drawings should be submitted in writing to the Engineer for approval.

L. Pipe rollers and lifters shall be used to help the transition of the carrier pipe into the bore. The number of pipe rollers and lifters shall be determined by the Contractor.

M. Surface settlement, or heave, of the ground surface or utilities and/or other features above the HDD centerlines and within the zone influenced by the HDD construction shall be limited to values that avoid damage. The Contractor shall repair any damage resulting from settlement or heave caused by HDD activities at no additional cost to the Owner. The Contractor shall grout any voids caused by or encountered during drilling.

1.08 INSTRUMENTATION

A. Contractor shall at all times provide and maintain instrumentation which will accurately locate the pilot hole, measure drill string axial and torsional loads, and measure drilling fluid discharge rate and pressure. The Engineer and the Inspector shall have access to these instruments and their readings at all times.

1.09 PHYSICAL CONDITIONS REFERENCE DOCUMENTS

A. Design has relied upon physical conditions data included in Geotech Investigation Report, August 8th, 2019. These data are the results and logs of subsurface soil borings whose locations are depicted on the construction plans and also the land surveying information on the plans.

B. The Contractor is responsible for satisfying himself as to the soil conditions associated with the HDD installation. Owner may provide Contractor with documentation of geotechnical/soil borings or subsurface investigations for Contractor reference only. Contractor is responsible for determining suitability of Owner-supplied documentation, and Owner is not responsible for the completeness and accuracy of such documentation.

PART 2 -- PRODUCTS

2.01 PIPE

A. The Contractor shall provide and install HDPE pipe in accordance with Section 33 05 33.23.

B. The pipe thickness must conform to the most conservative design with respect to design calculations for the critical combination of internal and external pressure, pullback, and bending as determined by the Contractor. Minimum pipe wall thickness shall be as shown in the Contract Documents.

2.02 WATER

A. The Contractor shall secure a suitable source of water, and shall be responsible for transporting, storing, and disposing of any water required for the operation of the site and the preparation of the drilling fluids

2.03 DRILLING FLUIDS

A. The Contractor shall select drilling fluid mixture proportions to ensure continuous circulation, bore stability, reduce drag on the pipe, and completely fill the annular space between the bore and the pipe to control settlement. Management and disposal of drilling fluids shall be the Contractor's responsibility.

B. Drilling fluids, including makeup water, bentonite, polymers, or other additives shall be designed for the anticipated geologic conditions along the bore.

C. Composition: The composition of all drilling fluids proposed for use shall be submitted to the Engineer for approval. No fluid will be approved or utilized that does not comply with permit requirements and environmental regulations.

D. Water: Contractor is responsible for obtaining, transporting, and storing water required for drilling fluids. Water used for preparation of drilling fluid will be either potable water or water obtained from an approved intake location. Saline water shall not be used in the preparation of the drilling fluids.

E. Recirculation: Contractor shall maximize recirculation of drilling fluid surface returns. Contractor shall provide solids control and fluid cleaning equipment of a configuration and capacity that can process surface returns and produce drilling fluid suitable for reuse. The Contractor will be solely responsible for solids control and cleansing equipment performance or for treatment of excess drilling fluid and drilled spoil.

F. Disposal: Disposal of excess drilling fluids and cuttings is the responsibility of Contractor and shall be conducted in compliance with all environmental regulations, right-of-way and workspace agreements, and permit requirements.

G. Inadvertent Returns: Contractor shall employ his best efforts to maintain full annular circulation of drilling fluids. Drilling fluid returns at locations other than the entry and exit points shall be minimized. If annular circulation is lost, Contractor shall take steps to restore circulation. If inadvertent surface returns of drilling fluids occur, they shall be immediately contained with hand placed barriers (i.e. hay bales, sandbags, silt fences, etc.) and collected using pumps as practical. If the amount of the surface return is not great enough to allow practical collection, the affected area shall be diluted with fresh water and the fluid will be allowed to dry and dissipate naturally. If the amount of the surface return exceeds that which can be contained with hand placed barriers, small collection sumps (less than 5 cu. yds) may be used. If the amount of the surface return exceeds that which can be contained and collected using small sumps, drilling operations shall be suspended until surface return volumes can be brought under control.

2.04 DRILL PIPE

A. The Contractor shall provide high quality drill pipe that has been inspected and determined to be adequate for the project requirements. Bent, cracked, or fatigued drill pipes shall not be used. Threads must be in good condition. On crossings 2000 ft or longer, the drill pipe used shall be double white banded (remaining wall > 80 percent of specified new wall) shall be used.

2.05 DRILLING DATA

A. Contractor shall provide and maintain electronic data recorder (EDR) instrumentation that will continuously and accurately monitor (at a minimum) tank pit volumes, mud flow (pump and return), pressure (annular pressure/standpipe), instantaneous rate of penetration, drill pipe axial and torsional loads (push/pull force and rotary torque), bit depth, and drill string rotations per minute. The electronic information shall be accessible to the Owner representative onsite and will form part of the records required at the end of the project. Data files including all electronically recorded data shall be provided to the Owner. Online access shall be provided to the Owner or its representative. The EDR shall record each of the above listed parameters on a 1 minute basis or at least every 4-in, whichever is more frequent

PART 3 -- EXECUTION

3.01 GENERAL

A. The Contractor shall not initiate HDD until all submittals are received, reviewed, and approved.

B. The Contractor shall not initiate HDD until all required permits are obtained.

C. The Contractor shall have the equipment listed in the submitted and approved Frac-Out and Surface Spill Contingency Plan prior to commencing drilling operations.

3.02 WORK STAGING AREA

A. WORK STAGING: The Contractor shall limit staging and work operations to the areas shown on the Drawings, or as otherwise accepted in writing by the Engineer, for storage of equipment and materials, parking, pipe layout, drilling, and other work.

B. CONTROL OF DRILLING FLUIDS: The Contractor shall follow all requirements of the Frac-Out and Surface Spill Contingency Plan and control operational pressures, drilling mud weights, drilling speeds, and any other operational factors required to avoid hydrofracture fluid losses into the surrounding formations, and control drilling fluid spillage. This includes any spillages, inadvertent fluid, or slurry returns at entry and exit locations or at any intermediate point. All inadvertent returns or spills shall be promptly contained and cleaned up. The Contractor shall maintain on-site mobile spill containment and removal equipment at the HDD entry and exit location at all times. The Contractor shall be capable of quickly containing and removing spills. The Contractor shall immediately notify ENGINEER of any inadvertent returns or spills and immediately clean up the inadvertent return or spill.

C. COMBUSTIBLE MATERIALS: Combustible materials (fuel, oil, lubricants, etc.) shall be stored off-site or in a well-ventilated storage facility removed from the immediate vicinity of the drilling area by at least 20 ft.

D. SITE SECURITY: The Contractor shall install an enclosure fence around the entry and exit work areas. The enclosure fence shall include a lockable gate and should prevent entry of unauthorized persons. Contractor may install enclosure fence around pipe stringing area at Contractor's own discretion.

3.03 MOBILIZATION

A. The Contractor shall mobilize all equipment, materials, and personnel necessary to construct the pipe product/conduit(s) using the HDD process at the locations shown on the Drawings.

B. ENTRY AREA: The Contractor shall set up temporary workspace within the areas delineated on the Drawings. Appropriate precautions and measures shall be employed by the Contractor to prevent erosion, surface drainage, and spillage of drilling fluids or other materials that could adversely impact the environmental quality of the site. Silt fences, hay wattles, and hay bales shall be used to line the work area to minimize erosion and contain any spillages or runoff.

C. EXIT AREA: The exit area shall have a drilling fluid pit for containing drilling fluids and cuttings. Hay bales, silt fences, or wattles shall be used to line the exit area to minimize erosion and runoff.

D. PIPE LAYOUT AREA: Layout area shall be free of stones, wood, debris and obstructions. Pipe rollers shall be provided by the Contractor to facilitate pipe pullback.

3.04 HORIZONTAL DIRECTIONAL DRILLING

A. BORE TRACKING AND MONITORING:

1. DOWNHOLE WIRELINE AND SURFACE GRID TRACKING SYSTEM:

a. Contractor shall monitor and record x, y, and z coordinates relative to an established surface survey benchmark, from downhole survey data using a downhole wireline system. Tru-tracker energized surface grid, or equivalent, shall be installed where feasible, and used on both sides of any waterway to augment the downhole wireline tracking system. The grids shall be surveyed to establish horizontal and vertical position to 0.1 ft accuracy. The data shall be continuously monitored and recorded at least once per drill pipe length or at 30 ft or 30 minute intervals during drilling, whichever is most frequent. The completed borehole shall be surveyed with the downhole locating system after all reaming is completed and prior to pullback of the pipe. This information shall be collected and provided to the Owner prior to commencement of pullback.

b. Deviations between the recorded and design bore path shall be calculated and reported on the daily report. If the deviations exceed tolerances listed herein, such occurrences shall be reported immediately. The Contractor shall undertake all necessary measures to correct deviations and return to design line and grade.

2. DRILLING FLUID PRESSURES AND FLOW RATES: Drilling fluid pressures and flow rates shall be continuously monitored and recorded by the Contractor. The pressures shall be monitored at the pump and in the annulus using a down-hole annular pressure sensor. These measurements shall be made during pilot bore drilling. Maximum allowable drilling speeds shall be calculated for pilot boring and each reaming pass and shall not be exceeded for pilot boring or reaming passes. Annular pressure measurements shall be continuous and shall be recorded using a data logging system.

3. DRILLING FLUID VISCOSITY AND DENSITY (MUD WEIGHT): The Contractor shall measure and record drilling fluid viscosity and density at least 3 times per shift with at least 2 hours between readings, using calibrated Marsh funnel and mud balance. These measurements shall be included in the daily log submittals.

B. LOCATION OF ENTRY AND EXIT POINTS: Entry and exit points shall be as shown on the Drawings, unless otherwise approved in writing. The Contractor shall employ licensed, experienced surveyors to locate the entry and exit points, and to establish horizontal and vertical datums for the bore and the pipe layout and fabrication areas.

C. ENTRY AND EXIT ANGLES: Drill entrance and exit angles shall be as shown on the Drawings, unless otherwise approved in writing.

D. CONDUCTOR CASING: Steel conductor casings shall be installed as deemed necessary by the Contractor. The casing shall meet the following minimum requirements:

1. The Contractor shall ensure the casing is installed at the designed entry angle along the designed drill path.

2. Methods used to install the conductor casing shall prevent settlement or heave of surface features and subsurface utilities.

3. Conductor casing thickness shall be determined by the Contractor and shall have a minimum wall thickness of 0.75-in.

4. Following completion of the crossing the conductor casing will be extracted by the Contractor, unless directed otherwise by the Owner in writing.

E. PILOT BORE: The pilot bore shall follow the design path of the bore shown on the Drawings.

1. Horizontal and Vertical Tolerances: As noted herein.

2. The pilot hole shall be drilled along the path shown on the plan and profile drawings to the tolerances listed. However, in all cases, right-of-way restrictions shall take precedence over the listed tolerances. Regardless of the tolerance achieved, no pilot hole will be accepted if it will result in any or all of the pipeline being installed in violation of right-of-way restrictions. In all cases, concern for adjacent utilities and/or structures shall take precedence over the listed tolerances. Listing of tolerances does not relieve Contractor from responsibility for safe operations or damage to adjacent utilities and structures.

3. Curve Radius: Curves shall be drilled at radii which fall within the tolerances listed. The drilled radius will be calculated over any 3 joint (range 2 drill pipe) segment using the following formula:

$$R_{drilled}=(L_{drilled}/A_{avg})*57.32$$

Where: $R_{drilled}$=drilled radius over $L_{drilled}$

$L_{drilled}$=length drilled, no less than 75 ft and no greater than 100 ft

A_{avg} =total change in angle over $L_{drilled}$

4. As-Built Survey: At the completion of pilot hole drilling, Contractor shall provide a tabulation and sealed drawings of coordinates, referenced to the drilled entry point, which accurately describe the location of the pilot hole.

F. REAM AND PULL BACK

1. Hydrostatic Pretest: If applicable, the entire pull section shall be subjected to a 4-hour hydrostatic test, unless otherwise is specified in the Contract Documents, prior to being installed in the hole. The test pressure shall be equal to or exceed that required for final certification. The hydrostatic pretest shall be conducted and documented in accordance with the applicable Specification.

2. Pulling Loads: The maximum allowable tensile load imposed on the pull section shall be equal to 80 percent of the product of the specified minimum yield strength of the pipe and the area of the pipe section. If more than one value is involved for a given pull section, the lesser shall govern.

3. Torsional Stress: A swivel shall be used to connect the pull section to the reaming assembly to minimize torsional stress imposed on the section.

4. Pull Section Support: The pull section shall be supported as it proceeds during pull back so that it moves freely and the pipe and corrosion coating are not damaged.

5. Breakover Section: The pull section shall be supported in a manner that ensures that the minimum bending radius associated with the pipe product installed is not violated as the pipe is pulled into the borehole.

6. External Collapse Pressure: The pull section shall be installed in the reamed hole in such a manner that external pressures are minimized. Any damage to the pipe resulting from external pressure during installation shall be the responsibility of Contractor.

7. Buoyancy Modification: Buoyancy modification shall be used at the discretion of Contractor. Any buoyancy modification procedure proposed for use shall be submitted to the Engineer for approval. No procedure shall be used which has not been approved. Contractor is responsible for any damage to the pull section resulting from buoyancy modification.

8. Contractor shall provide a sufficient number of rollers, cradles and motorized equipment to support the pipe and prevent over-stressing due to sags or bends during the pullback procedure.

9. Entry and Exit Tolerances: The location of the entry and exit points shall be within the tolerances shown on the Drawings. The Contractor shall be solely responsible for all work necessary to correct excessive deviations from line and grade, including re-drilling, redesigning connections, and acquiring additional easement, at no additional cost and without schedule extension.

10. PRE-REAMING AND REAMING: The pilot bore shall be pre-reamed and reamed using equipment and methods submitted by the Contractor. The Contractor shall completely ream the bore to the final diameter prior to pullback.

11. SWAB PASS: The Contractor shall complete a swab pass of the entire bore length prior to pullback of the pipe. Swab pass reamer shall have an outside diameter that is larger than the product pipe outside diameter.

12. HYDROSTATIC TEST: The Contractor shall perform hydrostatic water pressure test prior to pipe pullback and after HDD pipe is installed. The Contractor shall repair any defects discovered during these tests and repeat until the pipe passes the test.

13. PIPE PULLBACK:

    a. The pipe shall be installed by pulling it into the reamed bore hole behind a final reaming tool selected by the Contractor.

    b. The pipe shall be isolated from excessive torsional and axial stresses by a swivel device.

    c. The welded pipe shall be filled with water in accordance with approved submittal as it enters the bore to reduce pullback loads.

    d. The Contractor shall monitor and inspect pipe rollers and method for suspending pipe during the pullback operation.

    e. The Contractor shall monitor and record installation loads once per drill pipe or every 30 ft, whichever is more frequent.

    f. When applicable, the Contractor shall submit a lift plan for the drag section, including lift calculations and associated drawings for cranes and/or other mechanical lifting equipment, for review and approval by the Engineer.

g. The Contractor shall cease operations if the pipe is damaged and shall remove the pipe from the bore and repair the pipe using the manufacturer's recommended procedure or replace the damaged pipe before resuming installation.

h. Damage to the pipe resulting from installation or grouting of the annulus is the responsibility of the Contractor, including costs for replacement and labor and materials. To confirm no damage to the pipe, the Contractor shall perform a sizing plate test to confirm the internal diameter and roundness of the pipe.

14. CONTACT GROUTING (When Applicable):

a. When applicable, the Contractor shall grout the annular space between the bore and the outer diameter or the pipe. Grouting shall be completed within 48 hours of completion of the final post installation hydrostatic test.

b. Grouting procedures shall be in accordance with approved submittals. The grouting operations shall ensure that the annulus is filled with grout for the 50 ft nearest the entry point and exit point unless otherwise noted. Grouting may be accomplished using tremie pipes inserted 50 ft into the bore from each end after pipe pullback, hydrostatic test and sizing plate and other specified testing are completed. Grout shall be injected in sufficient volume to completely fill the annulus as the tremie pipe is withdrawn. Grouting pressures shall be carefully controlled and monitored to avoid applying excessive pressure to the pipe and to avoid heave or hydrofracture. The grouting apparatus used to complete the annular space grouting shall be capable of delivering grout concurrently at multiple injection points around the carrier pipeline. The Contractor is responsible for ensuring damage to the pipe does not occur during all grouting operations.

15. SITE RESTORATION AND DEMOBILIZATION: The Contractor shall remove all equipment, materials, drilling fluids, muck, waste, and debris from the site and restore the site to its original condition upon completion of the installation as defined in the contract documents.

16. SHEETING AND SHORING

a. The Contractor shall be responsible for the design, installation, maintenance and removal of any sheeting and shoring necessary for the drilling operation, including fluid containment and permitted disposal practices.

17. NOISE ABATEMENT

a. The Contractor is required to furnish, install and maintain noise control barriers at the site as required to mee the project’s permits, approvals and/or local noise bylaws, and shall remove them upon the completion of the WORK. Generator and rig engine shall be enclosed with insulated noise barriers, as required. When applicable, the Contractor shall equip all machinery and equipment used for construction with enclosures as well as noise mitigation devices such as mufflers, muffling sleeves, and spark arrestors or other suitable noise suppressors. Air compressors shall be of a quiet type such as a "whisperized" compressor.

b. Noise produced by construction operations shall be kept to a minimum. Noisy operations shall be conducted wherever possible during daylight hours and scheduled to minimize duration. the Contractor shall comply with all applicable Federal, State, and local noise pollution control regulations.

c. Noisy equipment shall be kept as far as possible from noise sensitive site boundaries. Equipment shall be properly maintained to reduce noise from excessive vibration, faulty muffles, or other sources. No equipment shall be left idling unnecessarily. Noisy operations shall be limited to daylight hours and scheduled to minimize their duration.

d. To determine whether the noise limits are being met, the Contractor shall use a portable sound level meter meeting the requirements of the ANSI S1.2 for Type 2 sound level meters. Sound levels shall be recorded at a minimum of 4 times daily and submitted to the Engineer as part of the daily report. If non-complying noise levels are found, the Contractor shall be responsible for monitoring and correction of excessive noise levels. The Contractor is required to respond immediately and positively to provide corrective action required to meet the sound attenuation specification.

END OF SECTION

SECTION 330509 - PIPING SPECIALTIES FOR SEWER UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing all sewer piping specialties; fittings, couplings, connectors, etc. and incidentals, complete and in place, in accordance with the Contract Documents.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required for the installation of necessary sewer appurtenances.

C. Section Includes:

1. Vacuum breakers.
2. Drain valves.
3. Specialty valves.
4. Flexible connectors.

D. Related Requirements:

1. Section 013300 Submittal Procedures
2. Section 333111 Public Sewerage Gravity Piping
3. Section 339220 Ductile Iron Piping

1.3 PRICE AND PAYMENT PROCEDURES

A. There is no direct measurement or payment for the installation of sewers repair couplings, service connection fittings (wyes or tees), saddle fittings (wyes or tees) or manhole connections. This work is considered incidental to the rehabilitation of sewers and installation of new sewerage lines and the cost of this work shall be included in the unit item bid price for the associated work included within this section.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Submit in accordance with Section 013300 Submittal Procedures.

B. Product Data: For each type of product.

C. Shop Drawings: For domestic water piping specialties.

1. Include diagrams for power, signal, and control wiring.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition

B. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM A 240: Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
2. ASTM C 425: Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings
3. ASTM C 1173: Standard Specification for Flexible Transition Couplings for Underground Piping Systems
4. ASTM D 3034: Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
5. ASTM D 5926: Standard Specification for Poly (Vinyl Chloride) (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems
6. ASTM F 477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
7. ASTM F 679: Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings

C. NSF/ANSI 14: Plastics Piping System Components and Related Materials

1.7 DELIVERY, STORAGE AND HANDLING

A. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer’s identification and printed instructions.

B. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

C. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

D. Fittings shall be lowered into trench by means of rope, cable, chain, or other means without damage. Cable, rope, or other devices used for lowering fitting into trench, shall be attached around exterior of fitting for handling. Under no circumstances shall the cable, rope, or other device be attached through the fitting interior for handling or shall pipe or fittings be dropped or dumped into the trench.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. All bronze/brass fittings, connectors, corporation stops and appurtenances shall be of domestic manufacture, shall be made of lead free bronze/brass, and meet all requirements of AWWA, ASTM, and ANSI for use in sewer systems.

2.2 PERFORMANCE REQUIREMENTS (NOT USED)

2.3 TEES, CLEANOUTS AND PLUGS

A. Unless otherwise specified or noted on the Drawings, tees, cleanouts, and stoppers or plugs shall be the same material used to repair the main sewer and have an inside diameter of the same size as the existing line, except that it shall in no case have a diameter smaller than 6-inches. The plug and installation shall be able to withstand all test pressures involved without leakage.

1. The Contractor shall provide the Engineer with the exact location of each clean out and cap installed.

2.4 COUPLINGS, REDUCERS, AND NIPPLES

A. Couplings shall be Ford Pack Joint Brass Service Coupling Cat. No. CB4-44 or approved equal.

B. Flexible Repair Coupling

1. Connections between dissimilar pipe materials are to be jointed with rigid non-shear couplings as specified herein or, when not available, with flexible elastomer couplings as specified herein.

    a. Material shall be Elastomeric Polyvinyl Chloride.
    b. Fitting shall conform to ASTM C 1173.
    c. For connections to clay sewer pipelines, the rubber portion of the couplings shall also meet the requirements of ASTM C 425.
    d. Fitting shall be secured to both the mainline pipe and the service lateral with the use of manufacturer provided stainless steel bands, grade 316.
    e. The bands for attaching the couplings to pipes shall be 316 series stainless steel and conform to the latest version of ASTM A 240.
    f. The shear ring shall be 300 series stainless steel and conform to the latest version of ASTM A 240

C. Reducers and Nipples shall be brass and of the appropriate size as indicated on the Drawings.

2.5 FITTINGS

A. The fittings for a solid wall PVC pipe shall be the same inside diameter as the solid wall PVC with a SDR of 35.

B. All sewer fittings and accessories shall conform to the requirements of ASTM D 3034 or ASTM F 679 and be furnished by the pipe supplier and shall be bell and/or spigot compatible with the pipe. The stiffness of the fittings shall not be less than the stiffness of the adjoining pipe.

C. ¾-inch Meter Clamping Outlet Fitting, Ford Dwg. 1358

D. Fittings, 6" – 15" Diameter:

1. All fittings for PVC pipe shall be full body SDR 35 and conform to the requirements of ASTM D 3034.
2. Rubber gaskets for compression type joints for PVC pipe and fittings shall conform to the requirements of ASTM F 477.
3. The ring groove and gasket ring shall be compatible with PVC pipe ends.

E. Fittings, 18" – 36" Diameter:

1. All fittings for PVC pipe shall be full body SDR 35 and conform to the requirements of ASTM F 679.
2. Rubber gaskets for compression type joints for PVC pipe and fittings shall conform to the requirements of ASTM F 477.
3. The ring groove and gasket ring shall be compatible with PVC pipe ends

2.6 FLEXIBLE TAP SADDLES

A. Flexible Tap Saddles shall be Fernco Flexible Tap Saddle or approved equal and conform to ASTM D 5926.

B. Flexible tap saddles are only to be installed on previously CIPP lined sewerage piping. Where CIPP lining is to occur after a point repair a standard wye or tee shall be used.

C. Service saddle to be installed on angle.

D. Flexible Tap Saddle Fittings:

1. Sewer service lateral connections to previously installed sewer pipelines shall be with a Flexible Tap Saddle Wye or Tee.

    a. The selection of a wye or tee shall be made to match the existing fitting or changed by field determination if the service lateral required field adjustments.
    b. Material shall be Polyvinyl Chloride.
    c. Fitting shall conform to ASTM D 5926.

E. The bands for attaching the couplings to pipes shall be 316 series stainless steel and conform to the latest version of ASTM A 240.

2.7 MANHOLE ADAPTERS

A. Sanitary sewer piping with tie-ins into sanitary sewer manholes shall be fitting with a Flexible Manhole Adapter

1. Material shall be Elastomeric Polyvinyl Chloride.
2. Fitting shall conform to ASTM D 5926.

PART 3 - EXECUTION

3.1 EXAMINATION

A. All necessary Examination prior to the Rehabilitation of Sewers Pipelines shall be conducted in accordance with Section 333111 Public Sewerage Gravity Piping.

3.2 PREPARATION

A. All necessary Preparation prior to the Rehabilitation of Sewers Pipelines shall be conducted in accordance with Section 333111 Public Sewerage Gravity Piping.

3.3 INSTALLATION

A. Tees, Cleanouts, Plugs

1. Wherever two pipe sections are to be joined, sewer flow control utilized, a line abandoned, or a sewer service lateral is installed a tee, cleanout, or plug shall be installed per the manufacturer's recommendations.
2. After installation, check the work to ensure that the pipe joints are vertically and horizontally aligned with the existing pipe and that the tees, cleanouts, plugs are tight and evenly fitted.

B. Flexible Repair Couplings

1. Wherever dissimilar pipe materials are joined, cut the replacement pipe to a length ½" less than the overall length of the section being replaced and the Contractor shall provide a flexible repair coupling in accordance with section 2.4.B.
2. Install the pipe in the trench, thoroughly clean the ends of existing and replacement pipe, and install repair couplings as per the manufacturer's installation instructions.
3. After installation, check the work to ensure that the replacement pipe is vertically and horizontally aligned with the existing pipe and that the elastomeric couplings and stainless steel shear ring are tight and evenly fitted.
4. There is no direct measurement or payment for the installation of sewer repair couplings

C. Sewer Service Fittings

1. Fittings shall be installed utilizing standard installation procedures.
2. Fittings shall be carefully connected to pipe or other facility, and joint shall be checked to insure a sound and proper joint.
3. Sewer service laterals shall be connected to the main sewer pipeline by only the use of full bodied wye or tee fittings.
4. The sewer service fittings shall meet the same requirements of the sewer pipelines as specified in Section 333111 Public Sewerage Gravity Piping.
5. There is no direct measurement or payment for the installation of sewer service fittings.

D. Flexible Tap Saddle

1. The use of saddles to connect the house service to the main will not be permitted unless the pipe has been previously lined.
2. Sewer service laterals for previously lined pipes shall be connected to the main line by only the use of a flexible tap saddle fittings as per section 2.6.C. Lines that have been previously lined shall not be cut to accommodate full body fittings.
3. Carefully remove the existing wye from around the liner. Is necessary, grind the perimeter of the liner opening to remove jagged edges.
4. Position the sale over the liner opening and align the inside surface of the fitting with the lower edge of the opening before tightening the stainless steel bands.
5. Once the fitting is correctly in place, install the pressure kit and verify that each band has been properly tightened.

END OF SECTION 330509

SECTION 330509.11 - PIPING SPECIALTIES FOR WATER UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing all water piping specialties; fittings, couplings, connectors, etc. and incidentals, complete and in place, in accordance with the Contract Documents.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required for the installation of necessary water appurtenances.

C. Section Includes:

1. Flexible connectors.
2. Water meters.

D. Related Requirements:

1. Section 330112 Inspection, Testing and Disinfection of Water Utility Piping
2. Section 330531.16 Pipe for Water Transmission and Distribution.
3. Section 330572 Masonry Structures
4. Section 330581 Metallic Castings for Utility Structures
5. Section 331423 Enclosures for Water Utility Piping and Valves
6. Section 339534 Polyethylene Pressure Piping

1.3 PRICE AND PAYMENT PROCEDURES

A. There is no direct measurement or payment for Piping Specialties for Water Utilities. This work is considered incidental to New Water Main unit bid item in accordance with this specification. All service saddles, fittings, couplings, etc. costs should be incorporated into the price for New Water Mains unless specified on the Drawings.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: For domestic water piping specialties.

1. Include diagrams for power, signal, and control wiring.

1.6 REFERENCE STANDARDS

A. NSF/ANSI 14: Plastics Piping System Components and Related Materials
B. NSF/ANSI 61: Drinking Water System Components – Health Effects
C. AWWA C 900: Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In., for Water Transmission and Distribution
D. AWWA C 905: Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 in. Through 48 in., for Water Transmission and Distribution

1.7 DELIVERY, STORAGE AND HANDLING

A. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions.

B. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

C. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

D. Fittings shall be lowered into trench by means of rope, cable, chain, or other means without damage. Cable, rope, or other devices used for lowering fitting into trench, shall be attached around exterior of fitting for handling. Under no circumstances shall the cable, rope, or other device be attached through the fitting interior for handling or shall pipe or fittings be dropped or dumped into the trench.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 and NSF 14. Mark "NSF-pw" on plastic piping components.

B. All bronze/brass fittings, connectors, corporation stops and appurtenances shall be of domestic manufacture, shall be made of lead free bronze/brass, and meet all requirements of AWWA, ASTM, and ANSI for use in potable water distribution systems.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 100 psi unless otherwise indicated.

2.3 COUPLINGS, REDUCERS, AND NIPPLES

A. Couplings shall be Ford Pack Joint Brass Service Coupling Cat. No. CB4-44 or approved equal.

B. Bell Joint Leak Clamp shall be Smith-Blair Model 274 or approved equal.

C. Reducers and Nipples shall be brass and of the appropriate size as indicated on the Drawings.

2.4 FITTINGS

A. The fittings for a solid wall PVC pipe shall be the same inside diameter as the solid wall PVC with a SDR of 18. For PVC water lines, all pipe fittings shall be ductile iron with rubber gaskets and shall have mechanical joints with restrained glands, and comply with AWWA C900.

B. ¾-inch Meter Clamping Outlet Fitting, Ford Dwg. 1358

C. Fittings, 4” – 12” Diameter:

1. All fittings for PVC pipe shall be full body SDR 18 and conform to the requirements of AWWA C900.
2. Rubber gaskets for compression type joints for PVC pipe and fittings shall conform to the requirements of ASTM F 477.
3. The ring groove and gasket ring shall be compatible with PVC pipe ends.

D. Fittings, 16” – 36” Diameter:

1. All fittings for PVC pipe shall be full body SDR 18 and conform to the requirements of AWWA C 905.
2. Rubber gaskets for compression type joints for PVC pipe and fittings shall conform to the requirements of ASTM F 477.
3. The ring groove and gasket ring shall be compatible with PVC pipe ends.

2.5 SERVICE SADDLES

A. Service Saddles shall be brass Clow No. 3407 G, JCM 407 Series, James Jones Co. No. J-996, Mueller Series H-13400, S90 Ford Brass Saddle, Ford FC202 or approved equal.

B. Service saddle to be installed on angle.

2.6 CORPORATION STOPS

A. Corporation Stops shall be Mueller H-15000 or Ford F-1000 where installed with service saddles.

B. Corporation Cocks shall be 2” Mueller H-10003 or approved equal for test connections on new water mains for flushing and chlorination.

2.7 HOUSE CONNECTIONS

A. Shall conform to Section 339534 Polyethylene Pressure Piping.

2.8 LUBRICANT FOR GASKETED PIPE AND FITTINGS

A. Lubricant shall be suitable for potable water systems and shall conform to and be certified by both ANSI/NSF 14 and ANSI/NSF 61.

B. Lubricant shall be nontoxic and suitable for potable water systems, non-corrosive and be non-flammable. Lubricant shall be an emulsified polymer based product, specifically formulated to be water-soluble without causing turbidity. Lubricant shall not transfer taste and/or odor to the new water main installations. Lubricant shall not promote bacterial growth and be safe for use on all metal and plastic pipes. Lubricant shall be easily flushed from the line and be non-reactive to chlorinated water. Lubricant should work easily on both wet and dry surfaces.

1. The use of oleate-based lubricants is not permitted for new water main installations due to odor and taste transfer problems.

2.9 WATER METERS

A. Required meters will be furnished by the S&WB at no additional cost to the Contractor. The Contractor shall be responsible for installation and construction of the meter box, and meter manhole or vault in accordance with Sections 330572 Masonry Structures, 330581 Metallic Castings for Utility Structures and 331423 Enclosures for Water Utility Piping and Valves.

B. The meter shall be installed as received from the S&WB meter department and may not be modified in any manner. Any modifications will void the UL warranty and, as such, my subject the owner to financial penalty and loss of service.

C. Meters installed on private property shall meet the requirements of the S&WB House Connection Department.

PART 3 - EXECUTION

3.1 EXAMINATION

A. All necessary Examination prior to the Rehabilitation of Sewers Pipelines shall be conducted in accordance with Section 330531.16 Pipe for Water Transmission and Distribution.

3.2 PREPARATION

A. All necessary preparation prior to the beginning of water main installation shall be conducted in accordance with Section 330531.16 Pipe for Water Transmission and Distribution.

3.3 INSTALLATION

A. Wherever dissimilar pipe materials are joined, cut the replacement pipe to a length ½" less than the overall length of the section being replaced and the Contractor shall provide a flexible repair coupling in accordance with section 2.3.

B. Install the pipe in the trench, thoroughly clean the ends of existing and replacement pipe, and install repair couplings as per the manufacturer's installation instructions.

C. After installation, check the work to ensure that the replacement pipe is vertically and horizontally aligned with the existing pipe and that the elastomeric couplings and stainless steel shear ring are tight and evenly fitted.

D. There is no direct measurement or payment for the installation of repair couplings.

3.4 FIELD QUALITY CONTROL

A. Refer to Section 330112 Inspection, Testing and Disinfection of Water Utility Piping.

END OF SECTION 330509.11

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SECTION 330531.16 – PVC PIPE FOR WATER TRANSMISSION AND DISTRIBUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing polyvinyl chloride (PVC) pipe and appurtenances, complete and in place, for water transmission and distribution in accordance with the Contract Documents.

B. Section Includes:

1. PVC pipe and fittings.
2. Piping joining materials.

C. Related Requirements:

1. Section 312316 Excavation and Trenching
2. Section 312319 Dewatering
3. Section 312323 Fill, Backfill and Compaction
4. Section 330112 Inspection, Testing and Disinfection for Water Utility Piping
5. Section 330509 Piping Specialties for Water Utilities
6. Section 339220 Ductile Iron Piping

1.3 PRICE AND PAYMENT PROCEDURES

A. There is no direct measurement or payment for PVC Pipe for Water Transmission and Distribution. This work shall be included in the unit item bid price for the associated work included within excavated rehabilitation of water utility piping.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Product Data: For transition fittings and dielectric fittings.

B. System purging and disinfecting activities report.

C. Field quality-control reports.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM D 1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))
2. ASTM D 1785: Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
3. ASTM D 2564: Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
4. ASTM D 3212: Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
5. ASTM F 477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
6. ASTM D 6938: Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

B. American Water works Association (AWWA)

1. AWWA C900: Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 in. through 12 in., for Water Distribution
2. AWWA C905: Standard for Polyvinyl Chloride (PVC Pressure Pipe and Fabricated Fittings, 14 in. through 48 in., for Water Distribution and Transmission

C. National Sanitation Foundation (NSF)/American National Standards Institute (ANSI)

1. NSF/ANSI 14: Plastics Piping System Components and Related Materials
2. NSF/ANSI 61: Drinking Water System Components – Health Effects
3. NSF 372

D. Louisiana Administrative Code Title Fifty-One (51) Public Health-Sanitary Code Part XII Water Supplies

1.7 FIELD CONDITIONS

A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service according to requirements indicated:

1. Notify Construction Manager and Owner no fewer than seven (7) days in advance of proposed interruption of water service.
2. Notify all residents and the New Orleans Fire Department a minimum of seventy-two (72) hours in advance of interruption of service.
3. Do not interrupt water service without Construction Manager's written approval.

1.8 COORDINATION

A. Refer to Section 013113, Project Coordination.

B. The S&WB Forces shall close all valves and witness the tests and chlorination of the mains. Contractors shall not operate S&WB valves.

PART 2 - PRODUCTS

2.1 PIPING MATERIAL

A. New water mains 6-inch through 12-inch shall be solid wall DR 18 PVC pipe manufactured in accordance with AWWA Standard C900.

B. New water mains 16-inch and larger shall be solid wall DR 18 PVC pipe manufactured in accordance with AWWA Standard C905.

C. Pipe shall be furnished in standard lengths (min. 16-feet) with integral cast bells or couplings using elastomeric gaskets conforming to AWWA C900, ASTM D 3213 or ASTM D 477.

2.2 FITTINGS

A. For PVC water lines, all pipe fittings shall be ductile iron and conform to Sections 330509 Piping Specialties for Water Utilities and 339220 Ductile Iron Piping. All nuts, bolts, and washers shall be manufactured of 316 stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sanitary sewer system is not surcharged prior to the start of work.

3.2 PREPARATION

A. The Contractor shall submit a Traffic Control Plan to the approving authority (DPW, DOTD, etc.) for review and approval prior to the closing of any streets. The approved traffic control plan shall be fully executed prior to the installation of water lines for transmission and distribution. The Contractor shall ensure sufficient barriers and other traffic control methods are in place around the excavation at all times and, at a minimum, the protective barriers shall meet the requirements of the City of New Orleans Department of Public Works requirements, except where the requirements of the Louisiana Department of Transportation are applicable and more stringent.

B. Any and all pavement saw cutting and removal shall be in accordance with Section 024113 Selective Site Demolition.

C. Any and all trenching, excavation, bedding, backfill and compaction shall be in accordance with Section 312316 Excavation and Trenching and Section 312323 Fill, Backfill and

Compaction and all applicable S&WB and New Orleans DPW Standard Drawings, current edition

1. Special care should be given in placing and consolidating the sand under the pipe haunches to provide adequate side support to the pipe while avoiding displacement and misalignment. The remainder of the trench shall be spread in loose lifts not to exceed twelve (12) inches and shall be compacted by mechanical vibrating equipment to at least 95 percent laboratory maximum density (dry) as determined by ASTM D 1557 at a moisture content within the limits of plus five (5) percent to minus three (3) percent of optimum. Density tests shall be one (1) per lift per one hundred (100) feet of trench. Field density in-place tests will be performed in accordance with ASTM D 6938.

D. The Contractor shall position his equipment and layout the site so as to not obstruct any fire hydrants or otherwise prevent its use in case of a fire in the area served by the hydrant.

E. The Contractor shall carry out operations in accordance with all OSHA and manufacturer's safety requirements. Particular attention is drawn to those safety requirements involving the entering of confined spaces and excavation/trench safety.

F. Where it is necessary for the proper accomplishment of the work to repair, move, and/or replace any such utility or structure, do so in accordance with the provisions set forth herein.

1. The Contractor shall locate any all utilities on site that may require protect and/or relocation. The Contractor is solely responsible for verifying the location of and scheduling any relocation of all conflicting utilities.
2. Where service connections or lines from water or gas mains or sewers to the user's premises are disconnected, broken, damaged, or otherwise rendered inoperative by the Contractor for any reason, the Contractor shall, at Contractor's own expense, arrange with the respective utility company for any repairs of lines under their jurisdiction, or for any lines not within their jurisdiction; the Contractor shall repair or replace same and restore service to the premises

3.3 EARTHWORK

A. Comply with requirements in Sections 312316 "Excavation and Trenching" and 312323 "Fill, Backfill and Compaction" for excavating, trenching, and backfilling.

B. Bedding and backfill for water mains and all appurtenances shall be pumped Mississippi River Sand, free of roots, wood, clay lumps, or any other foreign matter. Soil Materials shall conform to Section 312323 Fill, Backfill and Compaction 2.1.I.

C. Dewatering operations shall comply with Section 312319.

D. Special care should be given in placing and consolidating the sand under the pipe haunches to provide adequate side support to the pipe while avoiding displacement and misalignment. The remainder of the trench shall be spread in loose lifts not to exceed twelve (12) inches and shall be compacted by mechanical vibrating equipment to at least 95 percent laboratory maximum density (dry) as determined by ASTM D 1557 at a moisture content within the limits of plus five (5) percent to minus three (3) percent of optimum. Density tests shall be one (1) per lift per one

hundred (100) feet of trench. Field density in-place tests will be performed in accordance with ASTM D 6938.

3.4 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of water piping. Install piping as indicated unless deviations to layout are approved in writing by the Engineer.

B. The installation of all pipe shall conform to the manufacturer's recommendations and as specified herein.

C. Rough-in utility water piping for water-meter installation according to S&WB requirements.

D. Install piping to permit valve servicing.

E. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating and in accordance with Section 330509.11 Piping Specialties for Water Utilities.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. The water main must be laid in a separate trench from all other utilities.

1. The minimum allowable horizontal distance between the water main and the sewer main shall be 6-ft, and a minimum vertical separation of 18 in. as stipulated in Louisiana Administrative Code Title Fifty-One (51) Public Health-Sanitary Code Part XII Water Supplies.
2. The minimum allowable horizontal distance between the water main and all other utilities shall be 3 ft., and maximum vertical clearance of 6 in. above and 12 in. below other utilities.
3. In instances where a new water main is replacing an existing, the new main must be a minimum of 3 ft. from the existing main and the existing main must be kept in service until the new main is tied in.
4. The minimum cover for a water main is at 3.5 ft.
5. All dimensions between utilities shall be measured from outside diameter to outside diameter.

3.5 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Threaded joints that are necessary to match up to threaded valves or fittings shall be made up with appropriate thread sealant, either paste or tape. Pipe threads shall conform to ASTM F 1498 - Taper Pipe Threads 60 Degrees for Thermoplastic Pipe and Fittings, and shall be full and cleanly cut with sharp dies or molded.

E. Flanged joints shall be made with solvent-welded PVC flanges, drilled to ASME B 16.5 - Pipe Flanges and Flanged Fittings, Class 150, unless otherwise indicated.

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests: Refer to Section 330112 Inspection, Testing and Disinfection of Water Utility Piping.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.7 CLEANING AND DISINFECTION

A. All cleaning and disinfection of newly installed PVC pipe for water transmission and distribution shall conform to Section 331300 Testing and Disinfection of Water Utility Piping.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

D. The Contractor shall be responsible for the cleanliness of the main until completion of the work and final acceptance of the Contract. At the end of each day's work, or stoppage of work, the Contractor must provide an approved temporary watertight plug at each open end. When work is resumed, the trench must be free of water and dirt before the plug is removed.

3.8 TIE-INS

A. The Contractor shall make all tie-ins and shall provide all material for tie-ins as specified in the contract drawings. Tie-ins shall only be made once the chlorination process has been approved.

B. The Contractor shall obtain approval from the S&WB prior to making tie-ins, and shall work continuously until completion on all tie-ins and water services are restored. Water services will not be interrupted until all crews and equipment are on site with the connection exposed, and prepared to begin the tie-ins. In addition, the Contractor must show that the N.O. Fire Department and affected residents have been notified 24 hours in advance of any interruption of service. The Contractor shall make every effort to limit residential closures.

END OF SECTION 330531.16

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SECTION 33 05 33.23 – POLYETHYLENE PRESSURE PIPE (AWWA C906)

PART 1 -- GENERAL

1.01 THE SUMMARY

A. The Contractor shall provide high density polyethylene (HDPE) pressure pipe, complete and in place, in accordance with the Contract Documents.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Reference Specifications

01 33 00	Submittal Procedures
31 23 23	Fill and Backfilling
33 01 12	Pressure Pipe Testing

B. Reference Standards

American Water Works Association	
AWWA C906	Polyethylene (PE) Pressure Pipe and Fittings, 4 In Through 65 In, for Waterworks
ASTM International (ASTM)	
ASTM D 3350	Polyethylene Plastics Pipe and Fittings Materials

1.03 CONTRACTOR SUBMITTALS

A. Furnish Shop Drawings of pipe, fittings, and appurtenances in accordance with Section 01 33 00 - Submittal Procedures

B. Certifications: Furnish a certified affidavit of compliance for pipe and other products or materials furnished under this Section:

1. Hydrostatic proof test reports.

2. Sustained pressure test reports.

3. Burst strength test reports.

C. Expenses incurred in making samples for certification of tests shall be borne by the Contractor as part of the WORK.

1.04 QUALITY ASSURANCE

A. Each manufacturer shall have an approved in-house QA/QC program for compliance to the testing specifications and requirements of AWWA C906 for both pipe and fittings.

B. Inspection: Pipe shall be subject to inspection at the place of manufacture in accordance with the provisions of the referenced standards as supplemented by the requirements herein. The Contractor shall notify the Engineer in writing of the manufacturing start date not less than 14 calendar days prior to the start of any phase of manufacture.

C. During manufacture of the pipe, the Engineer shall be given access to areas where manufacturing is in process to confirm compliance with the Specifications.

D. Tests: Except as modified herein, materials used in the manufacture of the pipe shall be tested in accordance with the requirements of this Section and in the referenced standards, as applicable.

E. The Contractor shall perform said material tests in accordance with the requirements of the Contract Documents. The Engineer shall have the right to witness testing conducted by the Contractor, provided that the Contractor's schedule will not be delayed for the convenience of the Engineer.

F. In addition to those tests specifically required, the Engineer may request additional samples of any material for testing by the Owner. The additional samples shall be furnished as part of the WORK.

G. Contractor shall furnish fusion data logs to Engineer for review to ensure proper fusions are made.

PART 2 -- PRODUCTS

2.01 GENERAL

A. Scope: The pipe shall be 16-in nominal, meeting the specifications and requirements of AWWA C 906. Pipe shall be in steel pipe sizes (IPS), unless labelled as Ductile Iron Pipe Size (DIPS).

B. Materials: Pipe and fittings shall be made from prime virgin resins type 4710 exhibiting a cell classification of PE 445574C as defined in ASTM D 3350, with an established hydrostatic-design basis of 1600 psi (for water at 73 degrees F). The resin shall be listed by the PPI (Plastic Pipe Institute) in its pipe-grade registry Technical Report (TR) 4, "Listing of Plastic Pipe Compounds”.

C. Pipe and Fittings: The pressure rating shall be 100psi. Laying lengths shall be 40 ft standard. Both pipe and fittings shall be listed as compliant with NSF Standard 61 and shall bear the "NSF-pw" logo or mark.

D. Joints: Pipe sections shall be joined by heat fusion. Heat fusion fittings shall meet the requirements of ASTM D3261.

E. Marking: Pipe and fittings shall be marked as prescribed by AWWA C906 . Pipe markings shall include nominal size, OD base (ie: 12-in iron pipe sizing, IPS), resin type, dimension ratio, pressure class, AWWA C906, manufacturer's name, manufacturer's production code including day, month, and year extruded, manufacturer's plant and extrusion line, and NSF - pw logo.

2.02 PLASTIC MARKING TAPE

A. The pipeline shall be marked with a magnetically detectable marking tape and tracer wire**.** The tape shall be placed along the trench centerline between 18-in and 24-in above the pipe.

PART 3 -- EXECUTION

3.01 GENERAL

A. Laying, jointing, and testing for defects and for leakage shall be performed in the presence of the Engineer and shall be subject to approval before acceptance. All material found to be defective will be rejected and the Contractor shall promptly remove such materials from the Site.

B. Installation shall conform to AWWA M55, instructions furnished by the pipe manufacturer, and to the supplementary requirements or modifications herein. Wherever the provisions of this Section and the aforementioned requirements are in conflict, the more stringent provision shall apply.

3.02 HANDLING AND STORAGE

A. Handling: Pipe, fittings, and accessories shall be carefully inspected before and after installation and those found defective will be rejected. Pipe and fittings shall be free from fins and burrs. Before placing in position, clean pipe, fittings, and accessories, and maintain them in a clean condition. Proper methods shall be used for lowering sections of pipe into trenches. Under no circumstances shall pipe, fittings, or any other material be dropped or dumped into trenches.

B. Storage: Pipe shall be stored, if possible, at the Site in unit packages provided by the manufacturer. Caution should be exercised to avoid compression damage or deformation to the pipe. Pipe shall be stored in such a way as to prevent sagging or bending. Gaskets shall be stored in a cool, dark place out of the direct rays of the sun, preferably in original cartons.

3.03 TRENCHING AND BACKFILL

A. Trench excavation and backfill shall conform to Section 31 23 23– Fill and Backfilling.

3.04 JOINING

A. The pipe shall be joined by the butt fusion procedure outlined in ASTM F2620 or PPI TR-33. All fusion joints shall be made in compliance with the pipe or fitting manufacturer’s recommendations.

B. Fusion joints shall be made by qualified fusion technicians per PPI TN-38 and TN-42. Prior to installation of any pipe, the manufacturer shall provide training in the recommended butt fusion and saddle fusion procedures, testing procedures, and any other installation methods required by the Work. The Contractor shall record the names of trained personnel, and provide copies of certificates of their training to the Engineer.

C. On every day that butt fusion joints are to be made, the first fusion of the day shall be a test. The test fusion shall be allowed to cool completely, then fusion test straps shall be cut out. Test strap length shall be 12-in (min) or 30 times the wall thickness with the fused area in the center and width shall be 1-in (min) or 1.5 times the wall thickness. The Contractor shall bend the test strap until the ends of the strap touch. If the test strap fails at the joint, the Contractor shall perform a new test to be cooled completely and bent as before. The Contractor shall not commence installation of pipe until a test fusion has passed the bent strap test.

D. The fusion machine used in the joining of the pipe shall incorporate a data logging device that records information related to each individual joint for the construction of the entire pipeline. The recorded information shall include at least the date and time of the fusion, the employee ID of the machine operator, the machine ID, the machine model, the piston area, pipe material, pipe size, the interfacial pressures (including heat, soak, fuse, cool), recommended gauge pressures (including heat, soak, fuse, cool), drag pressure, data logger probe temperature, and the external probe temperature.

E. Based on industry standard, electrofusion couplings between HDPE piping segments should be used in lieu of mechanical fittings. Electrofusion can only be used if there is no running water going through the pipe which should be applicable to new pipe installations.

F. When mechanical fittings are used to connect HDPE to HDPE and electrofusion in not an option, the Contractor should initially torque the bolts as much as possible, and let it rest for at least 12 hours. The Contractor is then required to re-torque the bolts for a second time.

3.05 INSTALLATION

A. Trench shall be graded in straight lines, taking care to avoid formation of any dips or low points. Pipe shall not be laid when the conditions of trench or weather are unsuitable. At the end of each day's work, open ends of pipe shall be closed temporarily with wood blocks or bulkheads.

B. Pipe shall be cut by means of saws, power driven abrasive wheels, pipe cutters, or other manufacturer recommended methods that will produce a clean, square cut.

C. Pipe shall be supported uniformly and firmly at its proper elevation. Wood support blocking will not be permitted. The full length of each section of pipe and fittings shall rest solidly on the soil, with recesses to accommodate joints and couplings. Anchors and supports shall be provided where necessary and where indicated for fastening Work into place. Fittings shall be independently supported.

D. Short lengths of pipe shall be used in and out of each rigid joint or rigid structure.

E. Joints shall be installed according to manufacturer's recommendations. Trenches shall be kept free of water until proper backfill is in place to prevent floatation. The maximum combined deflection at any coupling shall be in accordance with the manufacturer's recommendations.

F. The bending radius shall not exceed 25 times the pipe diameter (in feet) or as recommended by the manufacturer, and shall be approved by the Engineer.

G. Where bead removal is required by the Engineer, complete the following:

1. Removing the fusion bead during the cooling stage of pipe fusion is recommended for greatest efficiency.

2. As the pipe lies in the fusion machine and before making the fusion weld slide the bead trimming machine head into the pipe, stopping 6-in away from the pipe end and confirm that the head is properly positioned.

3. Ensure that the bead trimmer machine indexing wheels and cutter blade are in their proper positions.

4. Clear away any debris that may have accumulated in front of the bead trimmer head.

5. After completion of the fusion joint and allowing enough time for the fusion bead to set up and harden, slide the bead trimmer head the remaining distance to the fusion joint.

6. After the bead trimmer has stopped on the fusion joint, release the cutter blade

7. After the cutter is activated, continue cutting for one full revolution. Remove the bead trimmer and the removed bead.

3.06 FIELD TESTING

A. Field testing shall conform to the requirements of Section 33 01 12- Pressure Pipe Testing.

END OF SECTION

SECTION 330572 – MASONRY STRUCTURES

PART 1 -- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing masonry work above and below grade, as indicated in accordance with the Contract Documents.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required for the installation of masonry structures.

C. Section Includes:

1. Brick
2. Mortar
3. Grout
4. Placement

D. Related Requirements:

1. Section 012200 Unit Prices
2. Section 013300 Submittal Procedures
3. Section 015136 Temporary Water
4. Section 312316 Excavation and Trenching
5. Section 312323 Fill, Backfill and Compaction
6. Section 321123 Aggregate Base Course
7. Section 321313 Concrete Paving
8. Section 330509 Piping Specialties for Sewer Utilities
9. Section 330509.11 Piping Specialties for Water Utilities
10. Section 330581 Metallic Castings for Utility Structures

1.3 PAYMENT PROCEDURES

A. See Section 012200 Unit Prices, for unit price requirements

B. Measurement:

1. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

2. Vertical Foot Measurement: Measurements will be made as the vertical height dimension of material installed, excluding overlap, and measured in vertical foot height. Irregular vertical heights will be measured as a summation of equivalent non-overlapping lines or other applicable geometry.

C. Payment:

1. New Sewer Manhole (Less than 9 feet): Payment for New Sewer Manhole will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.1) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. New Sewer Manhole (Greater than 9 feet): Payment for New Sewer Manhole will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements

1.4 QUALITY ASSURANCE

A. Engineered Masonry: ACI 530.1/ASCE 6.

1.5 SUBMITTALS

A. Submit following in accordance with Section 013300 Submittal Procedures before delivery to site.

1. Sewer and Manhole Brick Samples.
   a. Submit at least 4 bricks before purchase and delivery of each type required.
      1) Do not purchase brick until Engineer has approved samples.

2. Concrete Block Samples.
   a. Submit at least 4 blocks of each type required before purchase and delivery.
      1) Do not purchase blocks until Engineer has approved samples

3. Certificates of Compliance:
   a. Bricks.
   b. Concrete blocks.
   c. Prepackaged mortar mix.
   d. Portland cement.
   e. Masonry cement.

1.6 REFERENCE STANDARDS

A. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition

B. American Society for testing Materials (ASTM), Latest Edition

1. ASTM C 32: Standard Specification for Sewer and Manhole Brick (Made From Clay or Shale)
2. ASTM C 91: Standard Specification for Masonry Cement
3. ASTM C 139: Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
4. ASTM C 144: Standard Specification for Aggregate for Masonry Mortar
5. ASTM C 150: Standard Specification for Portland Cement
6. ASTM C 270: Standard Specification for Mortar for Unit Masonry
7. ASTM C 476: Standard Specification for Grout for Masonry
8. ASTM C 1019: Standard Test Method for Sampling and Testing Grout

1.7 DELIVERY, HANDLING, AND STORAGE

A. Deliver cement, lime, and other cementitious materials to site and store in unbroken bags, barrels, or other approved containers, plainly marked and labeled with manufacturers' names and brands.

B. Maintain packaged materials clean, dry and protected against dampness, freezing, and foreign matter.

C. Handle masonry units to avoid chipping and breakage, and store off ground on wood blocks, pallets, or other means.

D. Store mortar materials in dry, weather tight sheds or enclosures, to prevent inclusion of foreign materials and damage by water or dampness.

1.8 PROJECT CONDITIONS

A. Masonry Placement:

1. Do not place masonry when air temperature falls below 40 degrees F. or when temperatures below 40 degrees F. are likely within 72 hours after mortar is placed, unless Engineer approves adequate means for protecting work from freezing.
2. Heat and maintain temperature of masonry materials at not less than 40 degrees F. but not more than 160 degrees F. and maintain air temperature above 40 degrees F. on both sides of masonry for not less than 72 hours.
    a. Do not work with or on frozen materials.
3. Protect new work against freezing weather for period of 72 hours after masonry is placed.
4. Use mortar or grout within 2 hours after mixing at temperatures of 80 deg. F. or 2.5 hours at temperatures under 50 deg. F.

B. During hot weather, protect masonry from direct rays of sun.

1. Cover or wet all finished work for period of 3 days after placing.
2. When ambient air temperature is warmer than 95 degrees F. or when it appears probable that temperatures above 95 degrees F. will be encountered, protect work from sun and prevent drying out for not less than 72 hours after masonry is placed.

PART 2 -- PRODUCTS

2.1 MATERIALS

A. Brick.

1. Match approved brick samples.
2. Sewer and Manhole Brick: ASTM C32.
3. Bricks Used for Channel Lining: Sewer brick Grade SM.
4. All Other Brick Used in Water, and Sewer, Structures and Manholes: Manhole brick, Grade MS.

B. Concrete Block.

1. Masonry Units for Manholes and Structures: ASTM C139.
2. Admixtures: Not allowed without Engineer's approval.

C. Mortar.

1. Mortar Proportions for Placing Concrete Block, Bricks, and Unit Masonry Structures:
   a. ASTM C270 and ASTM C91 for foundation walls, and work below grade, Type M.
   b. For all other masonry work, Type S.
   c. Type S Mix (1,800 psi at 28 days): For reinforced masonry with high flexural bond strength. Use for all walls
   d. Type M Mix (2,500 psi at 28 days): For structural masonry, frost resistance, below grade masonry and masonry in contact with earth.
   e. Admixtures are not permitted.

2. Mortar for Parging Masonry Walls below Grade: Composed of 1 part Portland cement, 1/4 part hydrated lime, and 3 parts sand.
3. Sewer and Water Main Construction: Unless otherwise shown on Drawings, 1 part Type II cement and 3 parts masonry sand meeting ASTM C144.
4. Prepackaged Mortar Mix: Meet requirements of mortar depending on use specified above.
5. Cement for Mortar: ASTM C150.

D. Grout: ASTM C476 with minimum compressive strength of 2000 psi at 28 days, tested following ASTM C1019.

E. Water for Mixing Mortar and Grout: See Section 015136 Temporary Water.

2.2 SEWER MANHOLE (BRICK, DROP, AND PRECAST)

A. Excavation and backfill for furnishing and installing sanitary sewer manholes shall be in accordance with Sections 312316 Excavation and Trenching and 312323 Fill, Backfill, and Compaction, and 321123 Aggregate Base Course.

B. Concrete foundation to be constructed in accordance with Section 321313 Concrete Paving.

C. Manholes, Frames and Covers to be provided and constructed is accordance with Section 330581 Metallic Castings for Utility Structures

PART 3 -- PART 3 EXECUTION

3.1 GENERAL (SEWER AND WATER MANHOLES)

A. Standard sewer manholes (MH) can be found on S&WB Dwg. Nos. 6178-B6, Sheets 1 & 2 and 6312-E5. Unless otherwise specified these basic detail requirements will be for all sewer manholes.

B. All portions of precast manholes must be approved by the Engineer prior to installation in the sanitary sewer system.

C. Manholes shall be installed at the locations shown on the Drawings such that primary leads enter radially at the invert elevations specified. The base section shall be set plumb on a prepared surface.

D. The Engineer shall check for buoyancy forces (uplift forces) for deep manholes.

E. New manholes will be constructed with steps as detailed on above listed drawings. When a manhole is rehabilitated the steps will be removed prior to any lining process. Access will be by use of a nonferrous ladder or a cage lowered into the shaft.

F. Brick Manhole: Brick MHs as shown on S&WB Dwg. No. 6178-B6, Sheets 1 & 2 and described in the S&WB General Specifications for the Construction of Sewers will be considered the standard sewer manhole.

G. Concrete Manhole: The S&WB will consider the use of lined or coated precast concrete manholes. The precast concrete manhole is shown on S&WB Dwg. No. 6178-B6, Sheets 1 & 2. These manholes shall be made adequately resistant to harsh aggressive chemicals by lining on the interior surfaces with a plastic, approved protective coating, or waterproofing compound or have a concrete admixture for protection from deterioration due to the effects of harsh environmental conditions added to the concrete mix.

H. Drop Manhole: Drop sewer manholes as shown on S&WB Dwg. No. 6178-B6, Sheets 1 & 2 may be required when there is a junction of two or more sewers at a MH and there is a vertical difference of at least eighteen (18") inches between the sewer inverts.

I. Manhole Spacing: Manholes shall be provided at any change in horizontal or vertical direction as follows:

Sewer Size (Inches)	Maximum Spacing (feet)
8 – 30	400
Larger than 30	750

J. Manhole Sizes: The Manhole size is dependent on the largest pipe size connected to the MH. The table below lists the minimum required manhole inside diameter with respect to pipe sizes connected to the manhole. The Engineer may increase the manhole to the next largest size upon his discretion with the approval of the S&WB.

Sewer Size (Inches)	Min. Manhole Inner Diameter (feet)
8 -24	4.0

27	4.5
30 and Over	5.0

1. Manhole Locations: Manhole's shall be spaced to comply with the requirements of a) above and b) located to provide safety to maintenance workers, pedestrians and vehicular traffic. The primary determination to be made when considering a Manhole at a change in vertical or horizontal direction/grade is the possibility of sedimentation. In general, solids and sediments that are in suspension in the sewage will settle when there is a reduction of velocity. The reduced velocity will typically occur when the vertical grade of the sewer is reduced.

    a. Manholes shall be placed in accordance with locations indicated on the plans unless field conditions require adjustment. In such situation the Contractor shall inform the Construction Manager and provide a RFI for a final determination from the Engineer if any Contract documents are to be adjusted.

K. Manhole wall thickness shall be 9-inches to a depth of 12 feet and 13-inches below 12 feet in conformance with the S&WB Standard Dwgs.

L. Manholes exceeding 17 feet in depth shall use a 10-inch concrete slab in lieu of 8-inch concrete slab.

3.2 PREPARATION

A. General.

1. Clean dirt, debris, oil, grease and other foreign substances which would affect bond of mortar, from surfaces to receive masonry.
2. Ascertain location of chases and openings for pipes.

3.3 CONCRETE MANHOLE BASES

A. A concrete base shall be set on a crushed stone foundation as shown in the S&WB Standard Dwgs. and shall be placed for all brick structures after the foundation excavation is completed and accepted. The foundation shall be built to the correct elevation, and shall be finished to insure the least possible resistance of flow.

B. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both.

C. Install anchor bolts to elevations required for proper attachment to new sewer manhole.

D. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

E. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Section 321313 " Concrete Paving" and according to the Standard Plans of S&WB

3.4 MORTAR

A. Measuring Materials for Mortar: Method that will control and maintain specified proportions during entire progress of Work.

B. Mixing Mortar.

1. Mix mortar in mechanically operated batch mixer of drum type.
2. Hand mixing will be permitted if quantities of materials and water are accurately measured and if Engineer approves method of mixing.
3. Mix cement, lime, and sand, add water and mix for at least 5 minutes.
4. Do not use mortar that has obtained its initial set or has been mixed for longer than 45 minutes.
5. Do not add water to mortar that has started to stiffen.

C. Grout.

1. Add water in sufficient quantity to produce fluid mixture.
2. Place fine grout in spaces less than 2 inches in any horizontal dimension and where clearance between reinforcing and masonry is less than 3/4 inch.
3. Place coarse grout in spaces 2 inches or greater in any horizontal dimension and where clearance between reinforcing and masonry is not less than 3/4 inch.

3.5 PLACING

A. Workmanship.

1. Place masonry plumb, true to line, with level and accurately spaced courses, and each course breaking joint with course below.
    a. Make joints uniform in thickness with average thickness of any 3 consecutive joints 3/8 to 1/2 inch.

2. Remove mortar splashed or smeared on finished surfaces with stiff bristle brushes as work progresses.

B. Plastering/Parging: Follow S&WB Standard Dwgs. The outside of brick manholes and structures, brick stacks and grading rings shall be neatly plastered with 1/4-inch of cement mortar (inside and out) as the work progresses.

C. Brick: Drenched with water just before laying.

1. Joints: Filled between bricks completely with mortar.
    a. Form bed joints with thick layer of mortar, smoothed.
    b. Buttering at corners of brick and then throwing mortar or scrapings into empty joints will not be permitted.

2. Brick Placement.
    a. Place brickwork in common bond.
    b. Place brick carefully without disturbing brick previously placed.
    c. Dry or butt joints will not be permitted.

d. Grout where indicated.

D. Sewer Manhole Invert Construction

1. The invert channels shall be smooth and semicircular in shape conforming to the inside of the connecting sanitary sewer section. Changes in directions of flow shall be made by forming a smooth radius sized to allow adequate access of a T.V. camera and/or maintenance equipment into the served sanitary sewer pipe. Changes in size and grades of the channels shall be made gradually and evenly. The invert channels may be formed directly in the concrete of the manhole base, or may be formed and poured in place, or may be constructed by laying a full section of sanitary sewer pipe through the manhole and breaking out the top half after the surrounding concrete has hardened. The floor of the manhole outside the channels shall be smooth and shall slope towards the channels at a grade of one inch (1"/ft) per foot.

3.6 PROTECTION OF WORK

A. Cover completed work each day to prevent rain or melting snow from penetrating mortar.

END OF SECTION 330572

SECTION 330581 – METALLIC CASTINGS FOR UTILITY STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of the supply and installation of metallic castings for utility manholes, catch basins, vaults, boxes, water meters, etc.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required for water utility piping enclosure installation.

C. Section Includes:

1. Manufacturers
2. Materials
3. Manhole Casting Embedment Sealant
4. Meter Boxes
5. Installation

D. Related Requirements:

1. Section 013113 Project Coordination
2. Section 012200 Unit Prices
3. Section 013300 Submittal Procedures

1.3 PRICE AND PAYMENT PROCEDURES

A. See Section 012200 Unit Prices, for unit price requirements.

B. Measurement:

1. Each Measurement: Measurements will be made per actual quantity of items fully installed, and measured per each. There will be no allowance for partial or fractional installations or quantities.

C. Payment:

1. Manhole Frame: Payment for Manhole Frame will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

2. Manhole Cover: Payment for Manhole Cover will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the

drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

3. Meter Box: Payment for meter boxes will be made at the respective Contract unit bid price as scheduled in Section 012200 per each (Paragraph 1.3.B.2) as indicated in the drawings, installed in accordance with these specifications and adjusted by the Construction Manager with acceptable field measurements.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

1. Manufacturer's Certifications verifying qualification of liner installer.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM A 27: Standard Specification for Steel Castings, Carbon, for General Application.
2. ASTM A 48: Standard Specification for Gray Iron Castings.
3. ASTM A 148: Standard Specification for Steel Castings, High-Strength, for Structural Purposes.
4. ASTM B 22: Standard Specification for Bronze Castings for Bridges and Turntables.
5. ASTM B 584: Standard Specification for Copper Alloy Sand Castings for General Applications.
6. ASTM C 990: Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
7. ASTM D 1187: Standard Specification for Asphalt-Base Emulsion for Use as Protective Coatings for Metal.
8. ASTM E 10: Standard Test Method for Brinell Hardness of Metallic Materials.

B. Federal Specification SS-S-210A - Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints, Type 1

C. Department of Public Works, City of New Orleans (DPW)

1. General Specifications, current edition.

D. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition.

1.7 QUALITY ASSURANCE (NOT USED)

1.8 DELIVERY, STORAGE AND HANDLING

A. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions.

B. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

C. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

1.9 COORDINATION

A. Refer to Section 013113, Project Coordination.

1.10 WARRANTY

A. The Contractor shall furnish an extended warranty for manhole rehabilitation for a period of one (1) year from the date of Final Acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Valve Box Frame and Cover shall conform to East Jordan Iron works, Inc. V-8451 Valve Box Frame and Cover or approved equal.

2.2 MATERIALS

A. Manhole Frame and Covers: New manhole frame and covers shall be East Jordan Iron Works, (Vulcan) V-1501 or approved equal, as detailed in S&WB Standard Dwg. Nos.:

1. D-871 – Drain Manhole Frame and Cover
2. 3143-E-1 – Sewer and Water Frame and Cover

2.3 MANHOLE CASTING EMBEDMENT SEALANT

A. The sealant shall be a premium, extruded, bituminous, tacky rubber sealant in rope form for use on manholes as an embedment material for the frame to be adjusted to the brick/mortar corbel.

B. Sealant shall conform to the latest version of ASTM C 990 and Federal Specification SS-S-210A.

C. The sealant shall have the following properties:

Physical Properties	Required
Initial Elongation, % min.	300
Elongation, % min., at 2 weeks in total water immersion	300
Storage Life	Indefinite
Service Temperature Range, ^{0}F	-20 to 200

2.4 SOURCE QUALITY CONTROL

A. Complete records of inspections, examinations and tests shall be kept and submitted to the Engineer.

B. The Engineer reserves the right to perform any of the inspections set forth herein where deemed necessary to assure that material and services conform to the prescribed requirements.

2.5 METER BOXES

A. Meter boxes shall be a No. 4 Crescent Meter Box with a round lid, conforming to Sewerage and Water Board of New Orleans, Standard Drawing No. 7134.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Field Location of Manholes

1. The Contractor shall be responsible for field locating all manholes in accordance with lines, grades, and inverts as shown on the drawings.

3.2 INSTALLATION

A. The top of the metal frame shall be flush with the natural ground in unpaved areas. In paved areas, the frame shall be set at a grade and slope that is consistent with the adjoining pavement, allowing for a smooth transition in all directions from pavement to frame and cover

1. The Contractor shall apply an approved sealant between the top adjustment ring and the manhole frame.

B. Where manholes or vaults are required within the public right-of-way, the Contractor shall be responsible for installation and construction of the meter manhole or vault in accordance with the S&WB General Specifications

1. Meter sizes 1-inch and smaller shall be installed within the public right-of-way in a meter box as shown on S&WB Dwg. No.7134-W.
2. Meter sizes 1-1/2-inch and 2-inch shall be installed within the public right-of-way shall be installed in manholes as shown on S&WB Dwg. No. 7332-W.
3. Meter sizes 4-inch to 10-inch shall be installed within the public right-of-way shall be installed in vaults as shown on S&WB Dwg. No. 7332-W.

3.3 ISOLATION PADS

A. All manholes within concrete paving areas shall be isolated (boxed out) by means of an approved square isolation pad in accordance with the DPW General Specifications for Street Paving and DPW Standard Drawing MC2. Refer to Section 321313 Concrete Paving.

END OF SECTION 330581

SECTION 333111 – PUBLIC SEWERAGE GRAVITY PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work consists of providing PVC solid wall non-pressure pipe and appurtenances, complete and in place.

B. The Contractor shall provide all supervision, labor, materials, equipment, tools, fuel, power, water and incidentals required to provide complete public sewerage gravity piping.

C. Section Includes:

1. Laying Pipe
2. Field Jointing
3. Installation of Fittings
4. Sanitary Sewer Service Laterals
5. Sanitary Sewer Manhole Connections

D. Related Requirements:

1. Section 012200 Unit Prices
2. Section 013300 Submittal Procedures
3. Section 330130.03 Sewer Flow Control
4. Section 330130.13 Cleaning of Sewers
5. Section 330130.16 CCTV Inspection of Sewers
6. Section 330500 Common Work Results for Utilities
7. Section 330505 Sewer Utilities Testing

1.3 PRICE AND PAYMENT PROCEDURES

A. There is no direct measurement or payment for, service connecting fittings (wyes or tees) or manhole connections. This work is considered incidental to public sanitary sewer gravity piping and the cost of this work shall be included in the unit item bid price for the associated work included within this section.

1.4 DEFINITIONS (NOT USED)

1.5 SUBMITTALS

A. Furnish Submittals in accordance with Section 013300 Submittal Procedures.

B. Product Data:

1. The Contractor shall submit the product data for the piping, joints, fittings and appurtenances documenting the manufacturer's name, pipe dimensional sizing and minimum pipe stiffness.

C. Shop Drawings:

1. The Contractor shall submit Shop Drawings and laying diagrams of pipe, joints, bends, special fittings, and piping appurtenances.

D. Certifications:

1. The Contractor shall submit pipe manufacturer's certification of compliance with these Specifications.
2. The Contractor shall submit documentation that the pipe manufacturer has certified the workmen who will be jointing pipe.

E. Manufacturer's Instructions:

1. The Contractor shall submit the pipe manufacturer's printed recommendations for handling, storing, and installing pipe.

1.6 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM), Latest Edition

1. ASTM C 425: Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.
2. ASTM D 1784: Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
3. ASTMD 1557: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3))
4. ASTM D 2321: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications and as indicated.
5. ASTM D 2444: Test Method for Impact Resistance of Thermoplastic Pipe and Fittings by Means of a Tup (Falling Weight).
6. ASTM D 3034: Standard Specifications for Type PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings.
7. ASTM D 3212: Standard Specifications for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
8. ASTM D 6938: Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
9. ASTM F 477: Standard Specifications for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
10. ASTM F 679: Standard Specification for Polyvinyl Chloride (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
11. ASTM F 913: Thermoplastic Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

B. Sewerage and Water Board of New Orleans (S&WB)

1. General Specifications and Standard Drawings, current edition.
2. Sewer Overflow Abatement Plan, current edition.

1.7 PERFORMANCE REQUIREMENTS (NOT USED)

1.8 QUALITY ASSURANCE

A. Testing: Materials testing shall be based upon applicable ASTM Test Methods and AWWA Standards referenced herein. Costs of such inspection and tests shall be borne by the Contractor.

1.9 REGULATORY REQUIREMENTS

A. Occupational and Safety Health Administration (OSHA)

1. CFR 29, Part 1910.146: Permit Required Confined Spaces
2. CFR 29, part 1926, Subpart P: Excavations

1.10 FIELD CONDITIONS

A. Sanitary Sewer Rehabilitation shall not be performed if the Contractor does not have sufficient Sewer Flow Control to completely perform the work without spill as per Section 33 01 30.03.

1.11 DELIVERY, STORAGE AND HANDLING

A. The materials shall be delivered to the job site in original unopened packaging and clearly labeled with the manufacturer's identification and printed instructions.

B. The Contractor shall handle and store all material in accordance with manufacturer instructions and shall dispose of all wastes in accordance with applicable regulations.

C. The Contractor shall keep products safe from damage. The Contractor shall promptly remove damaged products from the job site and replace damaged products with undamaged goods.

D. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

E. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

F. Handling of the PVC pipe shall be done with implements, tools, and facilities as recommended by the pipe manufacturer to ensure that the pipe is not damaged in any manner during storage, transit, loading, unloading, and installation.

G. Pipe shall be inspected both prior to and after installation in the trench and all defective lengths shall be rejected and immediately removed from the working area.

1.12 COORDINATION

A. Refer to Section 013113 Project Coordination.

1.13 WARRANTY

A. The Contractor shall furnish an extended warranty for sanitary sewer line repairs for a period of one (1) year from the date of Final Acceptance.

PART 2 - PRODUCTS

2.1 GENERAL

A. At points of tie-ins to the existing system, the pipe material should match the existing. If the new material does not match the existing material, the connection shall be made with the use of a coupling and bushing adapter intended for that purpose: ARC (Mission Rubber Co.), FERNCO, or equal, conforming to ASTM C 425.

2.2 MANUFACTURERS (NOT USED)

2.3 DESIGN CRITERIA (NOT USED)

2.4 ASSEMBLIES (NOT USED)

2.5 MATERIALS

A. All pipe shall have a SDR of 26 with minimum pipe stiffness of 115 psi when tested in accordance with ASTM D 2412.

B. The maximum allowable compression for installed PVC sewer pipe is 7.5% of its original vertical inside diameter. Pipe exceeding this allowable compression shall be removed and replaced with new pipe and reinstalled at the Contractor’s expense.

C. Pipe, 6” – 15” Diameter:

1. All pipe shall be Solid Wall PVC pipe, joined by compression joints, unless otherwise indicated, and shall conform to the following requirements:

a. Polyvinyl chloride pipe (PVC) shall conform to the requirements of ASTM D 3034, SDR 26.

b. Material for PVC pipe shall conform to the requirements of ASTM D 1784 - Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds, for cell classification 12454-B or 12454-C as defined therein.

c. Joints shall conform to ASTM D 3212. Elastomeric seals for compression type joints shall conform to the requirements of ASTM F 477 - Elastomeric Seals (Gaskets) for Joining Plastic Pipe or ASTM F 913.

d. Pipe shall be continuously and permanently marked with the manufacturer's name and code, pipe size, PVC minimum cell classification, pipe stiffness designation, and the designation ASTM F 679.

i. The manufacturer's code shall include the year, month, day, shift, plant and extruder of manufacture.

ii. This coding shall be done in conjunction with records to be held by the manufacturer for 2 years, covering quality control tests, raw material batch number, and other information deemed necessary by the manufacturer.

D. Pipe, 18” – 36” Diameter:

1. All pipe shall be Solid Wall PVC pipe, joined by compression joints, unless otherwise indicated, and shall conform to the following requirements:

a. Polyvinyl chloride pipe (PVC) shall conform to the requirements of ASTM F 679. Material for PVC pipe shall conform to the requirements of ASTM D 1784 for Class 12364-C or 12454-C as defined therein. Maximum filler content shall be 10 percent.

b. Rubber gaskets for compression type joints for PVC pipe and fittings shall conform to the requirements of ASTM F 477

c. Pipe shall be continuously and permanently marked with the manufacturer's name and code, pipe size, PVC minimum cell classification, pipe stiffness designation, and the designation ASTM F 679.

i. The manufacturer's code shall include the year, month, day, shift, plant and extruder of manufacture.

ii. This coding shall be done in conjunction with records to be held by the manufacturer for 2 years, covering quality control tests, raw material batch number, and other information deemed necessary by the manufacturer.

E. Joints: integral bell and spigot-type with solid cross section elastomeric or rubber gasket ring conforming to ASTM D 3212. Gaskets shall meet the requirements of ASTM F 477. Use elastomeric factory installed gaskets to make joints flexible and watertight. Lubricant for rubber-gasketed joints shall be water soluble, non-toxic, non-supporting of bacteria growth, having no deteriorating effect on PVC or rubber gaskets. The manufacturer shall test a sample from each batch conforming to the requirements of ASTM D 2444.

F. Bedding Material:

1. All bedding material shall conform to the S&WB General Specifications and Standard Drawings, current edition and Sections 312323 Fill, Backfill and Compaction, 321123 Aggregate Base Course, and 330600 Schedules for Exterior Paving and Sodding.

2.6 ACCESSORIES

A. Refer to Section 330509 Piping Specialties for Sewer Utilities, for Flexible Repair Coupling, Flexible Tap Saddle Fittings, Manhole Adapters, and other piping specialties.

2.7 SOURCE QUALITY CONTROL

A. The supplier shall be responsible for the performance of all inspection and testing requirements specified in the latest versions of ASTM D 3034 or ASTM F 679, as applicable.

B. Complete records of inspections, examinations and tests shall be kept and submitted to the Engineer.

C. The Engineer reserves the right to perform any of the inspections set forth herein where deemed necessary to assure that material and services conform to the prescribed requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are acceptable and ready to receive work.

B. Examine and verify the sanitary sewer system is not surcharged prior to the start of work.

3.2 PREPARATION

A. The Contractor shall provide Sewer Flow Control, as specified in Section 330130.13 prior to the installation of Public Sewerage Gravity Piping for the duration of the installation.

B. The Contractor shall submit a Traffic Control Plan to the approving authority (DPW, DOTD, etc.) for review and approval prior to the closing of any streets. The approved traffic control plan shall be fully executed prior to the installation of Public Sanitary Sewer Pipelines.

C. The Contractor shall ensure sufficient barriers and other traffic control methods are in place around the excavation at all times and, at a minimum, the protective barriers shall meet the requirements of the City of New Orleans Department of Public Works requirements, except where the requirements of the Louisiana Department of Transportation are applicable and more stringent.

D. Any and all pavement saw cutting and removal shall be in accordance with Section 024113 Selective Site Demolition.

E. Any and all trenching, excavation, bedding, backfill and compaction shall be in accordance with Section 312316 Excavation and Trenching and Section 312323 Fill, Backfill and Compaction and all applicable S&WB and New Orleans DPW Standard Drawings, current edition

1. Special care should be given in placing and consolidating the sand under the pipe haunches to provide adequate side support to the pipe while avoiding displacement and misalignment. The remainder of the trench shall be spread in loose lifts not to exceed twelve (12) inches and shall be compacted by mechanical vibrating equipment to at least 95 percent laboratory maximum density (dry) as determined by ASTM D 1557 at a moisture content within the limits of plus five (5) percent to minus three (3) percent of optimum. Density tests shall be one (1) per lift per one hundred (100) feet of trench. Field density in-place tests will be performed in accordance with ASTM D 6938.

F. The Contractor shall position his equipment and layout the site so as to not obstruct any fire hydrants or otherwise prevent its use in case of a fire in the area served by the hydrant.

G. The Contractor shall carry out operations in accordance with all OSHA and manufacturer's safety requirements. Particular attention is drawn to those safety requirements involving the entering of confined spaces and excavation/trench safety.

H. Where it is necessary for the proper accomplishment of the work to repair, move, and/or replace any such utility or structure, do so in accordance with the provisions set forth herein.

1. The Contractor shall locate any all utilities on site that may require protect and/or relocation. The Contractor is solely responsible for verifying the location of and scheduling any relocation of all conflicting utilities.

2. Where service connections or lines from water or gas mains or sewers to the user's premises are disconnected, broken, damaged, or otherwise rendered inoperative by the Contractor for any reason, the Contractor shall, at Contractor's own expense, arrange with the respective utility company for any repairs of lines under their jurisdiction, or for any lines not within their jurisdiction; the Contractor shall repair or replace same and restore service to the premises.

3.3 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated unless deviations to layout are approved in writing by the Engineer.

B. The pipe shall be installed in accordance with the requirements of ASTM D 2321, manufacturer's installation instructions and this Section and the pipe sections shall be closely jointed to form a smooth flow line. Immediately before placing each section of pipe in final position for jointing, the bedding for the pipe shall be checked for firmness and uniformity of surface. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16-in per foot of length.

C. Proper implements, tools, and facilities as recommended by the pipe manufacturer's standard printed installation instructions shall be provided and used by the Contractor for safe and efficient execution of the work. Pipe, fittings, valves, and accessories shall be carefully lowered into the trench by means of derrick, ropes, or other suitable equipment in such a manner as to prevent damage to pipe and fittings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench.

D. Bell holes shall be excavated so that after installation only the pipe barrel shall bear upon the trench bottom.

E. Cutting and machining of the pipe shall be accomplished in accordance with the pipe manufacturer's standard procedures for this operation. Pipe shall not be cut with a cold chisel, standard iron pipe cutter, or any other method that may fracture the pipe or will produce ragged, uneven edges.

F. The pipe and accessories shall be inspected for defects prior to lowering into the trench. Any defective, damaged or unsound pipe shall be repaired or replaced. Foreign matter or dirt shall be removed from the interior of the pipe before lowering into position in the trench.

G. Pipe shall be kept clean during and after laying. Openings in the pipeline shall be closed with watertight expandable type sewer plugs or PVC test plugs at the end of each day's operation or whenever the pipe openings are left unattended. The use of burlap, wood, or other similar temporary plugs will not be permitted.

H. Adequate protection and maintenance of all underground and surface utility structures, drains, sewers, and other obstructions encountered in the progress of the work shall be furnished by the Contractor at its own expense.

I. Where the grade or alignment of the pipe is obstructed by existing utility structures such as conduits, ducts, pipes, branch connections to main sewers, or main drains, the obstruction shall be permanently supported, relocated, removed, or reconstructed by the Contractor in cooperation with owners of such utility structures. Unless otherwise indicated, this work shall be performed at the Contractor's expense.

J. The Contractor shall use a PVC pipe cutter where necessary to cut and machine all PVC pipe in the field. A "full insertion mark" shall be provided on each field cut pipe end. Field-cut pipe shall be beveled with a beveling tool made especially for plastic pipe.

K. If pipe or fittings become damaged during installation, it shall be repaired as recommended by the manufacturer or replaced as required by the Engineer at the Contractor's expense before proceeding further.

L. If any defective pipe is discovered after it has been installed, it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional cost to the Owner. Repair couplings of any type will not be permitted for this repair.

M. Adequate backfill shall be deposited on pipe to prevent floating of pipe. Any pipe that has floated shall be removed from the trench, cleaned, and re-laid in an acceptable manner.

N. When pipe laying is not in progress or each time pipe laying is halted for more than one (1) hour, the ends of the pipe shall be sealed to prevent foreign material or trench water from entering the pipe.

O. No pipe shall be laid when, in the opinion of the Engineer, the trench conditions or weather are unsuitable for such work.

3.4 FIELD JOINTING

A. Workmen who are certified by the pipe manufacturer to join the pipe shall only perform pipe joining.

B. The jointing of the pipe shall be done in strict accordance with the pipe manufacturer instructions and shall be done entirely in the trench

C. Each pipe compression type joint shall be joined with a lock-in rubber ring and a ring groove that is designed to resist displacement during pipe insertion.

D. Machined ends and couplings shall be wiped clean immediately prior to jointing. The ring and the ring seat inside the bell shall be wiped clean before the gasket is inserted. At this time a thin film of lubricant shall be applied to the exposed surface of the ring and to the outside of the clean pipe end. Lubricant other than that furnished with the pipe shall not be used. The end of the pipe shall be then forced into the ring to complete the joint.

E. The pipe shall not be deflected either vertically or horizontally in excess of the printed recommendations of the manufacturer of the coupling.

F. After the joints have been completed, they shall be inspected before they are covered.

1. The pipe shall meet the test requirements for watertightness; immediately repair any leak or defect discovered at any time after the completion of the work.

2. Take up any pipe that has been disturbed after joints were formed, clean and remake the joints, and relay the pipe; this shall be done at the Contractor's expense.

3.5 INSTALLATION OF FITTINGS

A. Refer to Section 330509 Piping Specialties for Sewer Utilities and the manufacturer's installation recommendations for installation procedures.

3.6 SANITARY SEWER SERVICE LATERALS

A. Service connections shall be a minimum of 6-inches in diameter unless otherwise approved by the Engineer.

B. Sewer house service connections shall be extended from the main to the property line and shall be installed at a minimum slope of 2 percent or as approved by the Engineer.

C. Clean-outs shall be furnished, installed and capped in locations as directed by the Engineer.

3.7 SANITARY SEWER MANHOLE CONNECTIONS

A. Sanitary sewer manhole connections shall be installed in accordance with S&WB standard drawing number 6178-B-6, current edition.

B. The existing piping penetrating the manhole wall shall be fully removed and the penetration fully brushed clean of any loose debris.

C. A new short piece of PVC piping with bell fitting attached shall cut and prepared for installation; the pipe shall be fitted to the full thickness of the manhole wall.

D. A flexible manhole adapter, conforming to section 330509 Piping Specialties for Sewer Utilities, shall be fitted onto the PVC pipe and inserted into the manhole opening.

E. The annular space between the pipe and the wall of the structure shall be grouted with an elastomeric grout and jute or approved equal shall be used in place of the cement grout.

1. As an alternative, the Contractor may use a sand-impregnated PVC stub, grouted with a type three (III), high early strength mortar, for the manhole connection.

F. Reshape the bottom of the manholes as necessary to fit the invert of the pipe in the manner specified elsewhere.

G. There is no direct measurement or payment for the installation of sewer manhole connections.

3.8 MAINTENANCE (NOT USED)

3.9 FIELD QUALITY CONTROL

A. Lay no pipe except in the presence of an inspector representing the Engineer.

B. Each time the work on the sewer is halted for more than one (1) hour, the ends of the pipe shall be sealed with a temporary plug, approved by the Engineer, to prevent foreign material from entering the pipe.

C. Do not allow water to run or stand in the trench while pipe laying is in progress or before the trench has been backfilled.

D. Do not at any time open up more trench than available pumping facilities are able to dewater.

E. Testing and Inspection:

1. After complete installation of polyvinyl chloride gravity sewer pipe, including all connection sewer service laterals, the pipe shall be tested for acceptance in accordance with Section 330505 Sanitary Sewer Utilities Testing.

2. After complete installation of polyvinyl chloride gravity sewer pipe, including all connection sewer service laterals, the work shall be CCTV inspected in accordance with Section 330130.16 CCTV Inspection of Sanitary Sewer.

3. Segments not fully conforming to these Specifications must be immediately brought to the Engineer's attention.

4. The Contractor shall furnish a written proposed method of correction within 24 hours for approval by the Engineer.

3.10 PROTECTION

A. The Contractor shall carefully protect all existing sewers, water lines, gas lines, sidewalks, curbs, gutters, pavements, electric lines, or other utilities or structures in the vicinity of the work from damage at all times.

B. The Contractor shall take reasonable care during the initial excavation of the defective pipe so as not to disturb existing pipe that is still acceptable.

C. The Contractor shall carefully protect all new pipe in place from damage until backfill operations have been completed

3.11 CLEAN UP AND REMOVAL

A. The material from excavation to be wasted shall be loaded directly into trucks during excavation; do not stockpile on the street.

B. The Contractor shall dispose of portions of any piece of material removed during installation unless retained by the Engineer.

C. Upon completion of the Work, the Contractor shall fully clean and restore the site.

D. Sanitary Sewer Flow Control shall be removed and sanitary sewer flow shall be normalized in accordance with Section 330130.03.

END OF SECTION 333111

SECTION 33 92 20 - DUCTILE IRON PIPING

PART 1 -- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 THE SUMMARY

A. The CONTRACTOR shall provide ductile iron pipe and appurtenant WORK, complete and in place, in accordance with the Contract Documents.

1.3 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

AWWA C104	Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
AWWA C105	Polyethylene Encasement for Ductile-Iron Pipe Systems
AWWA C110	Ductile-Iron and Gray-Iron Fittings, 3 in through 48 in for Water
AWWA C111	Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
AWWA C115	Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
AWWA C150	Thickness Design of Ductile-Iron Pipe
AWWA C151	Ductile-Iron Pipe, Centrifugally Cast for Water
AWWA C153	Ductile-Iron Compact Fittings for Water Service
AWWA C600	Installation of Ductile Iron Water Mains and Their Appurtenances
AWWA C606	Grooved and Shouldered Joints
ASTM C150	Portland Cement

1.4 CONTRACTOR SUBMITTALS

A. Furnish Submittals in accordance with Section 01 33 00 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES and the following supplemental requirements:

B. Shop Drawings

1. Certified dimensional drawings of valves, fittings, and appurtenances.

2. For pipe 24-inches diameter and larger, line layout and marking diagrams which indicate the specific number of each fitting and the location and the direction of each fitting in the completed line. In addition, the line layouts shall include: the pipe station and invert elevation at changes in grade or horizontal alignment; elements of curves and bends, both

in horizontal and vertical alignment; and the limits of each reach of restrained joints, or of concrete encasement.

C. **Certifications:** Certified affidavit of compliance for pipe and other products or materials furnished under this Section and as specified in the referenced standards and the following supplemental requirements:

1. Physical and chemical properties.

2. Hydrostatic test reports.

D. The CONTRACTOR shall be responsible for performing and paying for sampling and testing as necessary for the certifications.

1.5 QUALITY ASSURANCE

A. **Tests:** Except as modified herein, materials used in the manufacture of the pipe shall be tested in accordance with the requirements of the referenced standards as applicable.

B. The CONTRACTOR shall perform said material tests as part of the WORK. The ENGINEER shall have the right to witness testing conducted by the CONTRACTOR; provided, that the CONTRACTOR's schedule is not delayed for the convenience of the ENGINEER.

C. In addition to those tests specifically required, the ENGINEER may request additional samples of any material including lining and coating samples for testing by the OWNER. The additional samples shall be furnished as a part of the WORK.

D. **Inspection:** Pipe shall be subject to inspection at the place of manufacture in accordance with the provisions of the referenced standards, as supplemented by the requirements herein. The CONTRACTOR shall notify the ENGINEER in writing of the manufacturing starting date not less than 14 Days prior to the start of any phase of the pipe manufacture.

E. During the manufacture of the pipe, the ENGINEER shall be given access to areas where manufacturing is in process and shall be permitted to make inspections necessary to confirm compliance with the Specifications.

PART 2 -- PRODUCTS

2.1 PIPE GENERAL

A. Ductile iron pipe shall conform to the applicable standards referenced herein, subject to the supplemental requirements in this Section. The pipe shall be of the diameter and class indicated, shall be provided complete with gaskets, specials, and fittings as required under the Contract Documents.

B. Gaskets:

1. Water mains shall use SBR gaskets for typical applications and field conditions shall be equipped with SBR gaskets. EPDM or nitrile gaskets shall be used in areas of contamination. All water main gaskets shall be NSF 61 approved.

2. Sewer Mains shall use neoprene or EPDM gaskets for typical applications and field conditions.

3. Areas with chemical or hydrocarbon contamination shall use the gasket material selected by the ENGINEER.

C. **Markings:** The CONTRACTOR shall legibly mark specials 24-inches diameter and larger in accordance with the laying schedule and marking diagram. Each fitting shall be marked at each end with top field centerline.

D. **Handling and Storage:** The pipe shall be handled as a minimum at the 1/3 points by use of wide slings, padded cradles, or other devices designed and constructed to prevent damage to the pipe coating/exterior. The use of chains, hooks, or other equipment that might injure the pipe coating/exterior will not be permitted. Stockpiled pipe shall be supported on padded skids, sand or earth berms free of rock exceeding 3-inches diameter, sand bags, or suitable means so that the coating will not be damaged. The pipe shall not be rolled and shall be secured to prevent accidental rolling

E. Bonded dielectric-coated pipe shall have the following additional requirements:

1. It shall be the responsibility of the CONTRACTOR to prevent damage of the coating that might be caused by handling and/or storage of the completed pipe at low temperature.

F. **Laying Lengths:** Nominal pipe laying lengths shall be 20-feet.

G. **Finish:** The pipe shall have smooth dense interior surfaces and shall be free from fractures, excessive interior surface crazing, and roughness.

H. **Bonding and Electrical Conductivity:** Pipe joints shall be prepared for bonding for electrical conductivity in accordance with the details indicated. The CONTRACTOR shall furnish materials required for joint bonding and electrolysis test station installations.

I. **Closures and Correction Pieces:** Closures and correction pieces shall be provided as required so that closures may be made due to different headings in the pipe laying operation and so that correction may be made to adjust the pipe laying to conform to pipe stationing on the Contract Drawings. The locations of correction pieces and closure assemblies are indicated. Any change in location or number of said items shall only be as accepted by the ENGINEER.

2.2 SPECIALS AND FITTINGS

A. Cast ductile-iron fittings in the 3-inch through 24-inch size range shall be working pressure rated at 350 psi, minimum; (except flange-joint fittings shall be rated at 250 psi, minimum); and in the 30-inch through 48-inch size range shall be working pressure rated at 250 psi, minimum.

2.3 DESIGN OF PIPE

A. The pipe shall be designed, manufactured, tested, inspected, and marked according to AWWA C150 and C151, except where modified by this Section.

B. Pipe Dimensions

1. The pipe thickness and outside diameter of ductile iron piping shall conform to the standard dimensions published in ANSI/AWWA Standard C151.

2. Pipe shall be of the pressure class indicated or the minimum pressure class for ductile iron piping shall be as follows:

Nominal Diameter	Pressure Class
4-inch through 12-inch	350
14-inch through 20-inch	250
24-inch	200
30-inch through 54-inch	150

3. Minimum thickness for pipe having threaded flanges shall be Special Class 53 or Pressure Class 350.

4. Minimum pipe wall thickness required for corporation stops and tapped outlets shall be in accordance with Table A.1 of ANSI/AWWA C151 for three full threads for pressures up to 250 psi and four full threads for design pressures over 250 psi.

5. Minimum wall thickness for pipe having grooved-end joints shall be as shown in the following table.

Pipe and Fitting Diameter (inches)	**Grooved End Joint Wall Thickness – Pressure Class**
Less than 16	Special Class 53
18	Special Class 54
20	Special Class 55
24 to 36	Special Class 56
42 and larger	Special Class 53 or PC 350

6. The OWNER reserves the right to require the use of "special thickness" class pipe or higher pressure class pipe in applications where in the opinion of the ENGINEER or OWNER such use is in the best interest of the OWNER. The Engineer's decision in this regard shall be final.

C. **Fitting Dimensions:** The fittings shall be of the diameter and class indicated.

1. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA C110

a. Restrained push-on joint fittings shall be cast ductile iron for use with ductile-iron pipe.

b. Standard mechanical joint, push-on joint and flanged joint fittings shall be ductile iron for use with ductile-iron pipe as specified above.

c. Cast ductile-iron fittings in the 3-inch through 24-inch size range shall be pressure rated at 350 psi, minimum; (except flange-joint fittings shall be rated at 250 psi, minimum); and in the 30-inch through 48-inch size range shall be pressure rated at 250 psi, minimum.

d. Fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111.

e. The weight of fittings shall be as given in ANSI/AWWA C110 for ductile-iron fittings.

2. Fittings Conforming with ANSI/AWWA C153

a. Fittings in the 3-inch through 24-inch size range shall be pressure rated at 350 psi, minimum; 30-inch through 48-inch size range shall be pressure rated at 250 psi, minimum; and in the 54-inch through 64-inch size range shall be pressure rated at 150 psi, minimum (except for those fittings such as plugs, caps, and sleeves which are normally rated at a higher pressure). No flanged fittings or mixtures of flanged with other end type fittings will be allowed in the range of 3-inch through 48-inch since they are not covered in the AWWA Standard. Flanged fittings conforming with and covered by this standard are allowed in sizes, 54, 60 and 64-inch. In conformance with the standard, 54, 60 and 64-inch flanged tees, crosses and reducers with outlets of smaller dimension as listed in ANSI/AWWA C153/A21.53-00 are permitted. All fittings with mechanical joints, flange joints and push-on joints shall conform to ANSI/AWWA Standard C153. In addition, fittings with mechanical joints and push-on joints shall conform to ANSI/AWWA Standard C111 except as otherwise allowed in C153. Mechanical joint glands shall be ductile-iron only.

b. Since the C153 Standard provides only minimum dimensions, fully detailed drawings of all fittings proposed shall be supplied by the manufacturer with his bid. The tabulated nominal weight of each size and type of fitting shall also be supplied by the manufacturer for all items proposed. This weight shall be that of the bare casting prior to application of any lining or coating. The weight of a fitting supplied under the contract shall not be less than ninety-five (95) percent of the tabulated nominal weight supplied by the manufacturer's catalog literature for that fitting. Further, the weight of fittings supplied shall not be more than five (5) percent above the same tabulated nominal weight.

D. **Joint Design:** Ductile iron pipe and fittings for buried pressure service shall be furnished with restrained joints, unless otherwise indicated. Ductile iron pipe and fittings for buried gravity service shall be furnished with mechanical joints or push-on joints as required, unless otherwise indicated. Above ground ductile iron pipe and fittings joints shall be as indicated. Flanged joints or grooved and shouldered joints shall be furnished where required.

1. Mechanical and push-on joints shall conform to AWWA C111.

2. Flanged joints shall conform to ANSI/AWWA Standard C115 and shall be rated for a working pressure of 250 psi, minimum. The nominal thickness of flanged ductile-iron pipe, 6-inch and larger, shall not be less than those shown in Table 1 of ANSI/AWWA Standard C115. The nominal thickness of 4-inch flanged ductile-iron pipe shall be Class 54 (min.) conforming to Tables 3 and 4 of ANSI/AWWA Standard C151. The pipe shall be furnished with ANSI Standard Class 125 flanges, plain faced and drilled, conforming to ANSI Standard B16.1, latest revision. Hollow back flanges and grey-iron flanges shall not be acceptable for use as threaded flanges. Threaded flanges shall be individually fitted and machine tightened on the threaded pipe by the manufacturer, and shall not be interchangeable in the field. Pipe lengths shall be as ordered. Removal of flanges, cutting and re-threading the pipe, and re-installing the flanges will not be permitted in any case.

3. Restrained joints shall be **Flex-Ring or Lok-Ring** restrained joint by **American Ductile Iron Pipe**, **TR FLEX** or **HP Lok** restrained joint by **U.S. Pipe**, or equal.

4. Joint restraining devices that impart point loads and/or wedging action on the pipe wall as a means of joint restraint shall not be allowed unless there are no other options for joint restraint available. Under such circumstances, the CONTRACTOR may propose such devices provided the following conditions are met and the request is made as a substitution:

    a. A formal request for substitution is submitted stating the locations where the devices are intended to be used and a statement from the device manufacturer and the pipe manufacturer that the proposed device is appropriate for the intended installation and is rated at least for the class of the pipe being supplied.

    b. A statement from the pipe manufacturer is provided accepting the use of the retaining devices and indicating that the use of such devices will in no way affect the warranty of the pipe and/or the performance of the pipe.

    c. The manufacturer of the device and the pipe manufacturer jointly provide instruction on the proper installation of the device to the personnel installing the units and provide certification to the OWNER that the installers are adequately trained in the installation of the units and that warranties are in full affect for the project.

    d. The devices shall be MegaLug Model 1100 as manufactured by EBAA Iron or equal.

5. Grooved and Shouldered Joints shall meet the requirements of mechanical-type couplings in accordance with Section 43 10 50 – PIPING, General and conform to AWWA C606.

E. For bell-and-spigot ends with rubber gaskets, the clearance between the bells and spigots shall be such that when combined with the gasket groove configuration and the gasket itself, will provide watertight joints under all operating conditions when properly installed. The CONTRACTOR shall require the pipe manufacturer to submit details complete with significant dimensions and tolerances and also to submit performance data indicating that the proposed joint has performed satisfactorily under similar conditions. In the absence of a history of field performance, the results of a test program shall be submitted.

F. Shop-applied interior linings and exterior coatings shall be held back from the ends of the pipe as indicated.

2.4 CERAMIC EPOXY LINING

A. Ceramic Epoxy lining shall be a high-build multi-component Amine cured Novalac epoxy, Protecto 401, by Vulcan Painters, Inc. and shall meet the following requirements and be accompanied by certification of the following test results:

1. A permeability rating of 0.00 when tested according to Method A of ASTM E96-00 "Test Method for Water Vapor Transmission of Materials", Procedure A with a test duration of 30 days

2. The following test must be run on coupons from factory lined ductile iron pipe:

   a. ASTM B117 Salt Spray (scribed panel) - Results to equal no more than 0.5mm undercutting after one year.

   b. ASTM G95 Cathodic Disbondment 1.5 volts @ 77 degrees F. Results to equal no more than 0.5mm undercutting after 30 days.

   c. Immersion Testing rating using ASTM D714-87 (1994).

3. A statement from the manufacturer attesting to the fact that at least 20% of the volume of the lining contains ceramic quartz pigment.

4. A statement concerning re-coatability and repair to the lining.

B. Application: The lining shall be applied by a competent firm with a successful history of applying linings to the interior of ductile iron pipe and fittings.

1. Surface Preparation: Prior to abrasive blasting, the entire area which will receive the protective compound shall be inspected for oil, grease, etc. Any areas where oil, grease or any substance which can be removed by solvent is present shall be solvent cleaned using the guidelines outlined in SSPC-1 Solvent Cleaning. After the surface has been made free of grease, oil or other substances, all areas to receive the protective compounds shall be abrasive blasted using compressed air nozzles with sand or grit abrasive media. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc., are removed from the surface. Only slight stains and tightly adhering annealing oxide may be left on the surface. Any area where rust reappears before coating must be re-blasted to remove all rust.

2. Lining: After the surface preparation and within 8 hours of surface preparation, the interior of pipe and fittings shall receive a minimum forty (40) mils dry film thickness of the protective lining. No lining shall take place when the substrate or ambient temperature is below 40 degrees Fahrenheit. The surface also must be dry and dust free. If flange ends are included in the Project, the linings must not be used on the face of the flange; however, full face gaskets must be used to protect the ends of the pipe. The 40-mil system shall not be applied in the gasket grooves.

3. Coating of Gasket and Spigot Ends: Due to the tolerances involved, the gasket area and exterior of the spigot end for 6 inches back from the end of the spigot must be coated with six (6) mils minimum, ten (10) mils maximum of Protecto Joint Compound. This coating shall be applied by brush to ensure coverage. Care should be taken that the

coating is smooth without excess buildup in the gasket groove or on the spigot end. All material for the gasket groove and spigot end shall be applied after the application of the lining as specified in the preceding paragraph.

4. Number of Coats: The number of coats of lining material applied shall be as recommended by the lining manufacturer. However, in no case shall this material be applied above the dry thickness per coat recommended by the lining manufacturer in printed literature. The time between coats shall never exceed that time recommended by the lining material manufacturer. No material shall be used for lining which is not indefinitely re-coatable with itself without roughening the surface.

5. Touch-Up and Repair: Protecto Joint Compound shall be used for touch-up or repair. Procedures shall be in accordance with the manufacturer's recommendations.

C. Inspection and Certification

1. All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PC-2 Film Thickness Rating.

2. The interior lining of all pipe and fittings shall be tested for pinholes with a nondestructive 2,500 volt test.

3. Each pipe joint and fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on the date.

4. The pipe or fitting manufacturer must supply a certificate attesting to the fact that the applicator met the requirements of this specification, and that the material used was as specified, and that the material was applied as required by the specification.

2.5 EXTERIOR PROTECTION OF PIPE

A. **Exterior Coating of Buried Piping:** Ductile iron piping shall have a protective zinc basecoat and be wrapped in enhanced polyethylene encasement.

1. **Zinc Basecoat**: The exterior of ductile iron pipe shall be coated with a layer of arc-sprayed zinc per ISO 8179 under the asphaltic topcoat. The mass of the zinc applied shall be 200 g/m2 of pipe surface area. A finishing layer asphaltic topcoat shall be applied to the zinc. The mean dry film thickness of the finishing layer shall not be less than 3 mils with a local minimum not less than 2 mils. The coating system shall conform in every respect to ISO 8179-1 "Ductile iron pipes - External zinc-based coating - Part 1: Metallic zinc with finishing layer. Second edition 2004-06-01." Ductile iron fittings shall also have a zinc protective coating sprayed on at the factory at a minimum of 3 mils.

2. **V-Bio Polyethylene Enhanced Encasement**: The pipes shall be wrapped with V-Bio Polyethylene Enhanced Encasement in accordance with AWWA C600 and ANSI/AWWA C105/A21.5, "Polyethylene Encasement of Ductile-Iron Pipe Systems". Color shall be blue for potable water, purple for recycled water, and green for sanitary sewage service. Polyethylene encasement for use with ductile iron pipe systems shall consist of three layers of co-extruded linear low density polyethylene (LLDPE), fused into a single thickness of not less than 8 mils. The inside layer of the polyethylene wrap

to be in contact with the pipe exterior shall be infused with a corrosion inhibitor and antimicrobial biocide to control galvanic corrosion.

a. Polyethylene encasement for ductile-iron pipe shall be supplied as a flat tube meeting the dimensions of Table 1 in AWWA C105 and shall be supplied by the ductile-iron pipe manufacturer.

b. Plastic adhesive tape shall consist of polyolefin backing and adhesive which bonds to common pipeline coatings including polyethylene. Products: Canusa Wrapid Tape; Tapecoat H35; Polyken 934; AA Thread Seal Tape, Inc.; or approved equal.

c. Install the polyethylene to completely encase the pipe and fittings to provide a watertight corrosion barrier. Continuously secure overlaps and ends of sheet and tube with polyethylene tape. Make circumferential seams with two or more complete wraps, with no exposed edges. Tape longitudinal seams and longitudinal overlaps, extending tape beyond and beneath circumferential seams. Wrap bell-spigot interfaces, restrained joint components, and other irregular surfaces with wax tape or moldable sealant prior to placing polyethylene encasement. Minimize voids beneath polyethylene.

d. Place circumferential or spiral wraps of polyethylene tape at 2-foot intervals along the barrel of the pipe to minimize the space between the pipe and the polyethylene. Overlap adjoining polyethylene tube coatings a minimum of 1 foot and wrap prior to placing concrete anchors, collars, supports, or thrust blocks. Hand-wrap the polyethylene sheet, apply two complete wraps with no exposed edges to provide a watertight corrosion barrier, and secure in place with 2-inch-wide plastic adhesive tape. Repair polyethylene material that is damaged during installation. Use polyethylene sheet, place over damaged or torn area, and secure in place with 2-inch-wide plastic adhesive tape.

e. Repair polyethylene encasement at all service connections in accordance with AWWA C600-10, Section 4.8.

PART 3 -- EXECUTION

3.1 INSTALLATION OF PIPE

A. The CONTRACTOR shall inspect each pipe and fitting prior to installation to insure that there are no damaged portions of the pipe. Pipe damaged prior to Substantial Completion shall be repaired or replaced by the CONTRACTOR.

B. Before placement of pipe in the trench, each pipe or fitting shall be thoroughly cleaned of any foreign substance which may have collected thereon and shall be kept clean at all times thereafter. For this purpose, the openings of pipes and fittings in the trench shall be closed during any interruption to the WORK.

C. **Pipe Laying:** The pipe shall be installed in accordance with AWWA C600.

D. Pipe shall be laid directly on the bedding material. No blocking will be permitted, and the bedding shall be such that it forms a continuous, solid bearing for the full length of the pipe. Excavations shall be made as needed to facilitate removal of handling devices after the pipe is

laid. Bell holes shall be formed at the ends of the pipe to prevent point loading at the bells or couplings. Excavation shall be made as needed outside the normal trench section at field joints to permit adequate access to the joints for field connection operations and for application of coating on field joints.

E. Each section of pipe 24-inches diameter and larger shall be laid in the order and position shown on the laying schedule. Each section shall be laid to the line and grade, within approximately one-inch plus or minus.

F. Where necessary to raise or lower the pipe due to unforeseen obstructions or other causes, the ENGINEER may change the alignment and/or the grades. Such change shall be made by the deflection of joints, by the use of bevel adapters, or by the use of additional fittings. However, in no case shall the deflection in the joint exceed 50 percent of the maximum deflection recommended by the pipe manufacturer. No joint shall be misfit any amount that will be detrimental to the strength and water tightness of the finished joint.

G. Except for short runs that may be permitted by the ENGINEER, pipes shall be laid uphill on grades exceeding 10 percent. Pipe that is laid on a downhill grade shall be blocked and held in place until sufficient support is furnished by the following pipe to prevent movement. Bends shall be properly installed as indicated.

H. Piping shall have a minimum of 48-inches cover whenever possible.

I. The centerline of the pipe shall not vary by more than 2-inches from the locations shown on the Drawings and the top of the top of the pipe shall not vary by more than 2-inches from the established grade, except at points where this tolerance must be changed to clear obstructions or make connections. Deviations shall be reviewed and approved by the ENGINEER prior to installation.

J. **Pipe and Specials Protection:** The openings of pipe and specials shall be protected with suitable bulkheads to prevent unauthorized access by persons, animals, water, or any undesirable substance. At all times, means shall be provided to prevent the pipe from floating.

K. **Pipe Cleanup:** As pipe laying progresses, the CONTRACTOR shall keep the pipe interior free of debris. The CONTRACTOR shall completely clean the interior of the pipe of sand, dirt, mortar splatter, and any other debris following completion of pipe laying and shall perform any necessary interior repairs prior to testing and disinfecting the completed pipeline.

3.2 RUBBER GASKETED JOINTS

A. **Rubber Gasketed Joints:** Immediately before jointing pipe, the bell end of the pipe shall be thoroughly cleaned, and a clean rubber gasket shall be placed in the bell groove. The spigot end of the pipe and the inside surface of the gasket shall be carefully cleaned and lubricated. The lubricant shall be suitable for lubricating the parts of the joint for assembly and be a compound listed as in compliance with NSF Standard 61. The lubricant shall be nontoxic, shall not support the growth of bacteria, and shall have no deleterious effects on the gasket material. The lubricant shall not impart taste or odor to water in the pipe. The spigot end of the pipe section shall then be inserted into the bell of the previously laid joint and telescoped into its proper position. Tilting of the pipe to insert the spigot into the bell will not be permitted.

3.3 INSTALLATION OF PIPE APPURTENANCES

A. **Protection of Appurtenances:** Where the joining pipe is dielectric-coated, buried appurtenances shall be coated in kind. Where pipe is encased in polyethylene sleeves, buried appurtenances shall be encased in polyethylene.

B. **Installation of Valves:** Valves shall be handled in a manner to prevent any injury or damage to any part of the valve. Joints shall be thoroughly cleaned and prepared prior to installation. The CONTRACTOR shall adjust stem packing and operate each valve prior to installation to insure proper operation.

C. Valves shall be installed so that the valve stems are plumb and in the location indicated.

3.4 STORAGE

A. Store ductile iron piping and appurtenances in accordance with manufacturer's recommendations.

B. Bolts, nuts, and gaskets shall be stored in covered areas, protected from the environment. Gaskets shall not be exposed to heat, light, or petroleum products and shall be kept clean.

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SECTION 40 05 57 - ACTUATORS FOR VALVES

PART 1 -- GENERAL

1.1 THE SUMMARY

A. Provide valve and appurtenances, complete and operable, as indicated in accordance with the Contract Documents.

B. The provisions of this Section apply to valves except where otherwise indicated in the Contract Documents.

C. Unit Responsibility

1. Make the valve manufacturer responsible for the coordination of design, assembly, testing, and installation of actuators on the valves; however, the Contractor shall be responsible to the Owner for compliance of the valves and actuators with the Contract Documents.

D. Where 2 or more valve actuators of the same type or size are required, the actuators shall be produced by the same manufacturer.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

American National Standards Institute (ANSI)	
ANSI/ASME B 31.1	Power Piping
EN55011	Industrial, Scientific and Medical Equipment. Radio-Frequency Disturbance Characteristics
EN50082-2	Electromagnetic Compatibility - Generic Immunity Standard - Part 2 Industrial Environment
American Society of Mechanical Engineers (ASME)	
ASME BPVC SEC VIII	Boiler and Pressure Vessel Codes: Section VIII Rules for Construction of Pressure Vessel
American Water Works Association (AWWA)	
AWWA C 500	Metal-Seated Gate Valves for Water Supply Service
AWWA C504	Rubber-Seated Butterfly Valves
AWWA C541	Hydraulic and Pneumatic Cylinder and Vane-Type Actuators for Valves and Slide Gates
AWWA C 542	Electric Motor Actuators for Valves and Slide Gates
ASTM International (ASTM)	
ASTM A 105	Forging, Carbon Steel, for Piping Components
International Electrotechnical Commission (IEC)	
IEC 801.5	Surge Immunity Test

IEC 1000-4-5	Electromagnetic Compatibility Testing and Measurement Techniques – Surge Immunity Test
IEC 1000-4-8	Power Frequency Magnetic Field Immunity Test
National Fire Protection Association (NFPA)	
NPFA 70	National Electrical Code

1.3 CONTRACTOR SUBMITTALS

A. Furnish Submittals in accordance with Section 01 33 00 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Submit Shop Drawing information for actuators with the valve submittals as a complete package.

C. Submit calculations showing dynamic seating and unseating torques versus the output torque of the actuator.

PART 2 -- PRODUCTS

2.1 GENERAL

A. Unless otherwise indicated, provide shut-off and throttling valves and externally actuated valves with manual or power actuators.

B. Provide actuators complete and operable with mounting hardware, motors, gears, controls, wiring, solenoids, hand wheels, levers, chains, and extensions, as applicable.

C. Provide actuators with torque ratings equal to or greater than required for valve seating and dynamic torques, whichever is greater, and capable of holding the valve in any intermediate position between fully-open and fully-closed without creeping or fluttering.

D. Manufacturers

1. Where indicated, certain valves may be provided with actuators manufactured by the valve or gate manufacturer.

2. Where actuators are furnished by different manufacturers, coordinate the selection to result in the fewest number of manufacturers possible.

E. Materials

1. Provide actuators of current models, of the best commercial quality materials, and liberally sized for the required torque.

2. Provide materials suitable for the environment in which the valve or gate is to be installed.

F. Actuator Mounting and Position Indicators

1. Securely mount actuators by means of brackets or hardware specially designed and sized for this purpose and of ample strength.

2. Cast the word "OPEN" on each valve or actuator, with an arrow indicating the direction to open in the counter-clockwise direction.

3. Equip gear and power actuators with position indicators.

4. Where possible, locate manual actuators between 48 and 60 inches above the floor or the permanent working platform.

2.2 MANUAL ACTUATORS

A. General

1. Unless otherwise indicated, provide valves with manual actuators.

2. Provide valves larger than 4-inch with gear-assisted manual actuators, with an operating pull of maximum 60 pounds on the rim of the hand wheel.

3. Provide buried and submerged gear-assisted valves, gear-assisted valves for pressures higher than 250 psig, valves 30 inches in diameter and larger, and where indicated, with worm gear actuators, hermetically-sealed water-tight and grease-packed.

4. Valves 6-inch to 24-inch diameter may be provided with traveling-nut actuators, worm gear actuators, spur or bevel gear actuators, as appropriate for each valve.

B. Buried Valves

1. Unless otherwise indicated, provide buried valves with extension stems to grade, with square nuts or floor stands, position indicators, and cast-iron or steel pipe extensions with valve boxes, covers, and operating keys.

2. Where indicated, provide buried valves in cast-iron, concrete, or similar valve boxes with covers of ample size in order to allow operation of the valve actuators.

3. Permanently label the valve box covers as required by the local Utility Company or the Engineer.

C. Floor Boxes

1. Provide hot-dipped galvanized cast iron or steel floor boxes and covers to fit the slab thickness, for operating nuts in or below concrete slabs.

2. For operating nuts in the concrete slab, provide a bronze-bushed cover.

D. Tee Wrenches

1. Furnish buried valves with floor boxes with 2 operating keys or one key per 10 valves, whichever is greater.

2. Size the tee wrenches such that the tee handle will be 2 to 4 feet above ground, and to fit the operating nuts.

E. Manual Worm Gear Actuator

1. Provide an actuator consisting of a single- or double-reduction gear unit contained in a weatherproof cast iron or steel body with cover, and a minimum 12-inch diameter handwheel.

2. Provide the actuator to be capable of a 90-degree rotation and equip the actuator with travel stops capable of limiting the valve opening and closing.

3. Provide the actuator with spur or helical gears and worm gearing.

4. Provide a self-locking gear ratio in order to prevent "back-driving."

5. Construct the spur or helical gears of hardened alloy steel, and the worm gear of alloy bronze.

6. Construct the worm gear shaft and the hand wheel shaft from 17-4 PH or similar stainless steel.

7. Accurately cut gearing with hobbing machines.

8. Use ball or roller bearings throughout.

9. Provide the output shaft end with a spline in order to allow adjustable alignment.

10. Actuator output gear changes shall be mechanically possible by simply changing the exposed or helical gearset ratio without further disassembly of the actuator.

11. Design gearing for a 100 percent overload.

12. The entire gear assembly shall be sealed weatherproof.

F. Design and rate buried gear actuators for buried service, provide with a stainless-steel input shaft, and double-seal on shaft and top cap.

G. Traveling-Nut Actuator

1. Provide the actuator with a traveling-nut and screw (Scotch yoke), contained in a weatherproof cast iron or steel housing with a spur gear and a minimum 12-inch diameter hand wheel.

2. The screw shall run in 2 end bearings and provide a self-locking actuator in order to maintain the valve position under any flow condition.

3. Construct the screw and gear from hardened alloy steel or stainless steel, and the construct the nut and bushings from alloy bronze.

4. The bearings and gear shall be grease-lubricated by means of nipples.

5. Design gearing for a 100 percent overload.

PART 3 -- EXECUTION

3.1 SERVICES OF MANUFACTURER

A. Field Adjustments

1. The adjustment of actuator controls and limit switches in the field for the required function shall be performed by field representatives of the manufacturers of valves or gates with pneumatic, hydraulic, or electric actuators.

3.2 INSTALLATION

A. Install valve actuators and accessories in accordance with the requirements of Section 40 05 62 – Plug Valves.

B. Locate the actuators to be readily accessible for operation and maintenance without obstructing walkways.

C. Do not mount actuators where shock or vibrations will impair their operation, and do not attach the support systems to handrails, process piping, or mechanical equipment.

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SECTION 40 05 62 - PLUG VALVES

PART 1 -- GENERAL

1.1 THE SUMMARY

A. The Contractor shall provide plug valves and appurtenances, complete and operable, in accordance with the Contract Documents.

B. The requirements of Section 40 05 57 – Actuators apply to this Section.

C. Plug valves shall have undergone a proof-of-design test to demonstrate that the valve components operate at the service flow, pressure, temperature, and fluid conditions, free from binding, excessive noise, and premature failures. Proof-of-design test results shall be available to the Engineer on request. The proof-of-design test shall be conducted in accordance with the applicable provisions of AWWA C517- Resilient-Seated Cast-Iron Eccentric Plug Valves.

1.2 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

American Water Works Association (AWWA)	
AWWA C517	Resilient-Seated Cast-Iron Eccentric Plug Valves
ASTM International (ASTM)	
ASTM A 126	Gray Iron Castings for Valves, Flanges, and Pipe Fittings
ASTM A 216	Steel Castings, Carbon, Suitable for Fusion Welding for High-Temperature Service
ASTM A 536	Ductile Iron Castings

1.3 CONTRACTOR SUBMITTALS

A. Furnish Submittals in accordance with Section 01 33 00 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Furnish the following information on Shop Drawings:

1. valve name, size, Cv factor, pressure rating, identification number (if any), and specification section number.

2. complete information on the valve actuator, manufacturer, model number, and mounting.

3. assembly drawings showing part nomenclature, materials, dimensions, weights, and relationships of valve handles, hand wheels, and position indicators.

4. A valve-labeling schedule, listing the valves to be furnished with stainless steel tags, indicating in each case the valve location and the proposed wording for the label.

C. Furnish a technical manual containing the required information for each valve, as indicated.

D. Furnish a spare parts list, containing the required information for each valve assembly, as indicated.

E. Factory Test Data

1. Where indicated, submit signed, dated, and certified factory test data for each valve requiring certification, before shipping the valve.

2. Furnish a certification of quality and test results for factory-applied coatings.

F. Field Test Data

1. Submit signed, dated, and certified field test data for each valve.

PART 2 -- PRODUCTS

2.1 PRODUCTS

A. General

1. Provide valves and gates of new and current manufacture.

2. Provide valves 6-inch and larger with actuators with position indicators.

3. Unless otherwise indicated, provide valve actuators in accordance with Section 40 05 57 – Actuators.

B. Protective Coating

1. The valve manufacturer shall certify in writing that the required coating has been applied and tested in the manufacturing plant prior to shipment, in accordance with the indicated requirements.

2. Do not coat the machined flange faces of valves except where such flanges are not adjoining a mating flange as shown in the Contract Documents. Apply rust inhibitor coating on machined surfaces of the flange prior to shipment.

C. Valve Labeling

1. Furnish a label composed of 1/16-inch plastic or stainless steel, a minimum of 2 inches by 4 inches in size and permanently attached to the valve or on the wall adjacent to the valve as directed by the Engineer.

D. Valve Testing

1. Factory-test valves 4 inches in diameter and larger as follows:

a. Hydrostatic Testing

1) Subject valve bodies to an internal hydrostatic pressure equivalent to twice the water-rated pressure of the valve.

2) Metallic valves rating pressures shall be based at 100 degrees F.

3) Plastic valves rating pressures shall be based at 73 degrees F, or at a higher temperature according to material type.

4) During the hydrostatic test, there shall be no visible leakage through the valve body, end joints, or shaft seals, nor shall parts of the valve be permanently deformed.

5) Allow test duration of at least 10 minutes, in order to allow visual examination for leakage.

b. Seat Testing

1) Test the valves for leaks in the closed position, with the pressure differential across the seat equal to the water rated pressure of the valve.

2) Provide test duration of at least 10 minutes, in order to allow visual examination for leakage.

3) The leakage rate shall be the more stringent of the following:

a) As recommended by the reference standard for that type of valve; or

b) Leakage past the closed valve not to exceed one fluid ounce per hour per inch diameter for metal seated valves and drop-tight for resilient seated valves.

c. Performance Testing

1) Shop-operate the valves from the fully-closed to the fully-open position and reverse under no-flow conditions in order to demonstrate that the valve assembly operates properly.

E. Certification

1. Prior to shipment of valves with sizes larger than 12-inches in diameter, submit certified, notarized copies of the hydrostatic factory tests, showing compliance with the applicable standards of AWWA, ANSI, or ASTM.

F. Valve Markings

1. Permanently mark valve bodies in accordance with MSS SP-25 - Standard Marking Systems for Valves, Fittings, Flanges, and Unions.

2.2 VALVE CONSTRUCTION

A. Bodies

1. Provide valve bodies that are cast, molded (in the case of plastic valves), forged, or welded, of the materials indicated, and with smooth interior passages.

2. Provide wall thicknesses uniform and in agreement with the applicable standards for each type of valve, without casting defects, pinholes, and other defects that could weaken the body.

3. Perform welds on welded bodies by certified welders and ground welds smooth.

4. Provide valve ends as indicated and rated for the maximum temperature and pressure to which the valve will be subjected.

B. Valve End Connections

1. Provide valves 3 inches in diameter and larger with flanged end connections.

C. Bonnets

1. Connect valve bonnets to the body by clamping, screwing, or flanging.

2. Provide bonnets of the same material, temperature, and pressure rating as the body.

3. Make provisions for the stem seal with the necessary glands, packing nuts, and yokes.

D. Stems

1. Provide valve stems of the materials indicated, or, if not indicated, of the best commercially-available material for the specific service, with adjustable stem packing, O-rings, chevron V-type packing, or other suitable seal. Bronze materials in contact with potable water shall be NSF 61 approved and free of lead. Elastomeric materials shall be compatible with fluid service.

E. Stem Guides

1. Provide stem guides spaced with an L/R ratio not to exceed 200:1. Submit calculations for L/R ratios and guide spacing to the Engineer for review.

2. Stem guides shall have slotted holes and shall be adjustable in two directions.

3. Construct submerged stem guides from Type 316 stainless steel.

F. Internal Parts

1. Provide internal parts and valve trim as indicated for each individual valve.

2. Where not indicated, construct valve trim from Type 316 stainless steel or other material best-suited for the intended service.

2.3 ECCENTRIC PLUG VALVES (1/2-inch to 72-inches)

A. Construction: Eccentric plug valves shall be of the non-lubricated, eccentric plug design with cast iron bodies conforming to ASTM A 126 - Gray Iron Castings for Valves, Flanges, and Pipe Fittings, with ANSI 125 lb. flanged ends for valves 3-inches and larger, and screwed or flanged ends for smaller sizes. The plugs and shafts shall be of cast iron or ductile iron conforming to ASTM A 536 - Ductile Iron Castings, and the plugs shall be lined with a resilient coating, best

suited for the specific service. The body shall be lined with a suitable elastomer, where required for a special service, or it shall be epoxy-lined. The seats shall be of nickel or stainless steel welded to the body. Top and bottom shaft bearings shall be of permanently lubricated stainless steel or Teflon coated stainless steel. Grit seals of Teflon, Nylatron, or similar suitable material shall be at the top and bottom plug journals. Valves up to and including 20-inches in size shall have an unobstructed port area of not less than 80 percent of full pipe area, and not less than 70 percent for larger valves. Valves 24-inches and larger shall have an unobstructed port area of 100% of pipe area. Eccentric plug valves shall have a pressure rating of not less than 150 psi WOG, for bubble-tight shut-off in the standard flow direction, and 25 psi WOG in the reverse flow direction. When equipped with worm gear actuator, the pressure rating shall be 150 psi WOG in both directions. The stem seal shall consist of field adjustable packing, replaceable without removal of the actuator, or of self-adjusting U-cup packing.

B. Actuators: Unless otherwise indicated, eccentric plug valves 3-inches and smaller shall have operating levers; larger valves shall have worm-gear actuators. Valve actuators shall be in accordance with Section 40 05 57 – Actuators.

C. Manufacturers, or Equal

1. DeZurik Corporation
2. Clow Valve Company
3. Pratt Valve
4. Victaulic

2.4 SPARE PARTS

A. Furnish the required spare parts, suitably packaged and labeled with the valve name, location, and identification number.

B. Furnish the name, address, and telephone number of the nearest distributor for the spare parts of each valve.

C. Spare parts are intended for use by the Owner, after expiration of the correction of defects period.

2.5 MANUFACTURERS

A. Valve manufacturers shall have a successful record of not less than 5 years in the manufacture of the indicated valves.

PART 3 -- EXECUTION

3.1 INSTALLATION

A. Plug valves shall be installed in strict accordance with the manufacturer's published recommendations.

B. Eccentric Plug Valves: Unless otherwise directed, the following rules shall be observed for the installation of eccentric plug valves on sewage, sludge, or other liquid systems containing solids, silt, or fine sand:

1. The valves shall be positioned with the stem in the horizontal direction.

2. In horizontal pipelines, the plug shall swing upwards when opening, to permit flushing out of solids.

3. The orientation of the valve shall prevent the valve body from filling up with solids when closed; however, where the pressure differential through the valve exceeds 25 psi, the higher pressure for valves without worm gear, electric, or air operators shall be through the valve to force the plug against the seat.

4. Valves which may be closed for extended periods (stand-by, bypass, or drain lines) and valves with reversed flow (higher pressure on downstream side, forcing the plug away from its seat), shall be equipped with worm gear operators for the full range of sizes.

5. For special applications or when in doubt, consult with the manufacturer prior to installation.

C. Trial Operation

1. After installation, schedule trial operation witnessed by the Engineer and the Owner representative.

2. All valves shall be cleaned thoroughly of all foreign materials and final adjustments made. The valves shall then be operated through one complete cycle from a fully closed position to a fully open position and back to a fully closed position to verify that the assembly is functional.

3. A field leakage test meeting the maximum allowable specified requirement shall be conducted.

4. Test certificate shall be signed by the valve manufacturer and the Contractor and shall be submitted to the Engineer.

- END OF SECTION –

GULF SOUTH
ENGINEERING AND TESTING, INC.
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August 8, 2019

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Attn: Chris Sanchez, PE
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Re: Geotechnical Investigation Report
SFM Replacement
Horizontal Directional Drilling (HDD) – Lafitte Avenue
Galvez Street to Board Street
New Orleans, LA
Gulf South Engineering & Testing File No. 19-062

Dear Chris,

This letter presents the results of soil borings and engineering analyses performed for the subject project. The results of the field investigation, laboratory testing and engineering analyses for the project are attached.

INTRODUCTION

This letter contains the results of an investigation made at the subject site. Instructions to proceed with the investigation were received from Stantec (Client) via approval of our proposal dated February 27, 2018. The study included drilling soil test borings and the performance of soil mechanics laboratory tests to evaluate the soil stratigraphy along the proposed pipeline replacement alignment. Engineering analyses/design recommendations were requested for this investigation and were aimed at determining the maximum pressure for HDD installation per ASTM and maximum fluid pressure U.S. Army Corps of Engineers (USACE) guidelines for pipeline crossings.

SOIL BORINGS

Two (2) undisturbed soil borings (Borings B-1 and B-2) were each drilled to a depth of 30 feet below the ground/pavement surface of Lafitte Ave. on July 16, 2019. The borings were drilled with a truck mounted drilling rig at the designated locations, as approximately shown on Figure 1, attached to this letter.

Undisturbed sampling was performed continuously or on approximate 5 foot centers in all cohesive or semi-cohesive materials with a three inch diameter thin wall tube sampler. The samples were extruded in the field, representative portions of each sample were trimmed and placed in moisture proof containers, the samples were properly labeled, and secured for transport to the laboratory.

When cohesionless material was encountered or when soils could not be adequately sampled by undisturbed methods, the Standard Penetration Test was performed. This test consists of driving a two-inch diameter split spoon sampler a total of approximately 18 inches with a 140 lb. hammer falling 30 inches. The number of blows required to drive the sampler per 6 inch increment is recorded and gives an indication of the density of the material. The blows per foot shown on the boring log are the total of the blow counts for the final 12 inches of penetration.

LABORATORY TESTING

Soil mechanics laboratory tests were performed on samples obtained from the borings. The testing consisted of natural moisture content, Atterberg limits, grain size sieve testing, and unconfined, compression, strength testing. The results of the laboratory tests are shown on the soil boring logs are attached to this letter.

SUBSOIL CONDITIONS

Subsoil Description

Reference to the borings shows there is pavement sections consisting of 2

to 4 inches of asphalt over 4 inches of concrete pavement or over a sand base The sand soils below the pavement follow to the approximate 1 foot to 3 foot depths below the ground surface. Interbedded layers of very soft to medium stiff organic clay and clay follow the borings' termination depth of 30 feet.

Groundwater

At the time of making the borings, groundwater was first encountered at 6 feet to 8 feet below the ground surface. After a short period (15 minutes), a rise detected at 4 feet below the ground surface. These observations were made during a short period of time and groundwater may not have become fully realized at the time of observation. Groundwater can fluctuate with seasonal precipitation, drainage, and prolonged drought. If the depth to groundwater is important to construction, it should be measured at that time.

FURNISHED INFORMATION

We understand that an existing sewer force main (SFM) will be replaced along Lafitte Avenue, between Galvez Street and Broad Street, by installing an HDD pipeline (18 inches Outer Diameter; At least 10 feet below the existing ground surface).

METHODOLOGY

We have performed analyses to provide the maximum pressure om the pipe and the maximum hydraulic fracture pressure.

In general, the earth pressure against heave is calculated using a procedure to determine the earth pressures acting at the top of the pipe. The procedure is outlined in the appendix of ASTM F1962-11 and requires pipe or borehole dimensions in addition to soil parameters (i.e. soil density, overburden stress, coefficient of earth pressure, etc.)

The procedure for calculating the hydraulic fracture pressure is found in relevant portions of a USACE guideline (CELMN-ED-F; Section 5; 2010) for installing pipelines by nearsurface direction drilling under levees. These analyses apply a factor of safety (FOS) against hydraulic fracture of at least 2 and is based on the relationship of fracture pressure (Pf) to downhole mud pressure (Pm). The fracture pressure is comprised of the soil overburden stress and undrained shear strength.

CONCLUSION AND RECOMMENDATIONS

The results of our analyses are provided on Figure 2, attached to this letter.

As there are many variables that are required in planning a HDD project that are not yet available, we recommend that an experience HDD contractor be consulted for the project. A pressure meter may be placed behind the cutting head to assure that the maximum mud pressure is not exceeded during installation.

LIMITATIONS

The results of the geotechnical investigation do not guarantee or warrant that conditions away from the borehole locations will be the same as those encountered in the borings. Also, should the nature of the project change or should any of the stated assumptions be inaccurate, Gulf South should be notified for comment.

We appreciate the opportunity to serve your geotechnical needs for this project.

Sincerely,
GULF SOUTH ENGINEERING AND TESTING, INC.

CHAD M. POCHE, P.E.
Principal/Vice President

BLAKE E. VUTERA, P.E.
Engineering Manager

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GULF SOUTH
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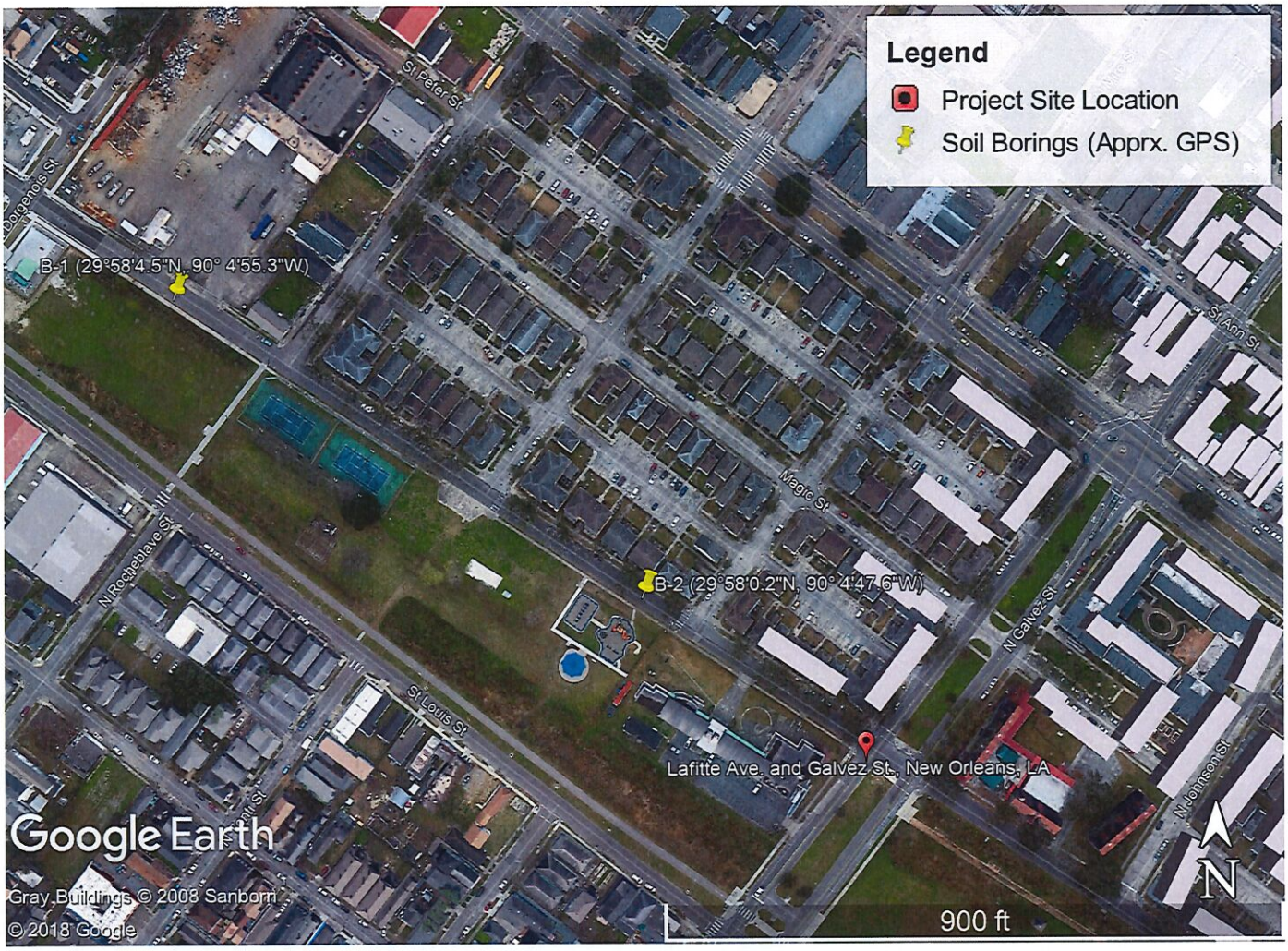
Geotechnical & Materials Consultants

ATTACHMENTS

- **FIGURE 1 – BORING PLAN**
- **FIGURE 2 –PRESSURE CALC. TABLE**
- **BORING LOGS B-1 & B-2**
- **ASTM PROCEDURE**
- **USACE PROCDURE**



Gulf South File 19-062	GULF SOUTH ENGINEERING AND TESTING, INC. Geotechnical & Materials Consultants	
SFM Replacement HDD-Lafitte Avenue Galvez to Broad New Orleans, LA	**For Stantec New Orleans, LA**	**BORING PLAN**
		Figure No. 1

Gulf South File No. 19-062

SFM Relocation
HDD - Lafitte Avenue
Galvez Street to Broad Street
New Orleans, LA

Boring Profile by Depth Below Ground Surface

Soil Layer Bot. Depth d, (ft.)	Wet Dens. γ ,(pcf)	Soil Strength C, (psf)	Overburden Per Layer OB_{lyr}, (psf)	Angle of Soil Fricition φ, (degrees)	Angle of Pipe-Soil Fricition δ ,(degrees)
4.0	80	250	320	0	0
8.0	111	425	444	0	0
13.0	81	200	405	0	0
18.0	86	300	430	0	0
23.0	80	225	400	0	0
30.0	103	345	721	0	0

Max. Earth Pressure
at Top of Pipe Against Heave Per ASTM F1962

Cover Depth, H, (ft. below ground surface)	Coeficent of Earth Pressure K, (-)	Arching Factor Kappa, (-)	Earth Pressure at Pipe, P_E, (psi)	Max. Pressure at Top of Pipe, P_{EV}, (psi)
10.0	1.00	0.99	7	7.0
15.0	1.00	0.99	10	9.8
20.0	1.00	0.99	13	12.6
25.0	1.00	0.99	17	17.2
30.0	1.00	0.98	19	18.6

Max. Downhole Mud Pressure
for Factor of Safety >= 2.0 against Hydraulic Fracture Per USACE's CELMN-ED-F (2010)

Pipe Depth D, (ft. below ground surface)	Total Overburden at Bottom EL OB, (psf)	Soil Strength at Bottom EL C, (psf)	Fracture Pressure Pf, (Overburden + Strength, psf)	Fracture Pressure Pf, (Overburden + Strength, psi)	Max. Mud Pressure for Min. Factor of Safety = 2.0 Pm, (psi)
10.0	1,007	200	1,207	8.4	4.2
15.0	1,427	300	1,727	12.0	6.0
20.0	1,839	225	2,064	14.3	7.2
25.0	2,514	345	2,859	19.9	9.9
30.0	2,720	345	3,065	21.3	10.6

Assumptions: Pipe/Borehole outer diameter 18.0 inches and values for H and D are equal

Boring No. B-1

Project: SFM Replacement
HDD - Lafitte Avenue
Location: Galvez Street to Broad Street
New Orleans, LA
Client: Stantec
New Orleans, LA

GSE&T File No.: 19-062
Date: 7/16/2019
Technician: V. Leco
Rig Type: Truck

Coord: 29° 58' 4.5"N, 90° 4' 55.3" W

Depth (Feet)	Sample	(Field Test) PP/ SPT	Comp. Strength (tsf)	Water Content (%)	Wet Density (pcf)	LL (%)	PI (%)	% Passing #200 Sv	TYPE	Description of Stratum
0		n/a								Approx. 4 inches ASPHALT over 4 inches CONCRETE pavement
		n/a		22.4				6.4		Brown SAND (SP/SC-FILL)
		n/a*		22.1				8.1		
		0.25 (PP)		38.0		153	105	55.1		Gray CLAY (CH) with sand layers, organic materials, trace gravel
5		0 b/f (PSS)		110.2		165	112	88.2		Very Soft gray ORGANIC CLAY (OH) with silt, peat pockets, wood
		0.25 (PP)		157.8						
		<0.25 (PP)	0.193	192.6	77					
10		0.50 (PP)	0.199	141.7	84					
		1.00 (PP)	0.275	133.6	86	129	82			Soft gray and black ORGANIC CLAY (OH) with wood/root
15										
		0.50 (PP)	0.332	58.6	109			98.7		Soft gray CLAY (CH) with silt, sand seams
20										
		1.00 (PP)	0.325	51.1	106					
25										
		0.50 (PP)	0.425	57.30	104					
30										Boring completed to 30 feet below ground surface
35										
40										

Sample Legend:

- Core (Shelby Tube)
- Standard Penetration (SPT)
- No Recovery
- Auger Sample

Comments/Notes:

- Borehole backfilled per LA DOTD & LA DEQ requirements upon completion
- D.A. / R.W. Depths = 0-10 ft. / 10-30 ft.
- Ground Water = Encountered at 6 ft. b.g.s.. After waiting approx. 15 minutes, groundwater rise detect to 4 ft. b.g.s..

*- Encountered refusal at apprx. 4 ft. b.g.s.; Borehole offset 5 feet and redrilled

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Boring No. B-2

Project: SFM Replacement
HDD - Lafitte Avenue
Location: Galvez Street to Broad Street
New Orleans, LA
Client: Stantec
New Orleans, LA

GSE&T File No.: 19-062
Date: 7/16/2019
Technician: V. Leco
Rig Type: Truck
Page: 1 of 1

Coord: 29° 58' 0.2"N, 90° 4' 47.6" W

Depth (Feet)	Sample	(Field Test) PP/ SPT	Comp. Strength (tsf)	Water Content (%)	Wet Density (pcf)	LL (%)	PI (%)	% Passing #200 Sv	TYPE	Description of Stratum
0		n/a								Approx. 4 inches ASPHALT pavement over sand base
		1.00 (PP)	0.588	50.3	104					Medium stiff gray CLAY (CH)
		1.00 (PP)	0.438	40.3	112	77	28			Soft gray CLAY (CH) with silt trace roots
5		0.75 (PP)	0.402	40.2	117					
		0.50 (PP)	0.440	37.0	116	53	30			Soft gray CLAY with silt layers
		0.75 (PP)	0.409	62.9	101	86	59			Soft gray CLAY with trace wood
10		1.00 (PP)	0.260	55.7	108					
		1.00 (PP)	0.541	175.9	80					Medium Stiff gray ORGANIC CLAY (OH) with trace wood
15										
		1.00 (PP)	0.261	53.2	104			86.5		Soft gray CLAY (CH) with sand pockets
20										
		0.25 (PP)	0.332	66.0	100					
25										
		0.50 (PP)	0.343	58.8	104					with trace silt seams
30										Boring completed to 30 feet below ground surface
35										
40										

Sample Legend:

- Core (Shelby Tube)
- Standard Penetration (SPT)
- No Recovery
- Auger Sample

Comments/Notes:

- Borehole backfilled per LA DOTD & LA DEQ requirements upon completion
- Dry Auger Depths = 0-10 ft.
- Rotary Wash Depths =10-30 ft.
- Ground Water = Encountered at 8 ft. b.g.s.. After waiting approx. 15 minutes, groundwater rise detect to 4 ft. b.g.s..

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Geotechnical & Materials Consultants

This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: F1962 – 11

Standard Guide for Use of Maxi-Horizontal Directional Drilling for Placement of Polyethylene Pipe or Conduit Under Obstacles, Including River Crossings[1]

This standard is issued under the fixed designation F1962; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This guide describes the design, selection considerations, and installation procedures for the placement of polyethylene pipe or conduit below ground using maxi-horizontal directional drilling equipment. The pipes or conduits may be used for various applications including telecommunications, electric power, natural gas, petroleum, water lines, sewer lines, or other fluid transport.

1.2 Horizontal directional drilling is a form of trenchless technology. The equipment and procedures are intended to minimize surface damage, restoration requirements, and disruption of vehicular or maritime traffic with little or no interruption of other existing lines or services. Mini-horizontal directional drilling (min-HDD) is typically used for the relatively shorter distances and smaller diameter pipes associated with local utility distribution lines. In comparison, maxi-horizontal directional drilling (maxi-HDD) is typically used for longer distances and larger diameter pipes common in major river crossings. Applications that are intermediate to the mini-HDD or maxi-HDD categories may utilize appropriate "medi" equipment of intermediate size and capabilities. In such cases, the design guidelines and installation practices would follow those described for the mini- or maxi-HDD categories, as judged to be most suitable for each situation.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of the regulatory limitations prior to use.* Section 6 contains general safety information related to the use of maxi-horizontal directional drilling equipment.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D420 Guide to Site Characterization for Engineering Design and Construction Purposes (Withdrawn 2011)[3]

D422 Test Method for Particle-Size Analysis of Soils

D1586 Test Method for Penetration Test (SPT) and Split-Barrel Sampling of Soils

D1587 Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes

D2113 Practice for Rock Core Drilling and Sampling of Rock for Site Exploration

D2166 Test Method for Unconfined Compressive Strength of Cohesive Soil

D2435 Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading

D2447 Specification for Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on Outside Diameter (Withdrawn 2010)[3]

D2513 Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing, and Fittings

D2850 Test Method for Unconsolidated-Undrained Triaxial Compression Test on Cohesive Soils

D3035 Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter

D4186 Test Method for One-Dimensional Consolidation Properties of Saturated Cohesive Soils Using Controlled-Strain Loading

D4220 Practices for Preserving and Transporting Soil Samples

D4318 Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

D4767 Test Method for Consolidated Undrained Triaxial Compression Test for Cohesive Soils

[1] This guide is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.67 on Trenchless Plastic Pipeline Technology.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] The last approved version of this historical standard is referenced on www.astm.org.

*A Summary of Changes section appears at the end of this standard

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D5084 Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter

F714 Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter

F1804 Practice for Determining Allowable Tensile Load for Polyethylene (PE) Gas Pipe During Pull-In Installation

F2620 Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings

2.2 *Other Standards:*

ANSI Preferred Number Series 10

ANSI/EIA/TIA-590 Standard for Physical Location and Protection of Below-Ground Fiber Optic Cable Plant[4]

OSHA-3075 Controlling Electrical Hazards[5]

TR-NWT-000356 Generic Requirements for Optical Cable Innerduct[6]

3. Terminology

3.1 *Definitions:*

3.1.1 *horizontal directional drilling, HDD, n*—a technique for installing pipes or utility lines below ground using a surface-mounted drill rig that launches and places a drill string at a shallow angle to the surface and has tracking and steering capabilities.

3.1.1.1 *Discussion*—The drill string creates a pilot bore hole in an essentially horizontal path or shallow arc which may subsequently be enlarged to a larger diameter during a secondary operation which typically includes reaming and then pullback of the pipe or utility line. Tracking of the initial bore path is accomplished by a manually operated overhead receiver or a remote tracking system. Steering is achieved by controlling the orientation of the drill head which has a directional bias and pushing the drill string forward with the drill head oriented in the direction desired. Continuous rotation of the drill string allows the drill head to bore a straight path. The procedure uses fluid jet or mechanical cutting, or both, with a low, controlled volume of drilling fluid flow to minimize the creation of voids during the initial boring or backreaming operations. The drilling fluid helps stabilize the bore hole, remove cuttings, provide lubricant for the drill string and plastic pipe, and cool the drill head. The resultant slurry surrounds the pipe, typically filling the annulus between the pipe and the bored cavity.

3.1.2 *maxi-horizontal directional drilling, maxi-HDD, n*—a class of HDD, sometimes referred to as directional drilling, for boring holes of up to several thousand feet in length and placing pipes of up to 48 in. (1¼ m) diameter or greater at depths up to 200 ft (60 m).

3.1.2.1 *Discussion*—Maxi-HDD is appropriate for placing pipes under large rivers or other large obstacles (Fig. 1). Tracking information is provided remotely to the operator of the drill rig by sensors located towards the leading end of the drill string. Cutting of the pilot hole and expansion of the hole is typically accomplished with a bit or reamer attached to the drill pipe, which is rotated and pulled by the drilling rig.

3.1.3 *mini-horizontal directional drilling, mini-HDD, n*—a class of HDD, sometimes referred to as guided boring, for boring holes of up to several hundred feet in length and placing pipes of typically 12 in. (300 mm) or less nominal diameter at depths typically less than 25 ft (7 m).

3.1.3.1 *Discussion*—Polyethylene pipe selection and usage for mini-HDD is discussed extensively in the Plastics Pipe Institute's (PPI) TR-46, "Guidelines for Use of Mini-Horizontal Directional Drilling for Placement of High Density Polyethylene Pipe." (1)[7]

3.1.3.2 *Discussion*—Mini-HDD is appropriate for placing local distribution lines (including service lines or laterals) beneath local streets, private property, and along right-of-ways. The creation of the pilot bore hole and the reaming operations are typically accomplished by fluid jet cutting or the cutting torque provided by rotating the drill string, although mud motors powered by the drilling fluid are sometimes used for hard or rocky soil conditions. The use of such mud motors would only be applicable for the larger mini-HDD machines. The locating and tracking systems typically require a manually operated overhead receiver to follow the progress of the initial pilot bore. The receiver is placed above the general vicinity of the drill head to allow a determination of its precise location

[4] Available from the Electronics Industries Association, 2001 Pennsylvania Ave., N.W., Washington, DC, 20006.

[5] Available from the Occupational Health and Safety Administration, 200 Constitution Ave. N.W. Washington, DC 20210.

[6] Available from Bellcore, 60 New England Ave., Room 1B252, Piscataway, NJ, 08854-4196.

[7] The boldface numbers in parentheses refer to the list of references at the end of this standard.

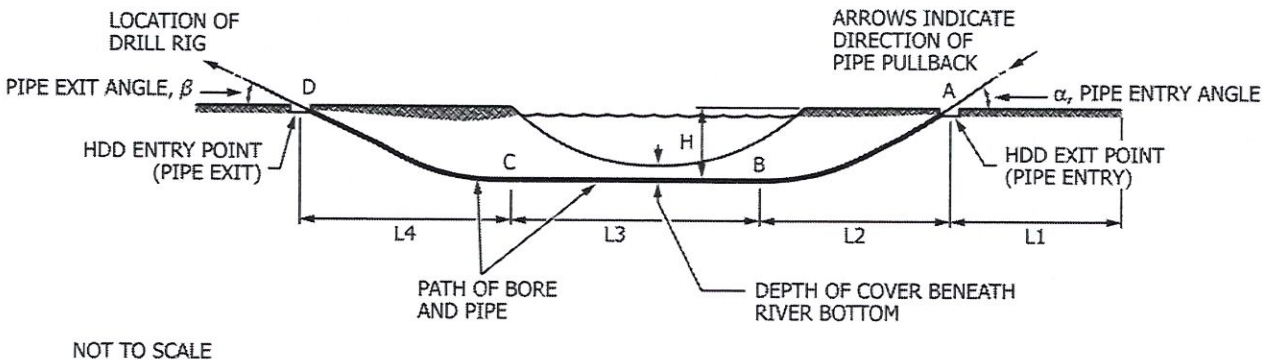

FIG. 1 Maxi-HDD for Obstacle (for example, River) Crossing

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and depth, indicate drill head orientation for determining steering information to be implemented from the drill rig.

3.1.4 *pipe dimension ratio, DR, n*—the average specified diameter of a pipe divided by the minimum specified wall thickness.

3.1.4.1 *Discussion*—For pipes manufactured to a controlled outside diameter (OD), the DR is the ratio of pipe outer diameter to minimum wall thickness. The standard dimension ratio (SDR) is a specific ratio of the outside diameter to the minimum wall thickness as specified by ANSI Preferred Number Series 10.

NOTE 1—Lower DR values correspond to thicker, stronger pipes.

4. Preliminary Site Investigation

4.1 *General Considerations*—A maxi-HDD project, such as that associated with a river crossing, is a major event that will require extensive and thorough surface and subsurface investigations. Qualified geotechnical engineers should perform the work for the owner in preparation for planning and designing of the bore route. The information should also be provided to the potential contractors to provide guidance for the bidding stage and subsequent installation. The contractor may perform additional investigations, as desired. Since typical maxi-HDD projects represent river crossings, the following procedures are described in terms of the specific investigations and issues arising in such cases. The general procedures, however, may be appropriately interpreted to also apply to non-river crossings, such as under land-based obstacles including highways, railways, etc.

4.2 *Surface Investigation* **(2, 3)**

4.2.1 *Topographic Survey*—A survey should be conducted to accurately define the working areas described in 4.1 for the proposed crossing site. Horizontal and vertical references must be established for referencing hydrographic and geotechnical data. The survey should typically include overbank profiles on the anticipated path center-line, extending about 150 ft (75 m) landward of the bore entry point to the length of the (pre-fabricated) pull section landward of the bore exit point. The survey information should be related to topographical features in the vicinity of the proposed crossing. Existing topographical information may be available from the U.S. Geological Survey, or Federal, state, or county publications. Aerial photographs or ordnance surveys may be useful, especially for crossing land-based obstacles in urban areas, since these may indicate the presence of demolished buildings and the possibility of old foundations, as well any filled areas (4). It is also necessary to check available utility records to help identify the precise location of existing below-ground facilities in the vicinity, including electric power, natural gas, petroleum, water, sewer, or telecommunications lines. The presence of existing pipelines, support pilings, etc., containing significant steel mass should be noted since this may cause interference with magnetically sensitive equipment guidance or location instrumentation.

4.2.1.1 *Drill Rig (Bore Entry) Side*—The available area required on the side of the drill rig must be sufficient for the rig itself and its ancillary equipment. In general, the size of the required area on the rig side will depend upon the magnitude of the operation, including length of bore and diameter of pipe to be placed. Typically, a temporary workspace of approximately 150 ft (45 m) width by 250 ft (75 m) length will be sufficient. These dimensions may vary from 100 by 150 ft (30 by 45 m) for shorter crossings of 1000 ft (300 m) or less, to 200 by 300 ft (60 by 90 m) for medium or long crossings.

4.2.1.2 *Water Supply*—Water storage and facilities for mixing, storing, and pumping drilling fluid will require significant space. Although it is standard practice to draw fresh water found at the location for mixing the drilling fluid, alternate water supplies may be required to obtain proper drilling fluid characteristics. Hard or salty water is undesirable, although additives may be used to create the proper pH value. It may be necessary to provide access for trucks to transport water or to provide for the installation of a relatively long surface pipe or hose connecting a remote hydrant.

4.2.1.3 *Pipe (Bore Exit) Side*—Assuming the pipe to be placed is too large a diameter to be supplied on a reel (for example, larger than 6 in. (150 mm)), sufficient space is required at the side opposite that of the drill rig, where the bore will exit and the pipe be inserted, to accommodate a continuous straight length of pre-fabricated pipe. The space for the straight length will begin approximately 50 to 100 ft (15 to 30 m) from the anticipated bore exit and extend straight landward at a width of 35 to 50 ft (10 to 15 m), depending upon the pipe diameter. In the immediate vicinity of the bore exit (pipe entry), an area of typically 50 ft (15 m) width by 100 ft (30 m) length is required; for relatively large diameter pipes (larger than 24 in. (600 mm), or in cases of difficult soil conditions, an area of 100 ft (30 m) width by 150 ft (45 m) length should be provided.

4.2.2 *Hydrographic/Potamological Survey*—For crossing significant waterways, a survey should be conducted to accurately describe the bottom contours and river stability to establish suitability for the design life of the pipeline. Typically, depths should be established along the anticipated center-line, and approximately 200 ft (60 m) upstream and downstream; closer readings may be required if it is necessary to monitor future river activity. Consideration should be given to future changes in river bank terrain. Washouts, bank migrations, or scour can expose pipe.

4.2.3 *Drilling Fluid Disposal*—The means for disposal of the drilling fluid wastes must be considered. The volume of drilling fluid used will depend upon the soil characteristics but is typically on the order of 1 to 3 times the volume of removed soil. Most drilling fluids use bentonite or polymer additives which are not generally considered to be hazardous. However, local regulations should be followed regarding disposal.

4.2.3.1 *Drilling Fluid Recirculation* —Occasionally, drilling fluid recirculation is used to reduce overall material and disposal costs. If drilling fluid recirculation is contemplated, a means must be considered for transporting any fluid exhausted from the opposite (bore exit) side, during the pullback operation, to the rig side. This may be accomplished by truck, barge, or a temporary recirculation pipe line on the bottom of the waterway (for river-crossings). The recirculation line must be adequate to prevent accidental discharge into the waterway.

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4.3 *Subsurface Investigation*—The overall technical and economic feasibility of the maxi-HDD process is highly dependent upon the properties of the soil formation through which the penetration will be accomplished. Thus, an accurate and thorough geotechnical investigation must be performed by a qualified engineer, including review of existing information and site specific studies for the proposed location. This information will be used to produce design drawings (including final bore route, pipe design, and bore design), construction specifications, and permit applications as well as to provide information for the contractors upon which to select appropriate tools and methods for the actual construction. While the guidelines given in the following sections point out general procedures or types of information, or both, which could be developed, unforeseeable site-specific variables make the thoroughness and accuracy of any site characterization study directly dependent on the skill, experience, and inquisitiveness of the investigating engineer. Therefore, the investigator should define the configuration, extent, and constituency of the investigation. Site characterization information must go beyond just defining soil conditions along the bore path to include a forecast of future conditions (that is, river meanders and scours) and to anticipate the affect of the maxi-HDD process on site conditions.

4.3.1 *Preliminary Study*—The subsurface investigation should begin with a review of existing data such as may be obtained from published soil reports (for example, Soil Conservation Service Report, U.S. Geological Survey, U.S. Army Corps of Engineers reports, etc.) or records from previous construction projects. In particular, data from nearby pipe or cable river-crossings, or bridge foundation construction should be examined. The results of this study will be used to define the initially recommended bore penetration profile path.

4.3.2 *Test Borings* **(2,3,5)**—Site-specific data must be obtained to fully characterize and verify the conditions through which the proposed bore path will be created. Refer to Guide D420, Test Method D1586, Test Method D1587, Test Method D2113 and Practice D4220. Data collection should be aimed at identifying earth materials at the site and at exploring subsurface stratification (including identification of the boundary between rock and other strata, presence of cobbles or boulders and other anomalies such as old tree stumps and fill debris). The location, depth, and number of borings should be determined by the engineer based on the preliminary study, anticipated future changes in site conditions (river meanders, scours, etc.), and modifications of soil conditions during construction. These borings should be located at a sufficient lateral distance (to either side) from the proposed bore path to avoid boring into the test hole, and the holes should be sealed with grouting to avoid potential leakage paths for drilling fluid during the actual installation. Following completion of the detailed route design (Section 7), additional test borings may be desirable at critical points such as bends.

NOTE 2—In environmentally sensitive areas, possible restrictions may exist on the location or number of test borings.

4.3.3 In addition to test borings, dynamic cone testing or developing non-intrusive techniques such as ground penetrating radar or sonar may be used to identify stratification and areas with anomalies. Such probing techniques may be applied in the proximity of known conditions determined by a boring to obtain proper calibration, and then extended towards untested areas at relatively close intervals to identify irregularities between borings. If needed, additional borings may then be made at intermediate points of interest **(4,5)**.

4.3.4 *Soil Analysis* **(3,6,7)**—The geotechnical study should evaluate several parameters, including soil classifications, (Refer to Test Methods D4318 and D422.) strength and deformation properties, (Refer to Test Methods D1586, D2166, D2435, D2850, D4186, and D4767.) and groundwater table behavior. (Refer to Test Method D5084.) Although some field evaluation and in-situ testing should be included, the geotechnical investigation should emphasize laboratory testing in order to obtain more accurate and meaningful quantitative results. If rock is encountered, the borings should penetrate sufficiently to verify whether or not it is bedrock. The relevant soil testing methods listed in Section 2 should be followed. In general, the following specific data should be obtained from the borings:

4.3.4.1 Standard classification of soils, (Refer to Test Method D4318),

4.3.4.2 Gradation curves for granular soils, as described in Test Method D422,

4.3.4.3 Standard penetration test values, as described in Test Method D1586,

4.3.4.4 Cored samples of rock with rock quality designation (RQD) and percent recovery,

4.3.4.5 Unconfined compressive strength, as described in Test Method D2166,

4.3.4.6 Moh's hardness for rock samples,

4.3.4.7 Possible contamination (hazardous waste),

4.3.4.8 Groundwater location, type, and behavior, and

4.3.4.9 Electrical resistivity or mineralogical constituents.

4.3.5 For river crossings, the results from the preliminary study and site specific tests should be combined in a comprehensive report describing the geotechnical subsurface conditions beneath the river bottom plus the stream's potential for meandering and scouring. The results must then be considered by the owner, the engineer, and potential contractors, with regard to compatibility with the state-of-the-art of directional drilling technology for cost-effectively completing the task. If necessary, the crossing location may be altered to a more favorable crossing site. In this case, many of the surface and subsurface investigations may have to be repeated for the new proposed crossing location and bore path.

4.3.6 *Feasibility*—Soil conditions are a major factor affecting the feasibility and cost of using maxi-HDD in a given geographic area. Table 1 indicates the suitability of horizontal directional drilling as a function of the general characteristics of the soil conditions in the area and depths of interest **(4,6)**. The "generally suitable" category presumes knowledgeable, experienced contractors or personnel using appropriate equipment. Such contractors are assumed to have a minimum of one year field experience and completed approximately 30 000 ft (10 km) of construction in related projects. The size and type machines considered appropriate for particular installations are a function of bore length, final hole diameter, and soil conditions. Various type drill heads, mud motors, reamers, and

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TABLE 1 Soil Conditions and Suitability of Horizontal Directional Drilling[A]

Soil Conditions	Generally Suitable	Difficulties May Occur	Substantial Problems
Soft to very soft clays, silts, and organic deposits		X	
Medium to very stiff clays and silts	X		
Hard clays and highly weathered shales	X		
Very loose to loose sands above and below the water table (not more than 30 % gravel by weight)		X	
Medium to dense sands above or below the water table (not more than 30 % gravel by weight)	X		
Very loose to dense gravelly sand, (30 % to 50 % gravel by weight)		X	
Very loose to dense gravelly sand (50 % to 85 % gravel by weight)			X
Very loose to very dense gravel			X
Soils with significant cobbles, boulders, and obstructions			X
Weathered rocks, marls, chalks, and firmly cemented soils	X		
Slightly weathered to unweathered rocks		X	

[A]For additional information, see Ref. **(6)**.

drilling fluid capabilities are available for various ground conditions. The conditions under which "difficulties may occur" may require modifications of routine procedures or equipment, such as the use of special purpose drill heads or optimized drilling fluids. Some cases will entail "substantial problems" and may not be economically feasible for directional drilling using present technology. The potential for problems to occur increases with the presence of gravels, boulders, or cobbles or with transitions from non-lithified material into solid rock. In such cases, other drilling locations or construction alternatives should be considered unless special circumstances dictate the need for directional drilling at the present location, even at high costs associated with special rock drilling techniques, etc.

5. Safety and Environmental Considerations

5.1 *General Considerations*—Injury to personnel may result from the mechanical and hydraulic machine operations directly related to the drilling operation or from striking of electric power lines or buried pipelines. In addition, the scale of maxi-HDD operations may involve additional equipment and accessories required for the lifting and handling of heavy drill rods, drill heads, reamers, etc., as well as the product pipe or conduit. Additional precautions relating to specific auxiliary equipment must be followed, but is beyond the scope of this standard. Non-essential personnel and bystanders should not be allowed in the immediate vicinity of the maxi-HDD equipment. Barriers and warnings should be placed a minimum of 30 ft (10 m) from the edge of the equipment or associated hardware. Safety precautions are to be followed by all personnel and at both ends of the bore path. Inadvertent contact with electric power, natural gas, or petroleum lines may result in hazards to personnel or contamination. If possible, any in-service pipeline in the proximity of the bore should be de-activated during the construction. In general, the possibility of injury or environmental impact caused by damage to working or powered subsurface facilities or pipelines during the initial boring or backreaming operations is reduced by appropriate adherence to regulations and damage prevention procedures, as outlined in Section 6.

5.2 *Work Clothing*—**Caution:** Loose clothing or jewelry should not be worn since they may snag on moving mechanical parts. Safety glasses or OSHA approved goggles, or both, and OSHA approved head gear should be worn at all times. Protective work shoes and gloves must be worn by all personnel.

5.3 *Machine Safety Practices*—Contractors must comply with all applicable OSHA, state, and local regulations, and accepted industry practices. All personnel in the vicinity of the drill rig or at the opposite end of the bore must be properly trained and educated regarding the potential hazards associated with the maxi-HDD equipment. For electrical hazards, see OSHA 3075. Personnel shall be knowledgeable of safe operating procedures, safety equipment, and proper precautions. Courses and seminars are available in the industry, including training provided by the equipment suppliers.

5.3.1 The operation of the drill rig requires rotation and advancement or retraction of the drill rods. Drill rig operation is typically accomplished using chain drives, gear systems, and vises which may potentially lead to personal injury due to the moving mechanical components. All safety shields or guards must be properly mounted. The equipment must be checked at the beginning of each work day to verify proper operation.

5.3.2 *Hydraulic Fluid*—The hydraulic oil lines powering the drill rig operate under pressures of several thousand psi (hundreds of bars). The hoses and connectors must be properly maintained to avoid leaks.

5.3.2.1 *Caution:* If a leak is suspected, it should be checked by using a piece of cardboard or other object, but not hands or any other part of the body. The high pressure hydraulic fluid can penetrate the skin, burn, or cause blood poisoning. Before disconnecting any hydraulic lines, the system pressure should be relieved.

5.3.3 *Drilling Fluid*—Drilling fluid pressures will vary depending upon the equipment design and operator preference; pressures of several thousand psi (hundreds of bars) are possible. The hoses and connections must be properly maintained to avoid leaks.

5.3.3.1 *Caution:* Suspected leaks should be checked by using a piece of cardboard or other object. Avoid the use of hands or any other part of the body to check for a leak. Before individual drill rods are inserted or removed from the drill string, it must be verified that the drilling fluid pressure has been shut off and allowed to decrease; otherwise, high pressure fluid will squirt from the joint and possibly cause injury to

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personnel. The drilling fluid pressure gage must be checked to verify the pressure has been relieved before disconnecting any rods.

NOTE 3—If the pressure does not decrease in a short interval following pressure shut off, the fluid jet openings at the drill head may be clogged. Special care must then be made when disconnecting the rod. It may be necessary to retract the drill string or expose the drill head to clear the jets before continuing the operation. To avoid injury from the drill head and drilling fluid, all personnel should maintain a safe distance from the exit point of the bore as the drill head surfaces. The pressure should be shut off as soon as the drill head exits.

5.4 *Construction Effects on Site*—It is assumed that the preliminary site investigations included analyses to verify the stability of embankments, roads, or other major features to be traversed. It is necessary to ensure that the maxi-HDD operation will not negatively impact the site upon completion. In many cases, it will be appropriate to use grouting to seal the final bore path hole or the end portions of the hole following the installation of the pipe to prevent future flow or environmental contamination. Particularly sensitive areas include statutorily designated areas, such as wetlands, natural and scenic waterways, or contaminated or waste disposal sites. If the bore will pass through, or in close proximity to, a contaminated area, special spoils monitoring and disposal procedures must be followed, consistent with applicable Federal, state, or local regulations.

5.4.1 *Drilling Fluid*—The most common drilling fluid additive is bentonite, a naturally occurring clay. When added to water, the resulting fluid provides desired properties including viscosity, low density, and lubricity. The bentonite material used should be National Sanitation Foundation (NSF) certified. Disposal should be in accordance with local laws and regulations. The bentonite-water slurry is not a hazardous material unless it becomes mixed with toxic pollutants. The waste material is usually considered as typical excavation spoils and can be disposed or by means similar to other spoils. If other additives are of concern or hazardous material disposal is required, it may be necessary to de-water the spoils, transport the solids to an appropriate disposal site, and treat the water to meet disposal requirements.

5.4.2 The utility access pits which may be present at both ends of the bore are convenient receptacles for collecting used drilling fluid. If not present for utility access, small pits should be provided at both ends to serve as such receptacles. Depending upon soil permeability, the pits may be lined with an appropriate material or membrane. The pits should be emptied as necessary. Some maxi-HDD systems use drilling fluid recirculating systems to reduce the volume of spoils. If the geotechnical investigation revealed the existence of soil conditions conductive to fluid migration, such as through pre-fractures in surrounding clay or soil mass permeability, this condition must be anticipated and accounted for in the drilling operation.

6. Regulations and Damage Prevention

6.1 *General Considerations*—The owner of the proposed pipeline should obtain any required drilling permits and is responsible for obtaining approvals from the Federal, state, or local jurisdictions or other agencies that may be affected by the work. The preliminary investigations (Section 4) should identify appropriate site locations and paths, including safe separations from other facilities such as electric power, natural gas, or petroleum lines. If the constraints for a particular maxi-HDD bore are such as to be in the vicinity of known facilities, the affected owners must be contacted and strict procedures for location and marking followed. If a maxi-HDD bore interconnects points under the jurisdiction of several states or governing bodies, then the regulations of all parties must be considered, including relevant permits. Special restrictions may exist, including restoration regulations, in environmentally sensitive habitat areas.

6.2 *Environmental, Health, and Safety Plan*—When required, each contractor that will work on the project must submit an environmental, health, and safety plan. Items to consider are the responsibilities of the plan, reporting, employee training, MSDS sheets for materials being used, emergency telephone numbers for police, fire department, and medical assistance, fire prevention, sanitation, and industrial hygiene.

6.3 *Environmental and Archaeological Impact Study*—Most projects using maxi-HDD will require procurement of various environmental permits. When an environmental permitting plan must be prepared, it should include a list of required permits (for example, USAE, USEPA), the time needed to prepare permits, and an estimated date of issuance. Items to consider are solid and hazardous materials and waste management, wetlands, burial grounds, land use, air pollution, noise, water supply and discharge, traffic control and river and railroad transportation.

6.4 *Waterways* (see ANSI/EIA/TIA-590)—The U.S. Army Corps of Engineers (USAE) regulates activities involving interstate bodies of water, including marshes and tributaries, as well as intrastate waters which could affect interstate or foreign commerce. The organization is responsible for work affecting such waterways, including to the headwaters of freshwater streams, wetlands, swamps and lakes. The Regional District Engineer of the USAE will advise applicants of the types of permits required for such proposed projects. In addition, a state or local, or both, agency environmental review and permit may be required.

6.5 *Railroad Crossings* (see ANSI/EIA/TIA-590)—The chief engineer of the railroad should be consulted for the approved methods of crossing the railroad line. For spur tracks or sidings, the tract owner should be consulted. Railroads normally require cased pipes at crossings to prevent track washouts or damage in the event of pipeline rupture. (At the time of writing of this standard, an American Railway Engineering Association (AREA) committee is studying the use of HDD for uncased and cased crossing of railroads for both plastic and steel gas pipelines.)

7. Bore Path Layout and Design

7.1 *General Considerations*—For maxi-HDD projects, such as river crossings, the bore path should be designed and specified by the engineer representing the owner prior to the contractor bidding process. Based upon the preliminary surface

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and subsurface investigations, the path will be selected to place the pipe within stable ground and isolated from river activities for the design life of the utility line. The ground through which the path will traverse must be compatible with maxi-HDD technology. In general, for maxi-HDD projects, the design path will lie within a vertical plane. If necessary, lateral curvature is possible, consistent with the capabilities of the equipment and the product pipe. The path should be clearly designated in an integrated report summarizing the results of the surface and subsurface investigations, and should be used for pricing, planning, and executing the operation.

7.2 *Steering and Drill Rod Constraints*—The planned path must be consistent with the steering capability of the drill string and the allowable radius of curvature of the steel drill rods based upon the corresponding bending stresses in the steel rods and joints. Although some soil conditions will inhibit sharp steering maneuvers, path limitations will often be based upon fatigue strength considerations of the rods. A given rod may be able to withstand a single bend cycle corresponding to a relatively sharp radius of curvature, but the rotation of the rod during the boring operation results in flexural cycles which may eventually cause cumulative fatigue failure. The diameter of the drill rod is an important parameter affecting its stiffness, steering capability, and the allowable bend radii. A conservative industry guideline indicates the minimum bend radius should be approximately:

$$(R_{rod})_{min} = 1200\, D_{rod} \quad (1)$$

where:

$(R_{rod})_{min}$ = medium recommended bend radius of drill rod, in. (mm), and
D_{rod} = nominal diameter of drill rod, in. (mm).

This applies to bends in horizontal (plan) or vertical (profile) planes.

7.3 The proposed path should avoid unnecessary bends. Such trajectories may be difficult to follow and may lead to oversteering and excessive bends, resulting in increased stresses in the drill rods and greater required pulling forces during the installation of the pipe. The local radius of curvature of the path at any point may be estimated by:

$$R = \frac{\Delta S}{\Delta \varphi} \quad (2)$$

where:

R = local radius of curvature along path segment, ft (m),
ΔS = distance along path, ft (m), and
$\Delta \varphi$ = angular change in direction, rad.

NOTE 4—The angle in radians is equal to the angle in degrees × 0.0175. (One radian equals 57.3°.)

Thus, if ΔS is selected to be equal to 30 ft (10 m) (for example, one rod length for some maxi-HDD machines) a change of 0.1 rad (6°) corresponds to a radius of curvature of 300 ft (100 m).

7.4 *Bore Paths Profile (Vertical Plane) Trajectory* **(2,3)** —A typical obstacle crossing, such as that represented by a river is illustrated in Fig. 1.

7.4.1 The following parameters must be specified in defining the bore path:

7.4.1.1 Bore entry (pipe exit) point,
7.4.1.2 Bore exit (pipe entry) point,
7.4.1.3 Bore entry (pipe exit) angle,
7.4.1.4 Bore exit (pipe entry) angle,
7.4.1.5 Depth of path, (for example, depth of cover of pipe beneath river bottom), and
7.4.1.6 Path curvatures.

7.4.2 *Bore Entry (Pipe Exit)*—The bore entry point must be accurately specified consistent with the pipe route, equipment requirements, and preliminary topographical investigations. Bore entry angles should be in the range of 8 to 20° (0.15 to 0.35 rad) from the ground surface, preferably 12 to 15° (0.20 to 0.25 rad) from the ground surface. These angles are compatible with typical equipment capabilities.

7.4.3 *Bore Exit (Pipe Entry)*—The bore exit point must also be accurately specified consistent with the pipe length and topographical investigations. Bore exit angles should be relatively shallow, preferably less than 10° (0.15 rad). A shallow angle will facilitate the insertion of the pipe into the bore hole while maintaining the minimum radius of curvature requirements. Relatively steep angles will require greater elevation of the pipe to maintain the required bend radii.

7.4.4 *Path Profile*—The proposed path should optimally lay within a vertical plane including the bore entry and exit points. The arcs of the bore path and straight sections (that is, after achieving desired depth) must be defined, including the radii of curvature and approximate points of tangency of curved and straight segments. The curvatures must be compatible with both the steel drill rods (Eq 1) and the PE pipe or conduit (Section 8). It should be noted that even larger bend radii (lower curvatures) will further reduce lateral flexural bending loads on the pipe and drill rods as they traverse the route, thereby helping avoid additional increases in tensile loads associated with their stiffness effects. Typically, the path should ensure a minimum depth of cover of 15 ft (5 m) beneath the river bottom as projected over the design life of the pipe line, including allowance for scouring **(3,5)**. This will overcome buoyancy effects and help overcome the tendency for the drill head to rise towards the free surface, thereby complicating the steering operation.

NOTE 5—The Directional Crossing Contractors Associations (DCCA) **(8)** recommends a minimum depth of 20 ft beneath the river bottom.

7.4.4.1 *Average Radius of Curvature* —The average radius of curvature for a path segment (that is, A-B or C-D in Fig. 1) reaching to or from a depth required to pass beneath an obstacle, may be estimated from the bore exit or entry angle, respectively, and the depth of the bore:

$$R_{avg} = \frac{2H}{\theta^2} \quad (3)$$

where:

R_{avg} = average radius of curvature along path segment, ft (m),
θ = bore exit or entry angle to surface, rad, and
H = depth of bore beneath surface, ft (m).

The corresponding horizontal distance required to achieve the depth or rise to the surface may be estimated by:

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$$L = \frac{2H}{\theta} \quad (4)$$

where:

L = horizontal transition distance, ft (m).

It must be noted that departures from a uniform radius will result in locally smaller radii.

7.4.4.2 The resultant path will determine the stresses to be exerted upon the pipe during the installation and service life. The product pipe design must therefore be analyzed based upon the final selected path, following the pipe design and selection procedures given in Section 8.

8. Pipe Design and Selection Considerations

8.1 *General Guidelines:*

8.1.1 Maxi-HDD applications typically require detailed analysis of the pipe or conduit in relation to its intended application. Due to the large anticipated pulling loads and potentially high external pressure, a careful analysis of the PE pipe must be performed, subject to the route geometry, to verify or determine an appropriate DR (or pipe wall thickness). The analysis should consider both the installation forces occurring during pull-back and the long-term operational loads.

8.1.2 *PE Pipe*—Pipes made from either high density polyethylene (HDPE) or medium density polyethylene (MDPE) are suited for directional drilling. PE pipe specifications include Specifications D2447, D2513, D3035, and F714. If such pipe is provided in short segments, the individual units should be joined using a butt-fusion technique in accordance with Practice F2620. This will allow the inherent strength of the PE pipe to be maintained during the placement process and when subjected to other operational stresses. Small diameter pipe of continuous length may be provided on reels. Table X1.1 gives modulus and strength values for typical pressure-rated HDPE and MDPE resins.

8.1.3 *Cable Conduit Applications* —For cable conduit applications, including electric power and telecommunications, small diameter pipe may be supplied on a continuous reel including internal pull line or the cable itself, as pre-installed by the manufacturer. In addition, the pipe may be provided with the interior surface pre-lubricated. Such features will be in accordance with that specified by the owner or engineer. Requirements for telecommunications applications, including HDPE pipe with various internal surface profiles, including smoothwall or ribbed are specified in TR-NWT-000356.

8.2 *Pipe Loading:*

8.2.1 *Operational and Installation Loads*—The pipe will be subject to loads during its long-term operation and during the installation process. It is the responsibility of the owner (or the owner's contractor or engineer) to determine the design and selection of the pipe to serve the function intended and withstand the operational stresses at the directionally drilled section as well as at other sections along the pipe line. This practice deals primarily with the loads imposed during the directional drilling process and earth and groundwater loads during operation (post-installation).

8.2.2 *Internal (Operational) Pressure Loads*—It is the responsibility of the owner (or owner's contractor or engineer) to determine the nominal diameter and wall thickness appropriate for the intended application. For example, if the pipe will be used for the pressurized flow of liquids or gases, it is necessary to determine the nominal diameter based on flow capacity requirements and the minimum wall thickness (or DR) to withstand the corresponding circumferential stresses on a long term basis. Specification D2513, D3035, or F714 may be used to determine an initial estimate of the corresponding maximum dimension ratio (DR) for PE pipe.

8.2.3 *External (Operational) Hydraulic and Earth Loads*—The pipe will be subjected to hydrostatic external pressure due to the height of water or drilling fluid (or slurry) above the maximum depth of placement relative to the entry or exit point, and earth loads and liveloads due to load transfer through the deformation of the soil around the borehole (**9**). If borehole deformation is minimal (such as in rock) or does not deform the pipe, the only loading applied to the pipe is the hydrostatic external pressure. When earth load does reach the pipe, load reductions from the geostatic stress (arching) may be anticipated. The reductions may be significant when the in situ soil is normally- or over-consolidated. On the other hand, in under-consolidated soils such as river deposits, the earth load on the pipe may equal the prism load (adjusted for buoyancy in the case of a river crossing). The external pressure applied to the pipe equals the total stress, that is, it is the sum of the effective earth pressure, reduced for arching, and the hydrostatic pressure. In some cases, the mud-slurry pressure will offset the earth pressure. As the earth load applied to directional drilled pipe is dependent on the depth of cover, borehole diameter, mud-slurry properties, drilling and back-reaming techniques, and the in situ soil properties, among other things, a geotechnical engineer should be consulted. See X2.2 for a discussion earth load calculations. Liveload pressure can be transmitted to shallow directional drilled pipe. For shallow applications, it is likely that the pipe is subjected to the same liveload and earth pressures as an entrenched pipe.

8.2.3.1 *Net External Pressure*—The net external pressure, P_{net}, is the differential pressure between the inside and outside of the pipe. The external operational load applied to the pipe may be decreased or totally off-set by internal pressure occurring within the pipe. Likewise, the external load may increase with the occurrence of negative pressure (vacuum) inside the pipe. The net external pressure may vary at different times in the life of the pipeline. For instance, during pressurized flow, the net external pressure may be zero but during a shut-down or prior to service, considerable external pressure may be applied. An analysis should be made of all potential external loadings, internal pressurization or vacuum events, and of their duration of occurrence, so that the net external pressure and its duration is determined for each cycle of the pipeline's service life.

8.2.4 *Pipe Resistance to External Loads*—The pipe must be of sufficient thickness (or DR ratio) to withstand the net external pressure without collapsing or deflecting unduly during each cycle of the operational life of the pipeline. (The

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effects of external hydrosatic loads applied during the installation phase are discussed in 8.2.8.2.)

NOTE 6—Spangler's Iowa Formula is typically not applicable to directional drilled pipes as the mud-slurry (unless cemented) on setting develops only the consistency of a soft clay which will not provide significant side-support for the pipe.

8.2.4.1 *Pipe Deflection (Ovality)*—Deflection reduces the pipe's resistance to external collapse pressure. Earth loads, longitudinal bending (bore path curvature), and buoyancy forces during installation will produce ring deflection in the pipe. Formulas for calculating earth load deflection, buoyancy deflection, and curvature-induced deflection along with permissible deflection limits are given in Appendix X2. When bore path curvature is limited to the guidelines given in Note 7 and the DR is 21 or less, ovality due to longitudinal bending can generally be ignored. Filling the pipe with water during the placement operation will reduce the buoyancy force (see 8.2.6) and greatly eliminate the possible short-term collapse. The effective external pressure would then be equal to that corresponding to the actual external differential pressure due to the head of drilling slurry minus the internal pressure due to that of the water inside the pipe.

8.2.4.2 *Unconstrained Collapse*—The following version of Levy's equation may be used to determine the allowable external pressure for directional drilled pipe:

$$P_{ua} = \frac{2E}{(1-\mu^2)}\left(\frac{1}{DR-1}\right)^3 \frac{f_o}{N} \quad (5)$$

where:

P_{ua} = allowable external collapse pressure, psi (kPa),
E = apparent (time-corrected) modulus, psi (kPa), for the grade of material used to manufacture the pipe, and time and temperature of interest,
μ = Poisson's Ratio (long term loading = 0.45, short term loading = 0.35),
DR = dimension ratio (OD/t),
f_o = ovality compensation factor (see Fig. 2), and
N = safety factor, generally 2.0 or higher.

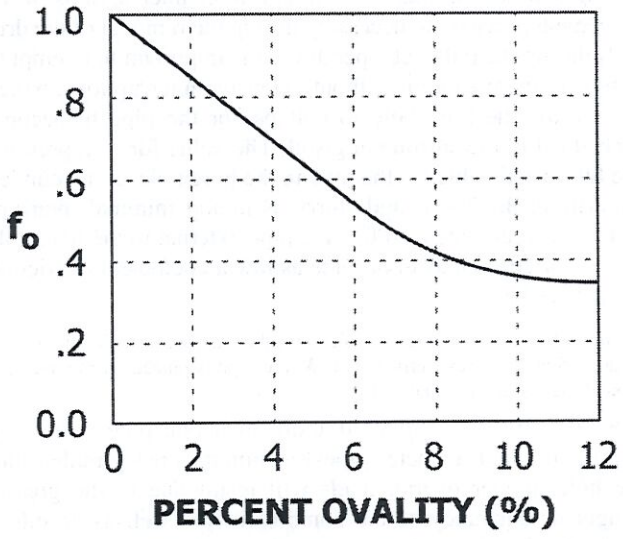

FIG. 2 Ovality Compensation Factor

For design, the allowable collapse pressure, P_{ua}, must equal or exceed the net effective pressure, P_{net}. The modulus of elasticity and Poisson's ratio are a function of the duration of the anticipated load. Modulus values are given in Table X1.1. If the safety factor in Levy's equation is set equal to one, the equation gives the critical collapse (buckling) pressure. Table X1.3 gives the critical collapse pressure for different DR's of HDPE pipe. For design purposes, the critical collapse pressure must be reduced by a safety factor and by ovality compensation to obtain an allowable stress, P_{ua}. When using Table X1.3 for determining pipe's resistance to buckling during pull-back, an additional reduction for tensile stresses is required. In general, if the resulting DR value is lower than that determined by the initial selection criteria based upon internal pressure considerations, the lower value must be used as corresponding to a required thicker, stronger pipe.

8.2.4.3 For a pipe that will be supported by grouting, the allowable external collapse pressure increases (is enhanced) by a factor of approximately 4 (2). Accordingly, the allowable pressure obtained from Levy's Equation, Eq 5, can be increased by a factor of 4. However, the enhancement will not apply to unsupported pipe until the grouting is fully effective. A period of 1 week may be conservatively assumed.

8.2.5 *Axial Bending Stress*—The radii of curvature for segments of the bored path, as indicated in Fig. 1, must be sufficiently large to ensure minimal bending strains and stresses within the pipe or conduit. The recommended minimum bend radius may be provided by the manufacturer, and corresponds to the following peak axial strain level:

$$\varepsilon_a = \frac{D}{2R} \quad (6)$$

where:

ε_a = peak axial strain, in./in. (mm/mm),
D = outer diameter of pipe, in. (mm), and
R = local radius of curvature, in. (mm).

The corresponding axial bending stresses may be calculated by:

$$\sigma_a = E_a \varepsilon_a \quad (7)$$

where:

σ_a = peak axial stress, psi (kPa),
E_a = apparent modulus of elasticity, psi (kPa) (see Table X1.1).

NOTE 7—Some PE pipe manufacturers recommend an allowable bending radius to diameter ratio of approximately 40 or 50 to 1 during pull-back to minimize the effect of ovaling due to tensile loads.

See X2.5 for calculating ovality induced by bending curvature.

8.2.5.1 *PE Pipe*—In general, the relatively stiff drill rods will require considerably larger bending radii than the flexible PE pipe. The resulting path radii for passing beneath a major obstacle, such as a river, are typically at least an order of magnitude greater than the minimum recommended for the plastic pipe. The corresponding bending strains and stresses are therefore usually not of major significance. However, the curvature required for the pipe to enter or exit the bore hole may be more severe and must be externally controlled to avoid excessive strains or stresses in these areas.

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8.2.6 *Pulling Force*—The pipe pullback operation is illustrated in Fig. 1, which shows the geometry of the path including the depth, entry and exit curves, and the possibly straight interim segment beneath the river or obstacle to be crossed. The required tensile force at the leading end of the product pipe will vary during the operation and is, in general, less than that experienced at the drill rig due to the additional load on the balance of the drill string still within the bore hole and that due to any simultaneous reaming operation. The tensile forces on the pipe result from the fractional drag forces acting on the sides of the pipe due to the weight or buoyancy forces as it is pulled into and along the hole, force amplifications due to pulling the pipe around the curves, and resistance due to the pipe stiffness. The resultant forces will depend upon whether the pipe is empty or deliberately weighted (for example, filled with ballast) to reduce the buoyancy. For the purposes of estimating the peak force on the product pipe, the load is calculated at the 4 transition points, A, B, C, D shown in Fig. 1 (2). The greatest load on the pipe would typically be at point D. The corresponding loads may be estimated by the following equations:

$$T_A = \exp(v_a\alpha)\ (v_a w_a(L_1+L_2+L_3+L_4)) \quad (8)$$

$$T_B = \exp(v_b\alpha)\ (T_A+v_b|w_b|L_2+w_bH - v_a w_a L_2\exp(v_a\alpha)) \quad (9)$$

$$T_C = T_B+v_b|w_b|L_3 - \exp(v_b\alpha)(v_a w_a L_3\exp(v_a\alpha)) \quad (10)$$

$$T_D = \exp(v_b\beta)\ (T_C+v_b|w_b|L_4 - w_bH - \exp(v_b\alpha)(v_a w_a L_4\exp(v_a\alpha))) \quad (11)$$

where:

T_A = pull force on pipe at point A, lbf (N),
T_B = pull force on pipe at point B, lbf (N),
T_C = pull force on pipe at point C, lbf (N),
T_D = pull force on pipe at point D, lbf (N),
L_1 = additional length of pipe required for handling and thermal contraction, ft (m),
L_2 = horizontal distance to achieve desired depth, ft (m),
L_3 = additional distance traversed at desired depth, ft (m),
L_4 = horizontal distance to rise to surface, ft (m),
H = depth of bore hole from ground surface, ft (m),
$\exp(X)$ = e^X, where e = natural logarithm base (e = 2.71828),
v_a = coefficient of friction applicable at the surface before the pipe enters bore hole,
v_b = coefficient of friction applicable within the lubricated bore hole or after the (wet) pipe exits.
w_a = weight of empty pipe, lbf/ft (N/m),
w_b = net upward buoyant force on pipe in bore hole, lbf/ft (N/m),
α = bore hole angle at pipe entry (or HDD exit, at side opposite drill rig), rad, and
β = bore hole angle at pipe exit (or HDD entry, at same side as drill rig), rad.

The exponential factors correspond to the capstan effect, reflecting increased bearing pressure caused by the pipe pulled against the inside surface of the bend.

NOTE 8—Although the actual value of L_1 may be considered to be approximately 100 ft (30 m) to allow for handling at both ends of the bore, including possible thermal contraction, it is recommended that a larger value of L_1 (for example, 200 to 250 ft (60 to 75 m)) be used in Eq 8 to account for the actual path length along the arc. In some cases, L_3 may be equal to zero.

NOTE 9—Eq 8-11 are based on the assumption that the borehole is open with no collapses, curvature is gradual (for example, no dog-legs from steering corrections), cuttings removal is mostly complete, a low-viscosity slurry is present, and fluid circulation is maintained throughout the bore. The calculated pullback force, TD, will typically be less than the actual pullback force experienced during installation. The closer the bore matches the above conditions the closer the calculated value should be to the actual pullback force (10, 11). Engineering judgment should be applied when bore conditions deviate from conditions described above.

8.2.6.1 If additional pipe length (to accomn.odate subsequent elastic, viscoelastic, or thermal contractions) is pulled through the bore hole by using a pulling force applied in a horizontal direction at the drill rig side, resulting in an additional bend of angle β at the surface, there may be a further increase in the pull force T_D. The total force would correspond to that of multiplying the value of T_D, as calculated by Eq 11, by the additional factor $\exp(v_b\beta)$. Furthermore, depending upon the total force magnitude and the local bend radius at this point, the corresponding sidewall bearing pressure at the inside of the bend may cause collapse of the pipe or conduit. This procedure should therefore be avoided in preference to pulling additional pipe length in a direction along the pipe exit (bore entry) angle.

8.2.6.2 *Pipe Stiffness*—The equations in 8.2.6 do not explicitly account for the resistance due to the pipe stiffness at curves along the bore path. This effect will be reduced for sufficiently large radii and greater clearance within the bore hole, but may still represent a significant contribution. Thus, Eq 8-11 and associated calculations should be considered primarily as estimates for the purposes of investigating the overall feasibility of the installation and providing an understanding of the effect of the other parameters. The operational procedures (Section 9) include methods for limiting the actual pulling force applied to the pipe to provide confidence in the integrity of the installed pipeline.

8.2.6.3 *Coefficient of Friction*—The coefficient of friction depends on the characteristics of the surfaces bearing against each other, the presence of any lubrication, and whether there is relative motion between the surfaces. The degree of friction immediately prior to slippage is generally greater than the level during subsequent sliding. Although brief interruptions in the placement process are necessary during the removal of the drill rods during the pullback operation, it is important to attempt to complete the operation without extensive interruptions, which may allow the bore hole to collapse or the pipe to become embedded in the surrounding soil. The value for v_b represents the lubricated value for the pipe in the bore hole as surrounded by drilling fluid and mud slurry assuming minimal interruptions. It is recommended that the pipe external to the bore hole be supported such as to provide as low a coefficient of friction v_a as possible.

NOTE 10—Suggested design values for the frictional coefficients v_a and v_b are 0.5 and 0.3, respectively (2). Where pipe is placed on rollers, v_a is typically considered equal to 0.1.

8.2.6.4 *Multiple Pipes*—If more than one pipe (that is, a bundle of small diameter pipes) is simultaneously pulled into the hole, higher overall loads will result due to the greater weight or buoyancy of the combination as well as an effectively amplified coefficient of friction v_b within the hole. The

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degree of amplification will depend upon the relative pipe and hole diameters and will be minimized for greater clearance within the borehole.

8.2.6.5 *Effective Weight and Buoyancy Forces*—The weight of the vacant pipe or conduit may be obtained from the manufacturer, or may be calculated by the following formula:

$$w_a = \pi D^2 \frac{(DR-1)}{DR^2} \rho_w \gamma_a \quad (12)$$

where:

w_a = weight of empty pipe, lbf/in. (N/mm),
γ_a = specific gravity of pipe material (for example, 0.955 for PE),
ρ_w = weight density of water times length unit conversion factor, lbf/in.^{3} (N/mm^3), and
D = outside diameter of pipe, in. (mm).

NOTE 11—The density of water is 3.61×10^{-2} lbf/in.^{3} (9.80×10^{-6} N/mm^3).

The net (upward) buoyant force on the vacant pipe surrounded by a drilling fluid or mud slurry may be calculated by:

$$w_b = \frac{\pi D^2}{4} \rho_w \gamma_b - w_a \quad (13)$$

$$w_b = \pi \frac{D^2}{4} \rho_w \left(\gamma_b - \frac{4\gamma_a (DR-1)}{DR^2} \right) \quad (14)$$

where γ_b equals specific gravity of mud slurry.

NOTE 12—The specific gravity of the mud slurry may be conservatively assumed to be 1.5 (see 8.2.3).

If the pipe is filled with water or fluid to serve as ballast, the buoyant force is reduced and is given by either:

$$w_b = \pi \frac{D^2}{4} \rho_w \left(\gamma_b - \gamma_c \left(1 - \frac{2}{DR} \right)^2 \right) - w_a \quad (15)$$

$$w_b = \pi \frac{D^2}{4} \rho_w \left(\gamma_b - \gamma_c \left(1 - \frac{2}{DR} \right)^2 - \frac{4\gamma_a (DR-1)}{DR^2} \right) \quad (16)$$

where γ_c equals specific gravity of ballast fluid.

If the pipe is filled with water, then $\gamma_c = 1$; if the pipe is filled with mud slurry (that is, if an open-ended pulling grip is used that allows the drilling fluid or slurry to enter the pipe), then $\gamma_c = \gamma_b$, and the above formula becomes:

$$w_b = \pi D^2 \rho_w (\gamma_b - \gamma_a) \frac{(DR-1)}{DR^2} \quad (17)$$

For PE pipe, these procedures will typically result in a lower required pull force as calculated by Eq 8-11.

8.2.6.6 *Hydrokinetic Pressure*—A pressure gradient exists during the pipe pullback operation corresponding to that required to exhaust the drilling fluid out of the hole, towards the pipe entry area. Additional pressure surges are possible due to nonuniform pulling rates **(2,3)**. The flow of the drilling fluid along the length of the pipe results in a drag force which may be estimated by considering a balance of the forces acting on the fluid annulus in the bore hole due to the hydrokinetic pressure and the lateral shear forces acting on the pipe and walls of the bore hole:

$$\Delta T = \Delta P \frac{\pi}{8} (D_{hole}^2 - D^2) \quad (18)$$

where:

ΔT = pulling force increment, lbf (N),
ΔP = hydrokinetic pressure, psi (kPa $\times 10^{-3}$), and
D_{hole} = backreamed hole diameter, in. (mm).

NOTE 13—ΔP is estimated to be 10 psi (70 kPa) **(2,7)**.

The term ΔT may be added to the pulling forces calculated by Eq 8-11 to obtain the total pull force at each corresponding point of the installation. This is shown explicitly in Eq 19.

NOTE 14—For a bundle of pipes, the term D^2 in Eq 18 is replaced by an equivalent sum of the corresponding quantities (diameters squared) for the individual pipes.

8.2.7 *Axial Tensile Stress*—The average axial stress acting on the pipe cross-section at point A, B, C, or D, including the increment for hydrokinetic pressure, is given by:

$$\sigma_i = (T_i + \Delta T) \frac{1}{\pi D^2} \left(\frac{DR^2}{DR-1} \right) \quad (19)$$

where:

T_i = T_A, T_B, T_C, or T_D, lbf (N), and
σ_i = corresponding stress, psi (kPa $\times 10^{-3}$).

The highest average axial stress will occur at the pulling head. However, depending on the curvature of the borepath, the peak tensile stress may not occur at the pulling head, but in a curve. In the curve, the maximum tensile stress due to bending occurs in the outer fibers of the pipe. For each curve, the maximum tensile stress equals the sum of the bending stress, as in Eq 7, due the curvature and the average axial stress at that point due to pulling. The maximum tensile stress for each curve should be determined and compared with the average axial stress at the pulling head to determine the peak tensile stress, σ_p, occurring in the pipe:

$$\sigma_{pi} = \sigma_i + \sigma_{ai} \quad (20)$$

where:

σ_{pi} = peak tensile stress at i-th point (where i = A, B, C, or D), psi (kPa),
σ_i = average axial tensile pull stress i-th point (where i = A, B, C, or D), psi (kPa), and
σ_{ai} = outerfiber tensile stress (Eq 7) at i -th point (where i = A, B, C, or D), psi (kPa).

8.2.7.1 *Allowable Tensile Stress*—The peak tensile stress, σ_p, should be compared to the allowable stress at the anticipated installation temperature. Thus, it is required that:

$$\sigma p \leq SPS \quad (21)$$

where *SPS* equals safe pull tensile stress, psi (kPa $\times 10^{-3}$) at the anticipated installation temperature. Under continuous load, polyethylene undergoes creep deformation. Therefore, the safe pull stress values are time and temperature dependent. See Table X1.1 for typical SPS values. The time interval for the installation depends upon the length and rate of pullback of the pipe. Pullback rates are on the order of several feet per minute, depending upon the soil conditions. If it is anticipated that the back-reaming process will be slow and difficult (see Section 9), it is recommended that a separate pre-reaming operation be used to allow a subsequent faster pipe pullback and shorter time interval for installation pull forces to be applied.

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8.2.7.2 If necessary, the stress on the PE pipe or conduit may be reduced by increasing the pipe wall thickness (that is, lower SDR value) or, possibly, reducing the net buoyant force by filling the pipe with fluid ballast (as described in 8.2.7.1).

8.2.8 *Torsional Stress*—Torsional stresses are eliminated or minimized by the use of a swivel at the leading end of the pipe. Section 9 provides information for the selection of an appropriate swivel.

8.2.9 *Combined Loads During Installation*—The calculations allow a preliminary selection of the pipe DR consistent with the anticipated application, installation, and path characteristics. It is necessary, however, to finally consider the overall installation stresses due to the combination of loads which many be present simultaneously. If the combined stresses are not within the desired overall design margin, it may be necessary to select a thicker wall pipe or modify the installation parameters to relieve the resultant stresses.

8.2.9.1 *Reduced PE Collapse Strength*—For PE pipe, the presence of an axial tensile load will have a tendency to reduce the pipe's short-term resistance to collapse under external pressure, as otherwise estimated from Eq 5 (**2**). In addition, the hydrokinetic pressure increment at the leading end of the pipe also increases the external hydrostatic pressure during this period. The modified equation to account for these effects is:

$$P_{pba} = \frac{2E}{(1-\mu^2)}\left(\frac{1}{DR-1}\right)^3 \frac{f_o f_R}{N} \tag{22}$$

where f_R, the tensile pull reduction factor, is given by:

$$f_R = \sqrt{5.57 - (r+1.09)^2} - 1.09 \tag{23}$$

and

$$r = \frac{\sigma_i}{2(SPS)} \tag{24}$$

σ_i = maximum average axial tensile pull stress from Eq 19, psi (kPa), and
SPS = safe pull tensile stress, psi (kPa).

The allowable collapse pressure, P_{pba}, should equal or exceed the sum of the net effective pressure during pull-back and the hydrokinetic pressure:

$$P_{pba} \geq P_{eff} + \Delta P \tag{25}$$

where:

P_{eff} = net effective pressure acting on pipe during pull-back, psi (kPa), and
ΔP = hydrokinetic pressure, psi (kPa).

NOTE 15—The modulus value used in Eq 22 and in the deflection calculation for determining ovality for use in Eq 22 during pull-back should be selected to match the time-interval of the pull-back.

8.2.9.2 The net effective external pressure term, P_{eff}, in Eq 25 corresponds to the external head of drilling fluid or slurry reduced by the internal pressure due to any fluid used as ballast. For the case of an open-ended pulling grip allowing the drilling fluid to serve as ballast (see 8.2.6.5), the net effective external pressure, P_{eff}, including the hydrokinetic pressure, is negligible and the possibility of collapse due to external pressure during the installation stage is essentially eliminated.

8.2.9.3 *Thermal Effects*—Potential effects due to thermal expansion may be minimized by allowing the pipe to reach temperature equilibrium with the soil before cutting the pipe to length to complete the installation.

8.2.10 *Combined Loads During Operation*—In general, it is the responsibility of the owner or owner's contractor or engineer to ensure that the design will be compatible with the long term operation of the pipe line, including sections away from that being placed by the drilling operation, as well as sections in the vicinity of the crossing, both at the surface and passing beneath the obstacle.

8.2.10.1 *Thermal Stress*—Thermal stresses due to temperature differentials existing during the placement process may be considered small, as discussed in 8.2.10. However, possible thermal effects during long-term operation due to seasonal expansion or contraction at the surface, including at sections away from the drilled crossing, are not specific to the HDD process and should be considered by the owner as for non-drilled pipe lines, in combination with the other stress contributions.

9. Implementation

9.1 Due to the magnitude of the typical operation and complexity of the equipment and control systems, maxi-HDD requires a highly trained crew. See Mini-Horizontal Directional Drilling Manual. It is beyond the scope of this guide to provide operational procedures for the various equipment. Such training is generally provided by the manufacturer. Contractors should be required to demonstrate evidence of proper training for their crews, including classroom and field experience for the primary personnel. The following items represent some of the issues related to the implementation process for placement of pipe or conduit.

9.1.1 *Machine Size & Capability*—The size and capacity of the drilling equipment must be compatible with the thrust and torque required to perform the drilling, reaming, and pipe pullback operations. It is difficult to estimate the drill rig forces associated with the reaming operation, which may be significantly greater than that directly applied to the pipe itself during pullback (as estimated by the formulas in 8.2.4), particularly when both operations are performed simultaneously. The estimated forces applied to the pipe may be considered a minimum equipment requirement.

9.1.2 *Drill Unit Positioning*—The drill rig unit is positioned consistent with the discussion in Section 7 and the desired bore route and pipe depth. Proper anchoring is especially important for soft or sandy soils.

9.1.3 *Boring and Drill Rods*—HDD operations begin with the initial pilot bore. Different ground conditions will require different type drill heads for the pilot bore operation. The drill rods should be as least as strong as the equipment capability. The planned bore route should also be compatible with drill rod capabilities with respect to cumulative fatigue stresses (Section 7). Proper care and handling of the drill rods is important to avoid breakage during boring or backreaming. The rod threads must be cared for and properly coated (greased) when inserted into the drill string. Proper torque should initially be applied to the drill rods as added at the bore entry to avoid potential loosening of the rods and loss of connection in the ground.

9.1.4 *Washover Pipe*—For many maxi-HDD operations, a washover pipe is inserted over the drill string as the bore

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progresses to support the hole and reduce torque. This steel pipe may be removed during the backreaming operation. If reaming is not required, the washover pipe may be left in place and used as a casing into which a group of small plastic pipes may be placed by a later independent pulling operation.

9.1.5 *Drilling Fluid Usage*—Drilling fluids serve a critical role in maxi-HDD operations. The fluid powers the mud-motor at the front of the drill string that bores the pilot hole. The fluid also provides lubrication during the pilot boring, reaming, and pullback operations to reduce the required torque and thrust or pullback loads. In addition, the drilling fluid stabilizes the bore hole, cools the drill head (and internal circuitry), and removes cuttings and spoils. The crew must be trained in the proper use of drilling fluids and the appropriate types for various ground conditions. Note that excessive drilling fluid pressures or volumes may result in greater disposal problems or appearances at undesired surface locations as the fluid penetrates through fissures.

9.2 *Tracking and Locating:*

9.2.1 *Location Interval*—In order to maintain the actual bore along the planned path, the pilot bore must be carefully tracked, and path confirmation established at least once each 30 ft (10 m) interval (for example, when adding drill rods). For paths with horizontal or vertical turns, or in critical areas including the vicinity of other obstacles, shorter intervals for example, 15 ft (5 m) are recommended. In areas with pockets of cobbles or other obstacles that may divert the drill head, measurements should be made whenever contact with such obstacles is suspected. A misdirected drill head must be corrected as soon as possible.

9.2.2 *As-Built Drawings*—A record of the actual as-built bore path, including plan and profile views and vertical and horizontal deviations, indicating the relation to the planned path, must be submitted to the owner. Any information obtained during the initial bore regarding soil characteristics, etc. should be added. The experiences gained during the initial bore may be used to provide guidance for the backreaming operating, as well as for subsequent operations in the project area. Additional information should also be included, such as steering or correction commands, drilling fluid usage, and the type of drill head being used. Regarding the reaming and pullback operations, the pipe insertion velocity, duration, type and size of reamers (cutters or compactors), final bore hole size, drilling fluid usage, and required pullback forces should be recorded.

9.3 *Reaming*—In some maxi-HDD applications, a backreaming operation to increase the hole size may not be required (for example, when a small pipe is to be pulled back into the initial bore hole or, possibly, a bundle of small pipes is to be pulled into the remaining washover pipe by a separate procedure after completion of the HDD operation). However, a backreaming operation is typically performed to produce a hole size sufficiently large to readily install the pipe(s) or conduit. Appropriate cutters and compactors compatible with the soil conditions are required, including proper usage of drilling fluid. In some cases, several reaming (that is, pre-reaming) operations may be required. In general, pre-reaming is not required for placing pipe 20 in. (500 mm) or less in diameter, and the reaming and pipe pullback may be performed simultaneously. The pre-reaming operations allow relatively large holes to be created in stages, reducing the required torque and thrust loads at the machine. For difficult installations for which a high pulling load is anticipated, a pre-reaming operation will help ensure that the capability of the machine is not exceeded due to the combined forces due to increasing the hole diameter and pulling the pipe. The pullback operation may also then be performed at a faster rate, reducing the time the pipe is under axial load. In addition, pre-reaming reduces the possibility of voids or surface heaving or settlement, including unanticipated drilling fluid appearances. Hole diameter increments should be restricted to approximately 10 in. (250 mm) or less during a single pass. The final hole diameter is typically 50 % greater than the outer diameter of the pipe (or pipe bundle) to provide clearance for pipe grips, allow spoils flow, and reduce the required loads during the pipe pullback operation. During pre-reaming, additional drill rods must be available at the pilot bore exit which are connected to a swivel at the rear of the reamer and pulled into the hole to maintain the path.

9.3.1 *Grouting*—If grouting has been specified to fill the annulus of the hole surrounding the pipe(s), it may be pumped during the pullback operation, serving as drilling fluid. However, if the pullback encounters any difficulty, the grout can set-up. Consideration should be given to placing grout through a tremie pipe pulled in during pullback. The requirement and formulation of the grouting shall have been established in advance by the owner and the owner's engineer following the preliminary surface and subsurface studies and route planning, for environmental considerations, or to increase the long-term collapse resistance of the pipe or provide additional strength or mechanical protection. The grouting requires proper formulation consistent with desired set-up time; appropriate fluid pumps are required to handle the thicker fluid mixture. In may cases it may only be required to plug the entry and exit penetration points, possibly using a cement-bentonite mixture (**6**).

9.4 *Gripping the Pipe*—If not supplied as a continuous length on a reel, it is assumed that the pipe(s) have been fused and tested prior to completion of the boring operation to avoid unnecessary delays in completing the installation. The bored and reamed hole may tend to close in or collapse after an extended period of time, significantly inhibiting or preventing the insertion of the pipe.

9.4.1 Due to the distance of the operation and the relatively high pullback loads generated, secure gripping procedures must be used. Basket-type or internal only grips are not recommended. The gripping method selected must allow essentially the full tensile rating of the pipe to be developed. Appropriate types may include an internal/external clamping or bolting device, or a fused PE pipe adapter with a built-in pulling eye. In the latter case, a smaller diameter section of the adapter may serve as a breakaway link protecting the main section of pipe (see 9.4.3). In general, the end of the pipe should be plugged or sealed to prevent contamination during the pull-back operation. However, if it is desired to allow the mud slurry to serve as ballast (see 8.2.5), a gripping method should be used that allows the fluid to enter the pipe. Several

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pipes may be pulled simultaneously, but the position of the grips should be staggered, if necessary, to avoid a single large bulge.

9.4.2 *Swivel*—A swivel is required between the reamer or compactor preceding the pipe to prevent the transmission of torsional loads to the pipe. The rating of the swivel should be somewhat larger than the lower of the pull force capability of the drill rig or the total strengths of the bundle of pipes to be installed, but not excessively greater. Inefficiencies in overly large swivels may result in relatively significant twist transmitted to small pipes.

9.4.3 *Breakaway Link*—In general, the recorded pulling forces as indicated at the drill rig will exceed the tensions experienced by the pipe or conduit throughout most of the pullback process. Limiting these loads to that of the allowable pipe strength will generally be overly conservative. It is recommended that individual breakaway links be provided between the main swivel and the grip(s) at the pipe(s), to ensure that the pipelines are installed within allowable load levels. Broken links will require removal of the pipe(s) from the entry end, or possibly abandonment. Following a determination of the problem, and an appropriate solution, another attempt may be made, possibly requiring a new bore path.

9.4.3.1 Each breakaway link rating should be within the safe pull tensile load, also called the allowable tensile load of its corresponding pipe. See Table X1.1.

9.4.3.2 Although less desirable, a single breakaway link may be used for a bundle of pipes. The corresponding safe working loads for the individual pipes in the bundle are added to determine the total safe working load and the corresponding rating of the breakaway link. If a breakaway swivel is used as the breakaway link, and not specifically designed for direct exposure with soil, this item should be cleaned well after each application. The use of such a breakaway swivel does not eliminate the need for the main swivel described in 9.4.2.

9.5 *Handling the Pipe*—Extreme care must be exercised when handling the pipe to ensure that it is not subject to excessively sharp bends which may cause a kink or other damage to the pipe. Section 8 provides appropriate guidelines, including discussion of the combined effects of bending loads and tension in the pipe. Particular areas of concern typically include the pipe entry or exit points. It is important to minimize bending of the pipe as it enters the bore hole, consistent with 7.3, 7.4.4 and 8.2.7, and to ensure low friction on the portion of the pipe outside the hole. This may be accomplished by the use of appropriate lifting equipment and roller stands to reduce friction. Due to the potentially high tensile load at the pipe exit, it is especially important to avoid sharp bends at this point.

10. Inspection and Site Cleanup

10.1 *Completion and Inspection*—It is necessary to minimize any residual stresses or strains remaining in the pipe following the installation, due to the imposed pulling forces and potential thermal expansion or contraction. Thus, the pipe should be allowed to achieve mechanical and thermal equilibrium with its surroundings prior to cutting the pipe at either end. Premature cutting of the pipe may allow the ends to shrink back into the hole. The pipe may be cut after it has been verified that there has been insignificant movement at the pipe entry end and negligible residual tensile load at the drill rig end. If any fluid or slurry was allowed to enter the pipe to serve as ballast (see 8.2.6), the fluid must be purged and the pipe thoroughly flushed and cleaned.

10.1.1 *Integrity*—Some pipes, such as for gas or fluid transport, may be required to pass hydrostatic pressure or leakage tests, before or after pullback, or both, as specified by the owner. For pipes to be used as paths for cables, the integrity of the path should be verified by pulling a "pig" through the installed pipe prior to splicing or terminating.

10.1.2 *Visual Inspection*—The pipe exiting the borehole should not show signs of yielding or necking-down. The surface of the pipe should be inspected for gouges or scratches. Gouges or scratches in excess of 10 % of the minimum wall thickness should be assessed as to whether pipe is suitable or not for pressure service.

10.1.3 *Bore Path*—The as-built drawings shall be submitted to the owner's representative to indicate the pipe was placed at the proper location and depth, or within acceptable limits. Maintaining an appropriate minimum depth of cover beneath the river bottom is critical, including margin to account for scouring, to avoid subsequent exposure or damage. Recording of the exact location will help avoid damage during any future construction activities in the area. In addition, records of pullback forces at the drill rig, breakaway link ratings, installation rate, final hole diameter, grouting information, etc., should be recorded and provided.

10.2 *Cleanup*—After inspection and approval by the owner or representative, the surface area must be restored to its original condition. The site must be cleaned of equipment, tools, and spoils. All drilling fluid must be cleaned from the site or its vicinity and properly disposed of, consistent with Section 6.

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APPENDIXES

(Nonmandatory Information)

X1. MATERIAL PROPERTIES OF POLYETHYLENE

X1.1 *Material Properties of Polyethylene*—Typical values for the apparent modulus of elasticity and tensile strength at 73°F (23°C) for medium density (PE 2406) and high density polyethylene (PE3408) resins are presented in Table X1.1. Consult the manufacturer for specific applications.

TABLE X1.1 Apparent Modulus of Elasticity and Safe Pull Tensile Stress at 73°F

Typical Apparent Modulus of Elasticity			Typical Safe Pull Stress		
Duration	HDPE	MDPE	Duration	HDPE	MDPE
Short-term	110 000 psi (800 MPa)	87 000 psi (600 MPa)	30 min	1300 psi (9.0 MPa)	1000 psi (6.9 MPa)
10 h	57 500 psi (400 MPa)	43 500 psi (300 MPa)	60 min	1200 psi (8.3 MPa)	900 psi (6.2 MPa)
100 h	51 200 psi (350 MPa)	36 200 psi (250 MPa)	12 h	1150 psi (7.9 MPa)	850 psi (5.9 MPa)
50 years	28 200 psi (200 MPa)	21 700 psi (150 MPa)	24 h	1100 psi (7.6 MPa)	800 psi (5.5 MPa)

X2. POST–INSTALLATION LOADS AND DEFLECTION OF HORIZONTAL DIRECTIONAL DRILLED PIPES

X2.1 Allowable Tensile Load—The safe pull tensile load for a pipe is equal to its allowable tensile load ATL, which can be calculated from the safe pull tensile stress SPS, as follows:

$$ATL = (SPS)\ \pi\ D^2\left(\frac{1}{DR} - \frac{1}{DR^2}\right) \qquad (X2.1)$$

where:

D = pipe outer diameter, in. (mm),
SPS = safe pull stress, psi (kPa), and
DR = pipe dimension ratio (outer diameter/minimum wall thickness).

For gas pipes, see Practice F1804 for determining ATL.

X2.2 *Earth Pressure Calculation*—The soil load on directional drilled pipe is essentially dependent on the depth of cover, borehole diameter, mud-slurry properties, and the in situ properties. Earth and live-load pressures are transferred to the pipe through the deformation of the soil around the borehole. As the deformation occurs, a cavity of loosened soil forms above the borehole. This cavity is filled by soil sloughing from above it. The process causes the soil to bulk, that is, the density of the sloughed soil is less than the density of the undisturbed soil. The sloughing process continues until an equilibrium is reached where the stiffness of the sloughed soil is sufficient to resist further sloughing from the soil above. This bulking state results in arching of load around the pipe (that is, the earth load applied to the pipe is less than the geostatic stress (or prism load).) There is a lack of published equations for calculating earth loads on directional pipes. However, equations have been published for calculating loads on jacked pipe. Although the applicability of these equations to directional drilling has not been confirmed, they are likely applicable where the PE is installed in a mud slurry. The normal jacking procedure like the directional drilled process overcuts the hole but the overcut is typically less than 10 % of the pipe diameter with jacked pipe, whereas with directional drilled pipes the overcut may be 50 %. Equations for calculating the loads occurring on jacked-pipe due to the bulking process are given by O'Rourke et al. Another interpretation of arching above jacked-pipe is given in (**12**). Stein's method in Ref. (**12**) considers the process of arching to be similar to trench arching. Only Stein's method is given below as O'Rourke's method in Ref. (**13**) involves extensive calculations and typically results in lesser load than Stein's method. Credit for arching should only be considered where the depth of cover is sufficient to develop arching (typically exceeding five pipe diameters), dynamic loads such as traffic or rail loads are insignificant, the soil has sufficient internal friction to transmit arching, as confirmed by a geotechnical engineer.

X2.2.1 Use of Terzaghi's equation as given in Eq X2.2 for calculating earth loads on jacked pipe is suggested in Ref. (**12**). Note that the friction angle, has been reduced in Terzaghi's equation by 50 %.

$$P_{EV} = \frac{\kappa\gamma H}{144\ \frac{in.^2}{ft^2}} \qquad (X2.2)$$

$$\kappa = \frac{1 - exp\left(-2\frac{KH}{B}\tan\left(\frac{\delta}{2}\right)\right)}{2\frac{KH}{B}\tan\left(\frac{\delta}{2}\right)} \qquad (X2.3)$$

[For metric units, the conversion factor of 144 in^2/ft^2 should be dropped]

where:

P_E = external earth pressure, psi (kPa),

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Y = soil weight, pcf (kN/m^3),
H = depth of cover, ft (m),
κ = arching factor,
B = "silo" width, ft (m),
δ = angle of wall friction, degrees (for directional drilling, assume $\delta = \varphi$, and φ = angle of internal friction, degrees.), and
K = earth pressure coefficient given by:

$$K = \tan^2\left(45 - \frac{\varphi}{2}\right) \quad \text{(X2.4)}$$

The silo width must be estimated based on the application. It varies between the pipe diameter and the borehole diameter. A conservative approach is to assume the silo width equals the borehole diameter. (If the effective soil weight is used the groundwater pressure must be added back into Eq X2.2 to get the total external pressure acting on the pipe. The effective soil weight is the dry unit weight of the soil for soil above the groundwater level; it is the saturated unit weight less the weight of water for soil below the groundwater level.)

X2.3 *Earth Load Deflection*—Earth load is generally applied at the pipe crown with a reaction at the invert. As slurry provides essentially no side-support, there is little pressure at the springline to restrain vertical deflection. The primary resistance to deflection is provided by the pipe's stiffness. Whereas, actual soil loads will occur over a good portion of the top and bottom halves of the pipe, Ref. **(14)** gives two ring deflection formulas for uniform loading on the top half of a pipe in the Appendix of the text. One formula assumes the pipe's invert is supported on a rigid, flat base while the other assumes the invert reaction load is uniform around the bottom half of the pipe. Neither case fits exactly what occurs with directional drilled pipe but the average of the two formulas may come close.

$$\frac{\Delta}{D} = \frac{0.0125P_E}{\dfrac{E}{12\,(DR-1)^3}} \quad \text{(X2.5)}$$

where:

D = pipe diameter, in. (mm),
Δ = ring deformation, in. (mm),
P_E = earth pressure, psi (kPa),
DR = pipe dimension ratio, and
E = modulus of elasticity, psi (kPa).

X2.4 *Buoyant Deflection*—An external pressure difference between crown and invert occurs when pipe is submerged in grout due to the difference in grout head pressure across the pipe. The pressure difference applies a force which deflects the invert upward toward the crown, thus creating ovality. Deflection is given by Eq X2.6. This can be converted to percent deflection by multiplying it by 100.

$$\frac{\Delta}{D} = \frac{0.1169\gamma_w\left(\dfrac{D}{2}\right)^4}{EI} \quad \text{(X2.6)}$$

where:

Δ = ring deflection, in. (m),
D = pipe diameter, in. (m),
Y_w = weight of fluid in borehole, lbs/in.^{3} (to convert fluid weight from lbs/ft^3 to lbs/in^3 divide by 1728) (kN/m^3),
E = modulus of elasticity, psi (kPa), and
I = moment of inertia of pipe wall cross-section (t^3/12), in.^{4}/in. (m^4/m).

X2.5 *Reissner Effect*—Longitudinal bending of a pipe induces ovality. For entrenched pipes this ovality is usually ignored as it is oriented transverse to earth load deflection. In a directional drilled pipe ovality is additive to earth load deflection. For DR 21 or lower pipes, when the bending radius is greater than or equal to 40 pipe diameters, the ovality is negligible. Ovality in terms of percent deflection can be calculated from the Reissner equation:

$$\frac{\Delta y}{D} = \left(\frac{2}{3}\right)z + \left(\frac{71}{135}\right)z^2 \quad \text{(X2.7)}$$

$$z = \frac{\dfrac{3}{2}(1-\mu^2)(D-t)^4}{16t^2R^2} \quad \text{(X2.8)}$$

where:

μ = Poisson's ratio,
D = pipe OD, in. (mm),
t = pipe wall thickness, in. (mm),
R = radius of curvature, in. (mm), and
$\Delta y/D$ = deflection, in./in. (mm/mm) (convert to percent by multiplying by 100).

X2.6 *Deflection Limits*—The limiting deflection (in percent) is determined by the geometric stability of the deflected pipe, hydraulic capacity, and the strain occurring in the pipe wall. It has been observed that for PE, pressure-rated pipe, subjected to soil pressure only, no upper limit from a practical design point of view seems to exist for the bending strain **(15)**. Therefore, for non-pressure pipes or conduits the safe long-term deflection is 7.5 % of the diameter. When subjected to internal pressure in addition to soil pressure, the localized bending strain resulting from deflection combines with the hoop tensile strain caused by internal pressure to produce a higher, localized tensile fiber-stress. However, as the internal pressure is increased the pipe re-rounds and the bending strain is reduced. At high pressures, the bending strain is reduced and the ring tensile stress approaches that due to internal pressure alone. For calculation method, see Ref. **(16)**. This fact coupled with the ductility of PE permits the designer to ignore the combined effect of pressure and deflection. In lieu of an exact calculation based on allowable strain, the designer can use the safe long-term design deflection values for pressure pipe shown to Table X2.1.

X2.6.1 Design deflections are for use in selecting DR and for field quality control. Field measured deflections exceeding the design deflection do not necessarily indicate unstable or over-strained pipe. In this case, an engineering analysis of such pipe should be performed before acceptance.

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TABLE X2.1 Safe Long-Term Design Deflection values for Buried Pressurized Polyethylene Pipe

DR or SDR	Deflection Limits as % of Diameter
21	7.5
17	6.0
15.5	6.0
13.5	6.0
11	5.0
9	4.0
7.3	3.0

X3. CRITICAL BUCKLING PRESSURE FOR HDPE PIPE

X3.1 *Critical Buckling Pressure*—Table X3.1 gives the critical collapse pressure for HDPE pipes. The values do not contain a safety factor nor any compensation for ovality or pulling force. See 9.2.3.1 for discussion.

TABLE X3.1 Critical Collapse Pressure for Unconstrained HDPE Pipe[A,B,C] at 73°F

NOTE 1—**Table does not include ovality compensation or safety factor.**

	Pipe SDR, psi, ft H_2O, in Hg						
Service Life	7.3	9	11	13.5	15.5	17	21
Short-term	1003, 2316, 2045	490, 1131, 999	251, 579, 512	128, 297, 262	82, 190, 168	61, 141, 125	31, 72, 64
100 h	488, 1126, 995	238, 550, 486	122, 282, 249	62, 144, 127	40, 92, 82	30, 69, 61	15, 35, 31
50 years	283, 653, 577	138, 319, 282	71, 163, 144	36, 84, 74	23, 54, 47	17, 40, 35	9, 20, 18

[A] Axial Tension during pull-back reduces collapse strength.
[B] Full vacuum is 14.7 psi, 34 ft water, 30 in Hg.
[C] Multipliers for temperature rerating:

60°F (16°C)	73.4°F (23°C)	100°F (38°C)	120°F (49°C)
1.08	1.00	0.78	0.63

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REFERENCES

(1) *TR-46, Guidelines for Use of Mini-Horizontal Directional Drilling for Placement of High Density Polyethylene Pipe*, Plastics Pipe Institute, Irving, Texas, 2009.

(2) Svetlik, H. E., "Polyethylene Pipe Design for Directional-Drillings and River-Crossings", *Proceedings, North American Society for Trenchless Technology NO-DIG '95*, April/May 1995.

(3) Hair, J. D., "Design and Project Management Considerations Involved with Horizontal Directional Drilling", *New Advances in Trenchless Technology: An Advanced Technical Seminar*, February 5–8, 1995.

(4) Ingold, T. S., and Thomson, J. C., "Site Investigations Related to Trenchless Techniques", *Proceedings, International Society for Trenchless Technology NO-DIG '89* April, 1989.

(5) Hair, J. D. and Hair, C. W. III," Considerations in the Design and Installation of Horizontally Drilled Pipeline River Crossings," American Society of Civil Engineers, *Proceedings of Pipeline Infrastructure Specialty Conference*, 1988.

(6) Hair, C. W. III, "Site Investigation Requirements for Large Diameter HDD Projects", *New Advances in Trenchless Technology: An Advanced Technical Seminar*, 1995.

(7) Iseley, D.T. and Cowling, D.H. "Obstacle Detection to Facilitate Horizontal Directional Drilling", prepared by the *Trenchless Technology Center for the American Gas Association*, January 1994.

(8) *Guidelines for a Successful Directional Crossing Bid Package*, The Directional Crossing Contractors Association, Dallas, Texas, 1995.

(9) Petroff, L.J., "Design Guidelines for Directional Drilled PE Pipe", American Society of Civil Engineers Congress on Trenchless Technology, 1997 .

(10) Duyvestyn, G.M., Knight, M.A. "Behavior of 180 m long MDPE and HDPE pipes installed using a midi HDD rig", No-Dig 2002, Montreal, Canada.

(11) Baumert, M.E., Allouche, E.A., and Moore, I.D. "Experimental Investigation of Pull Loads and Borehole Pressures During Horizontal Directional Drilling Installations", Canadian Journal of Geotechnical Engineering, CGS, August, 2004.

(12) Stein, D., Mollers, K., Bielecki, R., *Microtunnelling*, Ernst & Sohn, Berlin, Germany, 1989.

(13) O'Rourke, T.D., El-Garbawy, S.L., Stewart, H.E., "Soil Loads at Pipeline Crossing", American Society of Civil Engineers Specialty Conference on Pipeline Crossings, 1991.

(14) Watkins, R.K. and Anderson, L.R., *Structural Mechanics of Buried Pipes*, Department of Civil Environmental Engineering, Utah State University, Logan, Utah, 1995.

(15) Janson, L.E.," Long-Term Studies of PVC and PE Pipes Subjected to Forced Constant Deflection", Report No. 3, KP-Council, Stockholm, Sweden, 1991.

(16) Janson, L.E., *Plastics Pipes for Water Supply and Sewage Disposal*, Borealis, Stockholm, Sweden, 1995.

SUMMARY OF CHANGES

Committee F17 has identified the location of selected changes to this standard since the last issue (F1962–05 ε1) that may impact the use of this standard.

(1) Add reference to PPI TR-46, "Guidelines for the Use of Mini-Horizontal Directional Drilling for Placement of Polyethylene Pipe."

(2) Replaced references to Practice D2657 with Practice F2620.

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CELMN-ED-F

Revised: January, 2010

Guidelines for Permit Review

Installing Pipelines by Nearsurface Directional Drilling Under Levees

Applications for directional drilling permits in congested urban areas will not be allowed. Variations may be considered in urban areas where population density and land use allow adequate room so that total expeditious replacement of the flood protection, should fracture occur and additionally the applicant must show financial responsibility for such replacement.

Note: This list of general criteria is not intended to be all inclusive of the concerns of the Corps of Engineers. Some additional elements must be considered on a case-by-case basis. It is recommended that all applicants or their representatives schedule a meeting with the Corps of Engineers to discuss these guidelines in the early stages of planning a directionally drilled crossing to discuss how these guidelines apply to their permit applications. Permit applications for directional drilling beneath levees/floodwalls will be entertained by the New Orleans District, however they will be closely examined for their affect upon the integrity of the flood protection provided by the system. HDD installations are complicated civil engineering works and only experienced professional engineers should undertake their design.

The following general criteria apply to the actual drilling operations:

1. All work on, around and under levees or flood protection is season sensitive. Some levee/flood wall systems serve as hurricane protection, some are for river flooding and still others are for a combination of these. There may be a season during which the sensitivity of the flood control system will not allow work, this should be known to the applicant early in the application process. The applicant should make every effort to discern the alternate methods of providing interim flood protection, which may be required of him during his work phases.

2. The proposed pipeline entry or exit point, when located land-side of a levee, should be set back sufficiently from the land-side toe of the levee such that (a) the pipeline reaches its horizontal level (maximum depth), and/or (b) the pipeline contacts the substratum sands or some other significant

horizon, at least 300 feet land-side of the levee toe.

3. When the proposed pipeline entry and/or exit point, are located on the batture (riverward of the levees), the entry and/or exit points should be positioned such that the pipeline is (a) landward of the projected 50-year bankline migration; and (b) at least 20 feet riverward of the levee stability control line based on the applicable project factor-of-safety and (c) at least 10-ft. landward of the existing revetment. The purpose of this restriction is to avoid the inclusion of a potential source of seepage any closer to the levee than the levee stability control line, and also to help assure the pipeline retains adequate cover.

4. The applicant must furnish Engineering evaluations and computations addressing the following concerns and giving specific measures of problem avoidance, dimensions, distances, pressures, weights, and all other pertinent data.

   a. The pilot hole cutter head must not be advanced beyond/ahead of the wash pipe more than a distance such that return flow would be lost. Also, the wash pipe ID should be sufficiently greater than the OD (cutting diameter) of the pilot cutter head such that return flow is enhanced. The applicant should directly address the methodology, which he plans to employ in his efforts to keep the return of flow up the drill hole during his entire operation. These requirements are to assure that blockage of the annular space between the wash pipe and drill pipe and associated pressure build-up do not occur.

   b. Drilling mud must be of sufficient noncolloidal lubricating admixtures to (a) assure complete suspension and removal of sands and other "solids" cuttings/ materials; and (b) provide adequate lubrication to minimize bridging by cohesive materials thereby facilitating surface returns flow along the annular space.

   c. The fly cutter used in the prereamer run must have an OD (cutting diameter) sufficiently greater than the OD of the production pipe such that the hole diameter remains adequate to minimize hang-ups of the production run and thereby, associated stresses on surrounding soils. The applicant must at the same time address the increased seepage potential caused by this annular space developed during drilling.

   d. Prereamer runs must be a continuous operation at least through the down-slope and up-slope cutting sections to

prevent undue stress on the surrounding soils during re-start operations.

e. The applicant must address the ratio of drill diameter versus installed pipe diameter and how seepage through the annular space will be avoided. The applicant should not over ream the final drill hole, as seepage will potentially result.

seepage through annulus and drill ϕ vs pipe ϕ?

5. As part of his submittal of a permit application, the applicant must furnish to the Corps of Engineers proof that his operation will not create a hydraulic fracture of the foundation soil beneath and near the levee. The applicant must submit calculations in accordance with paragraph 4, demonstrating that the downhole mud pressure during the drilling operation results in a **minimum factor of safety equal to 2.0 against hydraulic fracture** of the levee foundation within 300-ft of the levee toe. The calculations must bear the stamp of a registered civil engineer. In addition, the applicant must submit in writing his plan for mitigating the potential problem of hydrolock in the borehole due to unanticipated clogging of the return fluid, and the potential loss of drilling fluid return to the surface as a result of other unforeseen downhole problems.

a. The basic relationship for hydraulic fracture pressure (P_f) for undrained conditions is simply a function of the in-situ minimum principal total stress, σ_3, i.e. the sum of the overburden pressure plus the undrained shear strength s_u at the point of rupture (This Does Not Include Any Side Forces on the Soil Column).

[1] $$P_f = \sigma_3 + s_u$$

b. Undrained conditions assume no flow of the borehole fluid into the soil formation. For bores in South Louisiana soils, employing a bentonite drilling fluid with good wall cake, it is reasonable to assume that undrained conditions exist. The downhole or borehole mud pressure is composed of hydrostatic pressure (position head) and circulation pressure. **The minimum factor of safety of 2.0 against hydraulic fracture** is defined here as the ratio of the existing overburden pressure (hydraulic fracture pressure P_f) to the downhole mud pressure (P_m). – ?

[2] $$F.S. = (\sigma_3 + s_u)/P_m$$

6. Shut-off capability in the production pipeline should be provided to immediately cutoff flow through the pipeline should leakage occur.

7. Positive seepage cutoff or control and impacts of future levee settlements on the pipeline must be addressed and supported by Corps approved engineering analyses.

8. Monitoring of the project by Corps representatives will be a permit requirement. The applicant will reimburse the Corps for all costs, including salaries and per diem, associated with monitoring the entire project. Additionally it is an applicant responsibility to inform the Corps Operations Division permits representative 36 hours in advance of beginning of installation. The Drilling beneath the levee must begin to be performed during the daylight hours Monday through Friday to facilitate inspection operation. The applicant must estimate his work schedule and inform the Corps so that inspection forces may have adequate time to inspect the site.

9. Should any damage to the levee occur as a result of the drilling operation, the owner/applicant is liable for replacing/repairing the damaged levee to the Corps of Engineers satisfaction. Damage is defined as drilling fluid returns to the surface inside the levee cross-section. As example of the damage to levees, which occurred on previous projects, the levee was hydraulically fractured and drilling fluid exited on the crown and/or toe of the levee. Repair may include total replacement of the levee and installation of a grout curtain to the depth of the pipe. This repair/ replacement will be performed in an expedited fashion to Corps specifications. A typical sketch of this repair is enclosed for information only.

10. The applicant must furnish a plan to replace the flood protection should damage occur as a normal part of the application process, see the typical repair enclosed.

11. Down hole pressure monitoring tool must be used during drill and reaming operations and must be within 5 feet of bit or reamer.

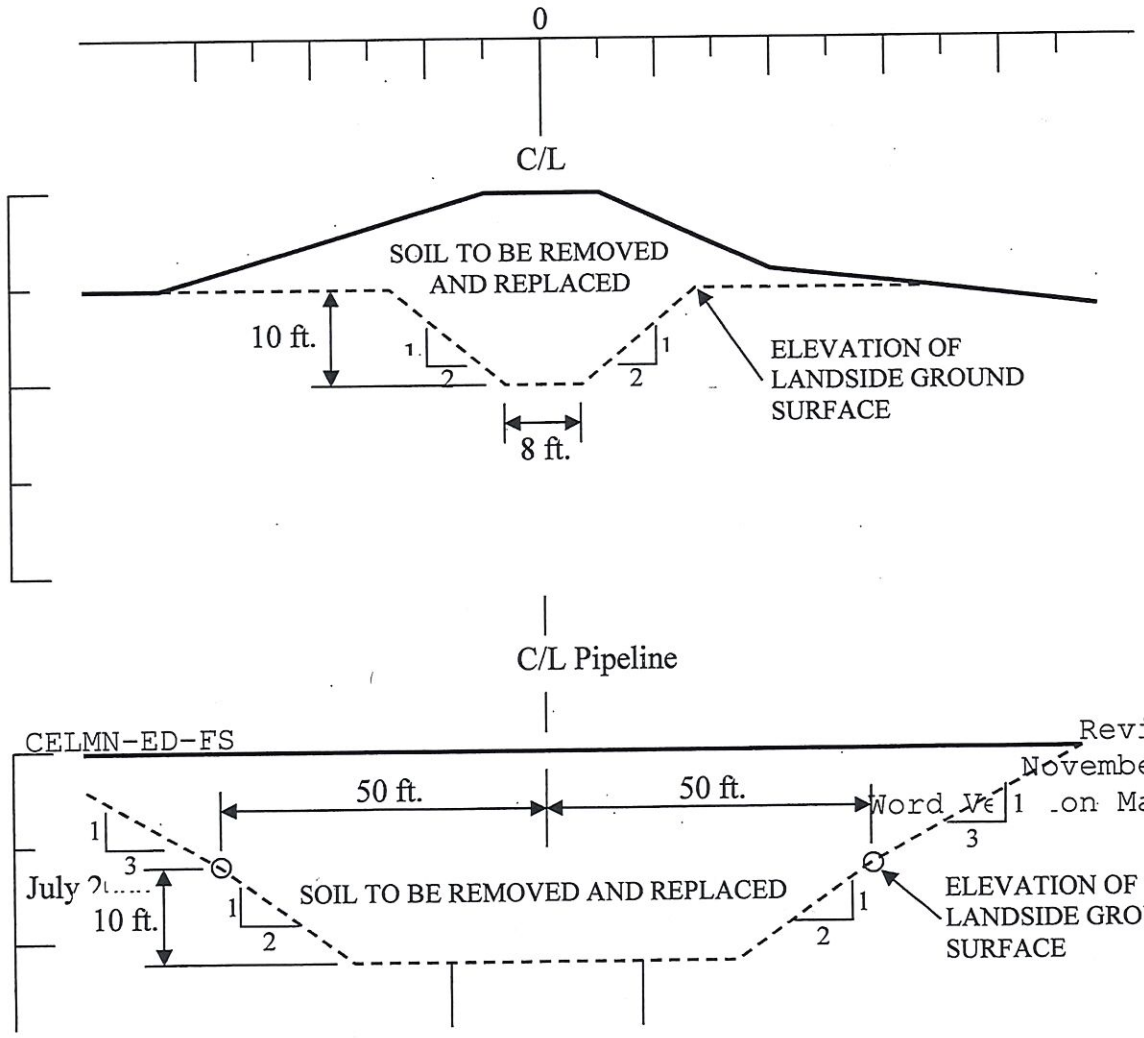
12. **A secondary survey monitoring system such as Tru Tracker or ParaTracker shall to employed to verify the drill bit location within the zone of concern (300 feet either side of**

the levee footprint).

13. Annualar solids will need be below 20 percent, forward movement must stop and annular space cleaned out.

14. Reaming advancement will be limited to 1.5 feet per minute and calculated annular solids must be keep to less than 20 percent.

TYPICAL FLOOD PROTECTION REPAIR



Guidelines for Permit Review

Installing Pipelines by Nearsurface
Directional Drilling Not Under Levees

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2. When the proposed pipeline entry and/or exit point, are located on the batture (riverward of the levees), the entry and/or exit points should be positioned such that the pipeline is: (a) landward of the projected 50-year bankline migration; (b) at least 20 feet riverward of the levee stability control line. The pipeline shall be a minimum of twenty (20) feet flood side of the levee stability control line, based on the applicable project factor-of-safety, at all points; and (c) at least 10-ft. landward of the existing revetment. The purpose of this restriction is to avoid the inclusion of a potential source of seepage any closer to the levee than the levee stability control line, and also to help assure the pipeline retains adequate cover.

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d. Prereamer runs must be a continuous operation at least through the down-slope and up-slope cutting sections to prevent undue stress on the surrounding soils during re-start operations.

e. Drilling fluid pumping pressures should be kept to a minimum to preclude ground uplift and "boils".

Automatic shut-off valves in the production pipeline should be provided to immediately cut-off flow through the pipeline should leakage occur.