



ST. TAMMANY PARISH

MICHAEL B. COOPER
PARISH PRESIDENT

September 20, 2024

Please find the following addendum to the below-mentioned BID.

Addendum No.: 1

Bid#: 24-43-2

Project Name: Brewster Road Sewer Consolidation

Bid Due Date: September 25, 2024



09/20/2024

GENERAL INFORMATION:

1. This addendum forms a part of the Contract Documents and modifies Specification sections as denoted below. **Acknowledge receipt of this addendum in the space provided on the Bid Form.** Failure to do so may subject the Bidder to being considered non - responsive. The Bidder is responsible for disseminating this addendum to all subcontractors and material suppliers concerned. This addendum supersedes any contrary or conflicting information in any previously issued addenda. This Addendum shall be part of the Contract Documents. The following items are issued to add, delete, modify, and clarify the Contract Documents. These items shall be part of and shall have full force and effect as the Contract Documents and the cost involved shall be included in the bid price.
2. A non – mandatory pre – bid conference was held on Friday, September 6, 2024. A copy of the sign – in sheet for the non – mandatory pre – bid conference is included as an attachment to this addendum.
3. Clarifications:
 - a. Road and Lane Closures: Intermittent Lane closures will be permitted along Brewster Road subject to approval by the ENGINEER and OWNER. The contractor shall adhere to DOTD standards for lane and road closures, including flagging operations. The contractor shall be required to submit a schedule for road closures. No lane or road closures will be allowed during school zone hours. Many subdivisions along Brewster Rd have only access from Brewster



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Rd. The contractor shall minimize the lane closure to not impact the public, and the contractor shall work with the Parish to notify the public in advance of any lane or road closures. Night work may be allowed upon written request subject to the approval of the ENGINEER and OWNER.

- b. Demolition of the Existing Treatment Facilities: The existing treatment facility tankage may be cut to be removed. Each facility may be cut into up to two separate pieces for transportation. The contractor shall deliver tankage to a location as determined by St. Tammany Parish Government within a 50 mile radius of the existing treatment facility.
- c. Demolition of Existing Treatment Facilities and Pumping Stations: All valves, blowers, pumps, and control panels shall be delivered to St. Tammany Parish Government Department of Utilities yard on North Tyler Street. All piping may be disposed of.
- d. Materials Quality Assurance Testing: The CONTRACTOR will be required to appoint, employ, and pay for the services of a testing laboratory listed on the St. Tammany Parish prior approved list. See Changes to Contract Specifications for additional requirements.
- e. Removal and Restoration of Drives: Additional items have been added to the Bid Form for removal and restoration of drives. See Changes to Contract Specifications.
- f. Contractor Submittals – provide submittals with a cover sheet provided by the ENGINEER. See Changes to Contract Specifications.
- g. As indicated at the pre – bid conference, drawings have been revised to indicate the limits of walks and drives to be removed and replaced.
- h. The contractor may substitute HDPE bores for open cut areas at no additional cost to the OWNER. 4” HDPE may be substituted for 4” C900. 12” HDPE may be substituted for 12” C900.
- i. The CONTRACTOR may work on multiple areas of the project concurrently.
- j. AIS/BABA: There is no requirement for compliance with American Iron and Steel Act or Build America/Buy America provisions for this project.



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4. Changes to Contract Specifications:

- a. Section 04 – Louisiana Uniform Public Work Bid Form. DELETE the Louisiana Uniform Public Work Bid Form and REPLACE with the attached REVISED Louisiana Uniform Public Work Bid Form.
- b. Section 01 14 00 – Construction Constraints. DELETE Item 1.5 – Construction Sequencing in its entirety and REPLACE with the following:

1.5 CONSTRUCTION SEQUENCING

A. Schedule and sequence construction activities to ensure continuous operation of the existing sanitary sewerage collection system. Develop construction sequencing so that the WORK will not adversely impact the existing system. Assume the full and sole responsibility for development of the construction sequencing. In implementing the construction sequencing, maintain the existing facilities in service until new facilities are constructed and are operational to supplement the existing capacity. When new facilities are operational, the existing facilities may be taken out of service. Use the following general guidelines in planning the sequence of construction.

- 1. Do not begin any construction until site conditions surveys have been completed and accepted by the ENGINEER and OWNER.*
- 2. Do not begin any construction within the right – of – way of any Parish roadway until the temporary traffic control plan has been approved and temporary traffic control devices are in place.*
- 3. Do not begin demolition of existing lift station components until temporary bypass pumping or other flow controls are in place and operational.*
- 4. Do not place rehabilitated pumping stations into service until pressure testing of force mains has been completed and pump station start up and commissioning has been completed.*
- 5. Do not take temporary bypass pumping or other flow controls out of operation until pump station start up and commissioning has been completed*
- 6. Do not begin construction until materials testing for backfill and bedding materials have been completed, reviewed, and accepted.*



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- c. Section 01 14 00 – Construction Constraints. DELETE Item 1.6 - Permits in its entirety and REPLACE with the following:

1.5 PERMITS

A. Abide by the conditions of permits and obtain proof of satisfaction of conditions from issuers of permits prior to acceptance of the WORK by the OWNER.

B. Conditions affecting the CONTRACTOR are found in the following permits.

1. Louisiana Department of Health Permit No. P-24-09-103-137.

2. St. Tammany Parish Building Permit (obtained and paid for by the Contractor).

- d. DELETE Section 01 29 00 – Measurement and Payment in its entirety and REPLACE with the attached REVISED Section 01 29 00 – Measurement and Payment.

- e. Section 01 33 00 – Contractor Submittals. DELETE paragraph 1.3 B in its entirety and REPLACE with the following.

***B. Shop Drawings:** Wherever called for in the Contract Documents or where required by the ENGINEER, furnish to the ENGINEER for review, a number and type of each Shop Drawing submittal as established by the OWNER or ENGINEER. Shop Drawings may include detail design calculations, shop-prepared drawings, fabrication and installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, and similar items. Whenever the CONTRACTOR is required to submit design calculations as part of a submittal, such calculations, ensure that the calculations bear the signature and seal of an engineer registered in the appropriate branch and in the state wherein the project is located, unless otherwise indicated. Submit all submittal documents with the ENGINEER's transmittal form which will be provided to the CONTRACTOR. Sign all submittals as an indication that they have been reviewed for completeness and organization.*

- f. DELETE Section 01 45 00 – Quality Control and REPLACE with the attached REVISED Section 01 45 00 – Quality Control.



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- g. Section 01 50 00 – Protection of Existing Facilities. DELETE Item 1.4 in its entirety and REPLACE with the attached.

1.4 RESTORATION OF PAVEMENT

A. General: Protect pavements not indicated to be removed and replaced from damage. Provide temporary surfacing per the requirements of the authority having jurisdiction over the pavement. Make permanent restoration in accordance with the requirements of the applicable earthwork and pavement specifications sections.

B. Portland Cement Concrete Pavement: Where the CONTRACTOR's operations cause damage to Portland cement concrete pavement which is not indicated to be removed and replaced, remove and repair the damaged Portland cement concrete pavement by patching at no cost to the OWNER. The authority having jurisdiction over the pavement will determine the required limits of patching. Patch Portland cement concrete pavement in accordance with the requirements of the authority having jurisdiction over the pavement. Replace any pavement markings which have been destroyed in accordance with the requirements of the authority having jurisdiction over the pavement

B. Asphalt Concrete Pavement: Where the CONTRACTOR's operations damage asphalt concrete pavement which is not indicated to be removed and replaced, repair by patching, milling, and overlaying at no cost to the OWNER. The authority having jurisdiction over the pavement will determine the required limits of patching, milling, and overlaying. Patch, mill, and overlay asphalt concrete pavement in accordance with the requirements of the authority having jurisdiction over the pavement.

B. Incidental Walks, Drives, and Pavement: Where the CONTRACTOR's operations cause damage to walks, drives, and/or incidental pavement, remove and replace the damaged walk, drive and/or incidental pavement. The authority having jurisdiction over the walk, drive, and/or incidental pavement will determine the required limits of removal and replacement. Repair walks, drives, and incidental pavement in accordance with the requirements of the authority having jurisdiction over the walk, drive, and/or incidental pavement.



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Replace any pavement markings which have been destroyed in accordance with the requirements of the authority having jurisdiction over the walk, drive, and/or incidental pavement.

- h. DELETE Section 09 96 00 – Protective Coatings in its entirety and REPLACE with the attached REVISED Section 09 96 00 – Protective Coatings.
 - i. DELETE Section 31 05 16 – Aggregates in its entirety and REPLACE with the attached REVISED Section 31 05 16 – Aggregates.
 - j. DELETE Section 31 30 00 - Earthwork in its entirety and REPLACE with the attached REVISED Section 31 30 00 - Earthwork.
 - k. DELETE Section 40 91 00 – Control Panels in its entirety.
 - l. ADD the attached Section 40 91 02 – Variable Frequency Drive Control Panel to the Contract Documents.
 - m. ADD the attached Section 40 91 04 – Motor Starter Control Panel to the Contract Documents.
 - n. DELETE Section 43 25 06 – Submersible Solids Handling Pumps and REPLACE with the attached REVISED Section 43 25 06 – Submersible Solids Handling Pumps
5. Changes to Contract Drawings:
- a. DELETE Drawing 10PP-05 and REPLACE with the attached REVISED Drawing 10PP-05.
 - b. DELETE Drawing 10PP-06 and REPLACE with the attached REVISED Drawing 10PP-06.
 - c. DELETE Drawing 10PP-07 and REPLACE with the attached REVISED Drawing 10PP-07.
 - d. DELETE Drawing 10PP-09 and REPLACE with the attached REVISED Drawing 10PP-09.



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- e. DELETE Drawing 20PP-02 and REPLACE with the attached REVISED Drawing 20PP-02.
- f. DELETE Drawing 20PP-03 and REPLACE with the attached REVISED Drawing 20PP-03.
- g. DELETE Drawing 20PP-04 and REPLACE with the attached REVISED Drawing 20PP-04.
- h. DELETE Drawing 20PP-05 and REPLACE with the attached REVISED Drawing 20PP-05.
- i. DELETE Drawing 30-03 and REPLACE with the attached REVISED Drawing 30PP-03.
- j. DELETE Drawing 40PP-02 and REPLACE with the attached REVISED Drawing 40PP-02.
- k. DELETE Drawing 40PP-03 and REPLACE with the attached REVISED Drawing 40PP-03.
- l. DELETE Drawing 40E-02 and REPLACE with the attached REVISED Drawing 40E-02.
- m. DELETE Drawing 40E-04 and REPLACE with the attached REVISED Drawing 40E-04.

QUESTIONS & ANSWERS:

Question 1: Is a job or project trailer required?

Answer 1: A job or project trailer will not be required for the use of the Parish or the ENGINEER. The CONTRACTOR may elect to provide a job or project trailer for his use; however, no additional payment will be made for a job trailer. The CONTRACTOR will be responsible for locating such project trailer outside of the Parish right of way.



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Question 2: Does the owner pay for all testing?

Answer 2: The CONTRACTOR will pay for testing. See clarifications and changes to Contract Specifications.

Question 3: Is this project tax exempt?

Answer 3: A tax exemption certificate will not be provided.

Question 4: Is there a DBE and/or SBE goal % on this project?

Answer 4: There is no DBE and/or SBE goal % on this project.

Question 5: Could you provide the dimensions of the manholes involved in the project and the total number of manholes to be coated?

Answer 5: Refer to the contract drawings.

Question 6: We have previously installed the Mainstay system by Madewell. The project plans indicate in the "Sewer Manhole Notes" and "Sewer Lift Station Notes" sections that both manholes and wet wells could be coated with this system. However, the "Protective Coating" section of the specifications does not mention the Madewell Mainstay system. Could you confirm whether this system is approved for the coating of all manholes and wet wells within the project scope?

Answer 6: See Changes to Contract Specifications (revised Section 09 96 00 – Protective Coatings). Madewell is included in the revised Section 09 96 00.

Question 7: Are Prevailing Wages required? If so, please provide the rates?

Answer 7: There are no prevailing wage rates established for this project.

Question 8: The plans are unclear on the limits of the driveways that will have to be removed & replaced, can you please provide notations on the drawings showing the limits of driveways that need to be removed and replaced?



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Answer 8: Refer to Clarifications, 3g and Changes to Contract Drawings.

Question 9: The specs do not state how we are to be paid for the removal & replacement of driveways. Where should this cost be accounted for?

Answer 9: See Changes to Contract Specifications. A bid item has been added.

Question 10: The plans are unclear on where the HDD bores start and end. Can you please provide notations on the drawings on where the HDD bores start and end as well as where the bore pits are to be located.

Answer 10: See Changes to Contract Drawings.

Question 11: Does the project have to be completed in phases, or can all the areas be worked on at the same time?

Answer 11: Refer to Clarifications, 3i.

Question 12: Does the contractor have the option to change areas indicated as open cut to HDD bores?

Answer 12: Refer to Clarifications, 3h.

ATTACHMENTS:

1. Sign in sheet for the non – mandatory pre – bid conference held on Friday, September 6, 2024.
2. A copy of the ENGINEER's Contractor Submittals Cover Sheet for the CONTRACTOR's use when transmitting submittals.
3. A copy of the LDH permit issued for the Project.
4. REVISED Section 04 – Louisiana Uniform Public Work Bid Form.



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5. REVISED Section 01 29 00 – Measurement and Payment.
6. REVISED Section 01 45 00 – Quality Control.
7. REVISED Section 09 96 00 – Protective Coatings.
8. REVISED Section 31 05 16 – Aggregates.
9. REVISED Section 31 30 00 – Earthwork.
10. Section 40 91 02 – Variable Frequency Drive Control Panel.
11. Section 40 91 04 – Motor Starter Control Panel.
12. REVISED Section 43 25 06 – Submersible Solids Handling Pumps.
13. REVISED Drawing 10PP-05.
14. REVISED Drawing 10PP-06.
15. REVISED Drawing 10PP-07.
16. REVISED Drawing 10PP-09.
17. REVISED Drawing 20PP-02.
18. REVISED Drawing 20PP-03.
19. REVISED Drawing 20PP-04.
20. REVISED Drawing 20PP-05.
21. REVISED Drawing 30PP-03.
22. REVISED Drawing 40PP-02.
23. REVISED Drawing 40PP-03.
24. REVISED Drawing 40E-02.



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25. REVISED Drawing 40E-04.

End of Addendum # 1

St. Tammany Parish Government Office Complex, Building "B" 21454 Koop Dr. Mandeville, LA 70471, 3rd Floor Staff Conference Room		Non-Mandatory Pre-Bid Sign-In Sheet		Friday, September 6, 2024		10:00 AM to 12:00 PM	
Brewster Road Sewer Consolidation Bid No.: 24-43-2							
	Name	Company	Email	Phone	Time In	Time Out	
1	Rachel Forehand	STP Gov Procurement	rforehand@stpgov.org	985 898 2520	9:51	10:24	
2	Chris Snowden	subterranean const	csnowden@subtlc.com	504-782-7680	9:52	10:22	
3	Nicholas Dupaquier	BLD Services	nich.dupaq@bidllc.net	504-466-1344	9:53	10:20	
4	Melissa Falvey	Conh and Construction, LLC	Melshell@conhandindustri.com	504-222-3518	9:55	10:20	
5	DAVID MARTIN	FAIRWAY CONSULTING	DAVID.MARTIN@FAIRWAYCE.COM	(504) 256-5136	9:56	10:20	
6	Matthew Loker	Fairway C+E	Matthew.Loker@Fairwayce.com	(985) 688-3877	9:56	10:20	
7	Elian Galarza	Python Corporation	egalarza@python-corp.com	(985) 377 4933	9:58	10:20	
8	Buddy Wagnerspack	Kass Bros	bwagnerspack@kassbros.com	504-583-0900	10:00	10:20	
9	Barp Leckert	KASS Bros	BLECKERT@KASSBROS.COM	504-214-3849	10:00	10:20	
10	Andrew Montiveros	STP. DU	AMONTIVEROS@STPGOV.ORG	(985) 893-1717	10:10	10:10	
11	Chris Snowden RNF	subterranean const					
12							
13							



Contractor's Submittal Transmittal Form

For all contractor submittals, including shop drawings, samples calculation, data, or other

		Date	Transmittal No.
To:		From:	
Attention:		Attention:	
Project Name		This is: <input type="checkbox"/> Check one an original submittal	
Owner		<input type="checkbox"/> a 2nd submittal	
		<input type="checkbox"/> a ____ submittal	
Subject of Submittal		Equipment Designation: Specification Section(s):	
Complete either (a) or (b), following:			
<input type="checkbox"/>		(a) We have verified that the materials or equipment contained in this submittal meets all the requirements specified or shown (no exceptions)	
<input type="checkbox"/>		(b) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown, except for the following deviations (List Deviations):	
Contractor's Authorized Representative _____			



State of Louisiana
Louisiana Department of Health
Office of Public Health

Tuesday, August 6, 2024

St. Tammany Parish Department of Utilities
620 N. Tyler Street
Covington, LA 70433

Re: Permit: P-24-09-103-137
West St. Tammany Regional WWTP
AI #125944

Brewster Road Sewer Consolidation:

- Proposed Three Rivers pump station, Fairfield Oaks pump station, Tchefuncte lift station and force mains:
~2,254 LF of 4", 3,465 LF of 12", and ~4,247 LF of 14" C900, DR18 PVC or C906, DR11 HDPE Force Main
Three Rivers Lift Station(s) with 2 Submersible Pumps, 120 GPM at 35 ft TDH, 6 ft Concrete Wet Well, Vent, Controls, Valves, Covers, and Appurtenances
Fairfield Oaks Lift Station(s) with 2 self priming suction Pumps, 150 GPM at 48 ft TDH, 6 ft Concrete Wet Well, Vent, Controls, Valves, Covers, and Appurtenances
Tchefuncte Lift Station(s) with 2 Submersible Pumps, 900 GPM at 71 ft TDH, 10 ft Concrete Wet Well, Vent, Controls, Valves, Covers, and Appurtenances

LDH Tracking ID: 60004505

St. Tammany Parish
Covington, Louisiana

Dear Mr. Tissue:

Plans and specifications of the above named project have been reviewed and found to be in substantial conformity with applicable provisions of the Sanitary Code. This Approval Letter refers to the sanitary features of the design only, and is not to be taken as an approval of structural details, except insofar as they may affect sanitation.

This Approval Letter is issued with the stipulation that the wastewater collection system will be owned, operated, and maintained by: West St. Tammany Regional WWTP AI #125944 St. Tammany Parish Department of Utilities 620 N. Tyler Street Covington, LA 70433

This Approval Letter is automatically canceled if construction of the project has not been started within two (2) years after the date of this letter.

If construction commences before a permit is granted, a Notice of Violation will be issued for the project. A letter of "no objection" will not be issued on any pre-constructed project unless the project fully complies with the requirements of the Sanitary Code.

Brewster Road Sewer Consolidation

August 6, 2024

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In the event that it is determined at some point in the future that a design error escaped our detection during our review of these plans and specifications, that oversight shall not relieve you, the applicant, of the responsibility for complete compliance with the applicable requirements of the Louisiana Administrative Code [particularly, LAC 51 (Public Health- Sanitary Code) and LAC 48 (Public Health – General)], specifically including correcting the violations inadvertently overlooked.

After construction is completed, the responsible party for the design of the project shall submit a Confirmation Letter to this Office 42354 West Club Deluxe Road Suite 12 Hammond, LA 70403 certifying that the project was constructed in accordance with the plans approved by this Office. This Confirmation Letter shall be required prior to occupancy.

Sincerely,

A handwritten signature in black ink that reads "Lisa de la Fuente". The signature is written in a cursive style with a long, sweeping underline.

Lisa de la Fuente, P. E.
Regional Engineer
Bureau of Engineering Region IX

cc: David Martin, P.E., Fairway Consulting & Engineering
Chance Wooton, St. Tammany Parish Sanitarian
Brant Conti, Region IX Sanitarian Manager
Corey Harris, Jr., P.E., Region IX Engineer

LOUISIANA UNIFORM PUBLIC WORK BID FORM UNIT PRICE FORM

TO:

St. Tammany Parish Government

21454 Koop Drive, Suite 2F

Mandeville, LA. 70471

(OWNER TO PROVIDE NAME AND ADDRESS OF OWNER)

BID FOR:

Brewster Road Sewer Consolidation

Bid Number 24-43-2

(OWNER TO PROVIDE PROJECT NAME & OTHER IDENTIFYING INFO)

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

REF NO.:	Description:	<input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT #		BREWSTER ROAD FORCE MAIN - MOBILIZATION	
		QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-001		1	LUMP SUM		
REF NO.:	Description:	<input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT #		BREWSTER ROAD FORCE MAIN - 12" SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL	
REF NO.:	Description:	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-002		2,327	LINEAR FOOT		
REF NO.:	Description:	<input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT #		BREWSTER ROAD FORCE MAIN - 12" DUCTILE IRON FITTINGS, ALL TYPES	
REF NO.:	Description:	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-003		6	EACH		
REF NO.:	Description:	<input checked="" type="checkbox"/> BASE BID OR <input type="checkbox"/> ALT #		BREWSTER ROAD SEWER FORCE MAIN - 14" DUCTILE IRON FITTINGS, ALL TYPES	
REF NO.:	Description:	QUANTITY	UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-004		2	EACH		

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.

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

Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	BREWSTER ROAD SEWER FORCE MAIN - 14" SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-005		4,650		LINEAR FOOT		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	BREWSTER ROAD SEWER FORCE MAIN - 12" C900 FORCE MAIN BY OPEN CUT	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-006		84		LIENAR FOOT		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	BREWSTER ROAD SEWER FORCE MAIN - 14" C900 FORCE MAIN BY OPEN CUT	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-007		20		LINEAR FOOT		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	BREWSTER ROAD SEWER FORCE MAIN - 12" BURIED GATE VALVE	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-008		1		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	BREWSTER ROAD SEWER FORCE MAIN - ARV AND VAULT	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000168-009		1		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	FAIRFIELD OAKS SEWER CONSOLIDATION - MOBILIZATION	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000170-001		1		LUMP SUM		

Version 2017 Q2

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.

REVISED ADDENDUM 1

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

Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	FAIRFIELD OAKS SEWER CONSOLIDATION - DEMOLITION AND DISPOSAL OF FAIRFIELD OAKS WWTP	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000170-002		1		LUMP SUM		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	FAIRFIELD OAKS SEWER CONSOLIDATION - 4" SEWER FORCE MAIN BY OPEN CUT	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000170-003		770		LINEAR FOOT		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	FAIRFIELD OAKS SEWER CONSOLIDATION - DUCTILE IRON FITTINGS, ALL TYPES	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000170-004		11		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	FAIRFIELD OAKS SEWER CONSOLIDATION - 4" SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000170-005		947		LINEAR FOOT		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	FAIRFIELD OAKS SEWER CONSOLIDATION - CONSTRUCT FAIRFIELD OAKS PUMPING STATION	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000170-006		1		LUMP SUM		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	FAIRFIELD OAKS SEWER CONSOLIDATION - 4" BURIED GATE VALVE	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000170-007		1		EACH		

Version 2017 Q2

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.
REVISED ADDENDUM 1

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

Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	FAIRFIELD OAKS SEWER CONSOLIDATION - ARV AND VAULT	UNIT PRICE EXTENSION (Quantity times unit price)
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	
23000170-008		1		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	THREE RIVERS SEWER CONSOLIDATION - MOBILIZATION	UNIT PRICE EXTENSION (Quantity times unit price)
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	
23000177-001		1		LUMP SUM		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	THREE RIVERS SEWER CONSOLIDATION - REMOVAL AND DISPOSAL OF THREE RIVERS TREATMENT PLANT	UNIT PRICE EXTENSION (Quantity times unit price)
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	
23000177-002		1		LUMP SUM		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	THREE RIVERS SEWER CONSOLIDATION - 4" SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL	UNIT PRICE EXTENSION (Quantity times unit price)
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	
23000177-003		474		LINEAR FOOT		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	THREE RIVERS SEWER CONSOLIDATION - 4" DUCTILE IRON FITTINGS, ALL TYPES	UNIT PRICE EXTENSION (Quantity times unit price)
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	
23000177-004		3		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	THREE RIVERS SEWER CONSOLIDATION - 4" SEWER FORCE MAIN BY OPEN CUT	UNIT PRICE EXTENSION (Quantity times unit price)
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	
23000177-005		37		LINEAR FOOT		

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.

REVISED ADDENDUM 1

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

Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	THREE RIVERS SEWER CONSOLIDATION - CONSTRUCT THREE RIVERS SEWER PUMPING STATION	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000177-006		1		LUMP SUM		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	THREE RIVERS SEWER CONSOLIDATION - 4" BURIED GATE VALVE	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000177-007		1		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	THREE RIVERS SEWER CONSOLIDATION - ARV AND VAULT	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000177-008		1		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	TCHEFUNCTE PARC SEWER CONSOLIDATION - MOBILIZATION	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000176-001		1		LUMP SUM		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	TCHEFUNCTE PARC SEWER CONSOLIDATION - DEMOLITION OF EXISTING TCHEFUNCTE PARC SEWER PUMPING STATION	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000176-002		1		LUMP SUM		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	TCHEFUNCTE PARC SEWER CONSOLIDATION - 12" DUCTILE IRON FITTINGS, ALL TYPES	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000176-003		18		EACH		

Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.

REVISED ADDENDUM 1

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

Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	TCHEFUNCTE PARC SEWER CONSOLIDATION - 12" SEWER FORCE MAIN BY OPEN CUT	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000176-004		420		LINEAR FOOT		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	TCHEFUNCTE PARC SEWER CONSOLIDATION - 14" SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000176-005		1,024		LINEAR FOOT		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	TCHEFUNCTE PARC SEWER CONSOLIDATION - CONSTRUCT NEW TCHEFUNCTE PARC SEWER PUMPING STATION	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000176-006		1		LUMP SUM		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	TCHEFUNCTE PARC SEWER CONSOLIDATION - 12" BURIED GATE VALVE	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000176-007		1		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	TCHEFUNCTE PARC SEWER CONSOLIDATION - ARV AND VAULT	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000176-008		1		EACH		
Description:		<input checked="" type="checkbox"/> BASE BID	OR	<input type="checkbox"/> ALT #	REMOVAL AND REPLACEMENT OF CONCRETE WALKS AND DRIVES	
REF NO.:		QUANTITY		UNIT OF MEASURE	UNIT PRICE	UNIT PRICE EXTENSION (Quantity times unit price)
23000170-009		100		SQUARE YARD		

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Wording for "description" is to be provided by the Owner. All Quantities Estimated. The Contractor will be paid based upon actual quantities as verified by the Owner.

REVISED ADDENDUM 1

SECTION 01 29 00 - MEASUREMENT AND PAYMENT (REVISED - ADDENDUM 1)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. Payment for the various items on the Bid Form, as further specified herein, will include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the WORK all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Bid Schedule. therefore, include all costs of the WORK in the prices named in the Bid Schedule for the various appurtenant items of WORK.

1.2 ACCURACY

- A. The ENGINEER will be the judge of the accuracy of measurements, or approximations made in lieu of accurate determinations, and these decisions will be binding upon both the CONTRACTOR and the OWNER.
- B. The ENGINEER will utilize the accepted Schedule of Values for the purpose of estimating the value of WORK completed for the evaluation of requests for payment.
- C. In computing volumes of excavation, the average end area method or other acceptable methods will be used.
- D. When United States standard units are used, the pound or the ton will be the standard units of weight. The term "ton," in the United States standard, will mean the short ton of 2,000 pounds avoirdupois. Weigh materials measured or proportioned by weight on approved scales by qualified personnel at designated locations. If material is shipped by rail, the car weight may be accepted provided the weight of material only will be paid for; however, car weights will not be acceptable for material to be passed through mixing plants. Weigh trucks used to haul material being paid by measured weight empty at such times as directed; and provide each truck a plainly legible identification mark.
- E. Haul materials specified to be measured by volume in hauling vehicles in approved vehicles that will be measured at the point of delivery on the project. Vehicles may be of any acceptable size or type, provided the body is of such shape that the volume can be readily and accurately determined. Load vehicles to at least a predetermined permanently fixed mark, which defines a known volume, upon arrival at the point of delivery. Vehicles will be measured in increments of 0.5 cubic yard, except that when tailgate spreader-boxes are used to place aggregate materials for asphaltic surface



treatment, the volume of the spreader-ox will be added to the volume of the vehicle. When materials are measured by weight and converted to volume for payment, conversion will be made to the nearest 0.1 cubic yard.

- F. Where decimal places are included in the estimated quantities shown in the Bid Form, the ENGINEER will round quantities to the same number of decimal places shown in the estimated quantities on the Bid Form.
- G. The terms "lump sum, each, or unit" when used as a unit of measure for payment will mean complete payment for the work described in the contract. Portions of lump sum items may be paid where deemed acceptable by the ENGINEER and OWNER based upon an estimate of the proportion of the WORK of the lump sum item acceptably completed in accordance with the Contract Documents. The ENGINEER may utilize an accepted Schedule of Values to make such determinations. Provide all supporting documentation requested by the ENGINEER in this regard.

1.3 BREWSTER ROAD SEWER FORCE MAIN - MOBILIZATION (REF. NO. 23000168-001)

- A. **Measurement:** No measurement will be made for this item.
- B. **Payment:** Payment for this item will be made at the lump sum price on the Bid Form, or in portions thereof in accordance with the table below. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the successful mobilization and de – mobilization to and from the site, temporary traffic controls, temporary environmental controls, construction layout, and project closeout, all in accordance with the requirements of the Contract Documents.

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Mobilization
<i>1st Application for Payment</i>	25
10	50
25	75
50	100

1.4 BREWSTER ROAD SEWER FORCE MAIN – 12” SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL (REF. NO. 23000168-002)

- A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe placed as determined by the approved drilling logs, not inclusive of the length of fittings and valves.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full



compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of water main pipeline installed by horizontal directional drilling, inclusive but not limited to launching and receiving pits, excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.5 BREWSTER ROAD SEWER FORCE MAIN – 12” DUCTILE IRON FITTINGS, ALL TYPES (REF. NO. 23000168-003)

- A. **Measurement:** Measurement for payment for this item will be based upon the number of such fittings furnished and installed in place.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of fittings within the pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of fittings, retainer glands, and backfilling and all other work all in accordance with the requirements of the Contract Documents

1.6 BREWSTER ROAD SEWER FORCE MAIN – 14” DUCTILE IRON FITTINGS, ALL TYPES (REF. NO. 23000168-004)

- A. **Measurement:** Measurement for payment for this item will be based upon the number of such fittings furnished and installed in place.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of fittings within the pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of fittings, retainer glands, and backfilling and all other work all in accordance with the requirements of the Contract Documents

1.7 BREWSTER ROAD SEWER FORCE MAIN – 14” SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL (REF. NO. 23000168-005)

- A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe placed as determined by the approved drilling logs, not inclusive of the length of fittings and valves.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the



installation of water main pipeline installed by horizontal directional drilling, inclusive but not limited to launching and receiving pits, excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.8 BREWSTER ROAD SEWER FORCE MAIN – 12” SEWER FORCE MAIN BY OPEN CUT (REF. NO. 23000168-006)

- A. Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe as measured between outside of structures, not inclusive of the length of fittings and valves.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of restrained water main pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, provision and installation of pipe restraints, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.9 BREWSTER ROAD SEWER FORCE MAIN – 14” SEWER FORCE MAIN BY OPEN CUT (REF. NO. 23000168-007)

- A. Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe as measured between outside of structures, not inclusive of the length of fittings and valves.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of restrained water main pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, provision and installation of pipe restraints, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.10 BREWSTER ROAD SEWER FORCE MAIN – 12” BURIED GATE VALVE (REF. NO. 23000168-008)

- A. Measurement:** Measurement for payment for this item will be based upon the number of such valves furnished and installed in place.
- B. Payment:** Payment for this item will be made at the unit price named on the



bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of the valve, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision and installation of the valve including retainer glands for full restraint of the valve, valve actuator, extension stem, soil pipe, valve casting, and concrete pad (or manhole cover for buried valves in pavement), and backfilling all in accordance with the requirements of the Contract Documents.

1.11 BREWSTER ROAD SEWER FORCE MAIN – ARV AND VAULT (REF. NO. 23000168-009)

- A. Measurement:** Measurement for payment for this item will be based upon the number of such valves furnished and installed in place.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of the valve inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision and installation of the valve, outlet piping, concrete box and lid, air release piping, concrete pad, and backfilling all in accordance with the requirements of the Contract Documents.

1.12 FAIRFIELD OAKS SEWER CONSOLIDATION – MOBILIZATION (REF. NO. 23000170-001)

- A. Measurement:** No measurement will be made for this item.
- A. Payment:** Payment for this item will be made at the lump sum price on the Bid Form, or in portions thereof in accordance with the table below. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the successful mobilization and de – mobilization to and from the site, temporary traffic controls, temporary environmental controls, construction layout, and project closeout, all in accordance with the requirements of the Contract Documents.

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Mobilization
<i>1st Application for Payment</i>	25
10	50
25	75
50	100



1.13 FAIRFIELD OAKS SEWER CONSOLIDATION – DEMOLITION AND DISPOSAL OF FAIRFIELD OAKS WWTP (REF. NO. 23000170-002)

- A. Measurement: No Measurement will be made for this item. Payment will be made based upon the estimated amount of the WORK completed in accordance with the accepted Schedule of Values.
- B. Payment: Payment for this item will be made at, or in portions thereof based upon the estimated amount of the WORK completed, of the lump sum bid price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the complete removal of the existing facility as indicated on the drawings and as specified.

1.14 FAIRFIELD OAKS SEWER CONSOLIDATION – 4" SEWER FORCE MAIN BY OPEN CUT (REF. NO. 23000170-003)

- A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe as measured between outside of structures, not inclusive of the length of fittings and valves.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of restrained water main pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, provision and installation of pipe restraints, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.15 FAIRFIELD OAKS SEWER CONSOLIDATION – 4" DUCTILE IRON FITTINGS, ALL TYPES (REF. NO. 23000170-004)

- A. Measurement: Measurement for payment for this item will be based upon the number of such fittings furnished and installed in place.
- B. Payment: Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of fittings within the pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of fittings, retainer glands, and backfilling and all other work all in accordance with the requirements of the Contract Documents



1.16 FAIRFIELD OAKS SEWER CONSOLIDATION – 4” SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL (REF. NO. 23000170-005)

- A. Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe placed as determined by the approved drilling logs, not inclusive of the length of fittings and valves.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of water main pipeline installed by horizontal directional drilling, inclusive but not limited to launching and receiving pits, excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.17 FAIRFIELD OAKS SEWER CONSOLIDATION – CONSTRUCT FAIRFIELD OAKS SEWER PUMP STATION (REF. NO. 23000170-006)

- A. Measurement:** No measurement will be made for this lump sum item.
- B. Payment:** Payment for this item will be made at, or in portions of based upon the portion of total work completed, the lump sum price named in the Bid Form, which price shall constitute full compensation for materials, labor and equipment required for the complete mechanical, structural, and electrical work necessary for the construction of the lift station as detailed within the Contract Documents, including demolition, excavation and backfilling, piping, valves, temporary flow controls, electrical and controls work, structural work, site work, mechanical work, and all other items required under the Contract Documents. Payments will be based upon the accepted Schedule of Values specified under Section 01 29 73 – Schedule of Values.

1.18 FAIRFIELD OAKS SEWER CONSOLIDATION – 4” BURIED GATE VALVE (REF. NO. 23000170-007)

- A. Measurement:** Measurement for payment for this item will be based upon the number of such valves furnished and installed in place.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of the valve, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision and installation of the valve including retainer glands for full restraint of the valve, valve actuator, extension stem, soil pipe, valve casting, and concrete pad (or manhole cover for buried valves in pavement), and backfilling all in accordance with the requirements of the Contract Documents.



1.19 FAIRFIELD OAKS SEWER CONSOLIDATION – ARV AND VAULT (REF. NO. 23000170-008)

- A. Measurement: Measurement for payment for this item will be based upon the number of such valves furnished and installed in place.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of the valve inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision and installation of the valve, outlet piping, concrete box and lid, air release piping, concrete pad, and backfilling all in accordance with the requirements of the Contract Documents.

1.20 THREE RIVERS SEWER CONSOLIDATION – MOBILIZATION (REF. NO. 23000177-001)

- A. **Measurement:** No measurement will be made for this item.
- A. **Payment:** Payment for this item will be made at the lump sum price on the Bid Form, or in portions thereof in accordance with the table below. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the successful mobilization and de – mobilization to and from the site, temporary traffic controls, temporary environmental controls, construction layout, and project closeout, all in accordance with the requirements of the Contract Documents.

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Mobilization
<i>1st Application for Payment</i>	25
10	50
25	75
50	100

1.21 THREE RIVERS SEWER CONSOLIDATION – REMOVAL AND DISPOSAL OF EXISTING THREE RIVERS TREATMENT PLANT (REF. NO. 23000177-002)

- A. Measurement: No Measurement will be made for this item. Payment will be made based upon the estimated amount of the WORK completed in accordance with the accepted Schedule of Values.
- B. Payment: Payment for this item will be made at, or in portions thereof based upon the estimated amount of the WORK completed, of the lump sum bid price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services



necessary for the complete removal of the existing facility as indicated on the drawings and as specified.

1.22 THREE RIVERS SEWER CONSOLIDATION – 4” SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL (REF. NO. 23000177-003)

- A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe placed as determined by the approved drilling logs, not inclusive of the length of fittings and valves.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of water main pipeline installed by horizontal directional drilling, inclusive but not limited to launching and receiving pits, excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.23 THREE RIVERS SEWER CONSOLIDATION – 4” DUCTILE IRON FITTINGS, ALL TYPES (REF. NO. 23000177-004)

- A. **Measurement:** Measurement for payment for this item will be based upon the number of such fittings furnished and installed in place.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of fittings within the pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of fittings, retainer glands, and backfilling and all other work all in accordance with the requirements of the Contract Documents

1.24 THREE RIVERS SEWER CONSOLIDATION – 4” SEWER FORCE MAIN BY OPEN CUT (REF. NO. 23000177-005)

- A. **Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe as measured between outside of structures, not inclusive of the length of fittings and valves.
- B. **Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of restrained water main pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, provision and



installation of pipe restraints, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.25 THREE RIVERS SEWER CONSOLIDATION – CONSTRUCT THREE RIVERS SEWER PUMP STATION (REF. NO. 23000177-006)

A. Measurement: No measurement will be made for this lump sum item.

A. Payment: Payment for this item will be made at, or in portions of based upon the portion of total work completed, the lump sum price named in the Bid Form, which price shall constitute full compensation for materials, labor and equipment required for the complete mechanical, structural, and electrical work necessary for the construction of the lift station as detailed within the Contract Documents, including demolition, excavation and backfilling, piping, valves, temporary flow controls, electrical and controls work, structural work, site work, mechanical work, and all other items required under the Contract Documents. Payments will be based upon the accepted Schedule of Values specified under Section 01 29 73 – Schedule of Values.

1.26 THREE RIVERS SEWER CONSOLIDATION – 4” BURIED GATE VALVE (REF. NO. 23000177-007)

A. Measurement: Measurement for payment for this item will be based upon the number of such valves furnished and installed in place.

B. Payment: Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of the valve, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision and installation of the valve including retainer glands for full restraint of the valve, valve actuator, extension stem, soil pipe, valve casting, and concrete pad (or manhole cover for buried valves in pavement), and backfilling all in accordance with the requirements of the Contract Documents.

1.27 THREE RIVERS SEWER CONSOLIDATION – ARV AND VAULT (REF. NO. 23000177-008)

A. Measurement: Measurement for payment for this item will be based upon the number of such valves furnished and installed in place.

B. Payment: Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of the valve inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision and installation of the valve, outlet piping, concrete box and lid, air release piping, concrete pad, and backfilling all in accordance with the requirements of the Contract Documents.



1.28 TCHEFUNCTE PARC SEWER CONSOLIDATION – MOBILIZATION (REF. NO. 23000176-001)

A. Measurement: No measurement will be made for this item.

A. Payment: Payment for this item will be made at the lump sum price on the Bid Form, or in portions thereof in accordance with the table below. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the successful mobilization and de – mobilization to and from the site, temporary traffic controls, temporary environmental controls, construction layout, and project closeout, all in accordance with the requirements of the Contract Documents.

Percent of Total Contract Amount Earned	Allowable Percent of Lump Sum Price for Mobilization
<i>1st Application for Payment</i>	25
10	50
25	75
50	100

1.29 TCHEFUNCTE PARC SEWER CONSOLIDATION – DEMOLITION OF TCHEFUNCTE PARC SEWER PUMPING STATION (REF. NO. 23000176-002)

- A.** Measurement: No Measurement will be made for this item. Payment will be made based upon the estimated amount of the WORK completed in accordance with the accepted Schedule of Values.
- B.** Payment: Payment for this item will be made at, or in portions thereof based upon the estimated amount of the WORK completed, of the lump sum bid price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the complete removal of the existing facility as indicated on the drawings and as specified.

1.30 TCHEFUNCTE PARC SEWER CONSOLIDATION – 12” DUCTILE IRON FITTINGS, ALL TYPES (REF. NO. 23000176-003)

- A. Measurement:** Measurement for payment for this item will be based upon the number of such fittings furnished and installed in place.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the



installation of fittings within the pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of fittings, retainer glands, and backfilling and all other work all in accordance with the requirements of the Contract Documents

1.31 TCHEFUNCTE PARC SEWER CONSOLIDATION – 12” SEWER FORCE MAIN BY OPEN CUT (REF. NO. 23000176-004)

- A. Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe actually placed as determined by measurement along the centerline of such pipe as measured between outside of structures, not inclusive of the length of fittings and valves.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of restrained water main pipeline, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, provision and installation of pipe restraints, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.32 TCHEFUNCTE PARC SEWER CONSOLIDATION – 14” SEWER FORCE MAIN BY HORIZONTAL DIRECTIONAL DRILL (REF. NO. 23000176-005)

- A. Measurement:** Measurement for payment for this item will be based upon the number of linear feet of such pipe placed as determined by the approved drilling logs, not inclusive of the length of fittings and valves.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of water main pipeline installed by horizontal directional drilling, inclusive but not limited to launching and receiving pits, excavation, shoring for excavation safety, provision and placement of bedding material, provision, placement and joining of pipe, pressure testing and disinfection of pipe, joining of pipe to structures, valves, and fittings, and backfilling and all other work all in accordance with the requirements of the Contract Documents.

1.33 TCHEFUNCTE PARC SEWER CONSOLIDATION – CONSTRUCT TCHEFUNCTE PARC SEWER PUMP STATION (REF. NO. 23000176-006)

- A. Measurement:** No measurement will be made for this lump sum item.
- A. Payment:** Payment for this item will be made at, or in portions of based upon the portion of total work completed, the lump sum price named in the Bid Form, which price shall constitute full compensation for materials, labor and equipment required for the complete mechanical, structural, and electrical



work necessary for the construction of the lift station as detailed within the Contract Documents, including demolition, excavation and backfilling, piping, valves, temporary flow controls, electrical and controls work, structural work, site work, mechanical work, and all other items required under the Contract Documents. Payments will be based upon the accepted Schedule of Values specified under Section 01 29 73 – Schedule of Values.

1.34 TCHEFUNCTE PARC SEWER CONSOLIDATION – 12” BURIED GATE VALVE (REF. NO. 23000176-007)

- A. Measurement:** Measurement for payment for this item will be based upon the number of such valves furnished and installed in place.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of the valve, inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision and installation of the valve including retainer glands for full restraint of the valve, valve actuator, extension stem, soil pipe, valve casting, and concrete pad (or manhole cover for buried valves in pavement), and backfilling all in accordance with the requirements of the Contract Documents.

1.35 TCHEFUNCTE PARC SEWER CONSOLIDATION – ARV AND VAULT (REF. NO. 23000176-008)

- A. Measurement:** Measurement for payment for this item will be based upon the number of such valves furnished and installed in place.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the installation of the valve inclusive but not limited to excavation, shoring for excavation safety, provision and placement of bedding material, provision and installation of the valve, outlet piping, concrete box and lid, air release piping, concrete pad, and backfilling all in accordance with the requirements of the Contract Documents.

1.36 REMOVAL AND REPLACEMENT OF CONCRETE WALKS AND DRIVES ((REF. NO. 23000170-009)

- A. Measurement:** Measurement for payment for this item will be based upon the number of square yards of concrete walks and drives removed and replaced as determined by field measurement along neat lines.
- B. Payment:** Payment for this item will be made at the unit price named on the bid form. Payment of said price listed on the Bid Form constitutes full compensation to be paid to the CONTRACTOR for this item, inclusive of all labor, products and materials, equipment, and services necessary for the removal and replacement of driveways, inclusive of demolition and disposal



of concrete walks and drives and reinforcing, forming, placement of concrete, curing of concrete, and removal and disposal of forms, all in accordance with the requirements of the Contract Documents.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION (NOT USED)

- END OF SECTION -



SECTION 01 45 00 - QUALITY CONTROL (REVISED – ADDENDUM 1)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. Specific quality control requirements for the WORK are indicated throughout the Contract Documents. The requirements of this Section are primarily related to performance of the WORK beyond furnishing of manufactured products. The term "Quality Control" includes inspection, sampling and testing, and associated requirements.

1.2 INSPECTION AT PLACE OF MANUFACTURE

- A. Unless otherwise indicated, all products, materials, and equipment are subject to inspection by the ENGINEER at the place of manufacture.
- B. The presence of the ENGINEER at the place of manufacturer, however, will not relieve the CONTRACTOR of the responsibility for providing products, materials, and equipment which comply with all requirements of the Contract Documents. Compliance is a duty of the CONTRACTOR, and said duty is not avoided by any act or omission on the part of the ENGINEER.

1.3 SAMPLING AND TESTING

- A. Unless otherwise indicated, all sampling and testing will be in accordance with the methods prescribed in the current standards of the ASTM, as applicable to the class and nature of the article or materials considered; however, the OWNER reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the ENGINEER will assure the OWNER that the quality of the workmanship is in full accord with the Contract Documents.
- B. Any waiver by the OWNER of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the testing or other quality assurance requirements originally indicated, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial WORK, will not be construed as a waiver of any requirements of the Contract Documents.
- C. Notwithstanding the existence of such waiver, the OWNER and ENGINEER reserve the right to make independent investigations and tests, and failure of any portion of the WORK to meet any of the requirements of the Contract Documents, will be reasonable cause for the ENGINEER to require the removal or correction and reconstruction of any such WORK in accordance with the General Conditions.

1.4 INSPECTION AND TESTING SERVICE

- A. Inspection and testing laboratory service will comply with the following:
 - 1. The CONTRACTOR will appoint, employ, and pay for services of an independent firm listed on the St. Tammany Parish Qualified List of testing firms to perform inspection and testing.



2. Additionally, the OWNER or independent firm might perform inspections, testing, and other services as required by the ENGINEER under Paragraph 1.3C above.
3. Reports of testing, regardless of whether the testing was the OWNER'S or the CONTRACTOR'S responsibility, will be submitted to the ENGINEER in electronic format, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
4. Cooperate with the OWNER or independent firm and furnish samples of materials, design mix, equipment, tools, storage, and assistance as requested.
5. Notify ENGINEER 24 hours prior to the expected time for operations requiring inspection and laboratory testing services.
6. Coordinate directly with the testing laboratory 24 hours prior to the date testing will be needed.
7. Retesting required because of non-conformance to requirements will be performed by the same independent firm on instructions by the ENGINEER. Pay all costs from such retesting.
8. For samples and tests required for CONTRACTOR'S use, make arrangements with an independent firm for payment and scheduling of testing. The cost of sampling and testing for the CONTRACTOR'S use is the CONTRACTOR'S responsibility.

PART 2 -- PRODUCTS (NOT USED)

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Inspection: Inspect materials or equipment upon the arrival on the job site and immediately prior to installation and reject damaged and defective items.
- B. Measurements: Verify measurements and dimensions of the WORK, as an integral step of starting each installation.
- C. Manufacturer's Instructions: Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

3.2 REQUIRED TESTING, GENERAL

- A. Conduct tests as prescribed below and as required by individual specifications sections. Failure to conduct testing as specified will be cause for rejection of installed materials.
- B. Where accepted by the ENGINEER, ASTM methods may be utilized in lieu of DOTD TR methods.



- C. Where specifications require evidence of a product or material's listing on the LDOTD AML, provide certificates to the ENGINEER and OWNER. Products so specified must be listed on the AML at the time of their incorporation into the WORK.
- D. Submit reports to the ENGINEER.
- E. Conduct tests necessary for quality control and include such costs in the cost of the WORK.
- F. **Definitions:**
 - 1. **Lot, Structural Concrete:** A lot is an identifiable placement not exceeding 50 cubic yards in volume.
 - 2. **Lot, Minor Concrete (Portland Cement Concrete Walks and Drives)** A lot consists of 50 cubic yards of concrete, placed continuously or cumulatively.

3.3 REQUIRED TESTING, SECTION 31 05 16 – AGGREGATES

- A. **Testing:** Refer to requirements for Section 31 30 00 - Earthwork.

3.4 REQUIRED TESTING, SECTION 31 30 00 – EARTHWORK

- A. **Testing:** The following tests are required under this Section:

1. **Bedding and Backfill for Drainage Pipes:**

- a. **Source Approval – Bedding:** Test material for deleterious materials and gradation prior to the first placement of backfill, and then not less than once monthly thereafter. Test and report relative density relationships of acceptable material in accordance with ASTM D4252 and ASTM D4254. Determine In – Place Density by DOTD TR 401.
- b. **Source Approval – Type A Backfill:** Test material for deleterious materials and gradation prior to the first placement of backfill, and then not less than once monthly thereafter. Test and report relative density relationships of acceptable material in accordance with ASTM D4252 and ASTM D4254. Determine In – Place Density by DOTD TR 401.
- c. **Source Approval – Type B Backfill:** Test material for deleterious materials and gradation prior to the first placement of backfill, and then not less than once monthly thereafter.
- d. **Bedding, In Place Testing:** Conduct a minimum one In – Place relative density test per each lift per 100 linear feet of pipe for pipe backfill.
- e. **Backfill, In Place Testing, Type A Backfill:** Conduct a minimum one In – Place relative density test per each per lift per 100 linear feet of pipe for pipe backfill. Unpaved areas will not require in place moisture density testing.

2. **Bedding and Backfill for Structures:**



- a. **Source Approval, Bedding Material: Test** material for deleterious materials and gradation prior to the first placement of backfill, and then not less than once monthly thereafter. Test and report relative density relationships of acceptable material in accordance with ASTM D4252 and ASTM D4254. Determine In – Place Density by DOTD TR 401.
 - b. **Source Approval, Backfill Material:** Test material for deleterious materials and gradation prior to the first placement of backfill, and then not less than once monthly thereafter. Test and report moisture – density relationships of acceptable material in accordance with DOTD TR 418. Determine In – Place Density and Determination of In – Place Moisture Content by DOTD TR 401 and DOTD TR 403, respectively.
 - c. **Bedding, In Place Testing:** Conduct a minimum one In – Place relative density test per each per lift for bedding material.
 - d. **Backfill, In Place Testing:** Conduct a minimum one In – Place Moisture Density test per each per lift for backfill.
3. **Bedding and Backfill for Force Main Pipelines:**
- a. **Source Approval, Bedding and Backfill Material:** Test material for deleterious materials and gradation prior to the first placement of backfill, and then not less than once monthly thereafter. Test and report moisture – density relationships of acceptable material in accordance with DOTD TR 418. Determine In – Place Density and Determination of In – Place Moisture Content by DOTD TR 401 and DOTD TR 403, respectively.
 - b. **Bedding Material, In Place Testing:** Conduct a minimum one In – Place moisture - density test per each per lift per 100 LF of pipeline installed for bedding material.
 - c. **Haunching and Initial Backfill, In Place Testing:** Conduct a minimum one In – Place moisture - density test per each per lift per 100 LF of pipeline installed for Initial backfill material.
 - d. **Final Backfill, In Place Testing:** Conduct a minimum one In – Place moisture - density test per each per lift per 100 LF of pipeline installed for final backfill material in paved areas. Unpaved areas will not require testing of final backfill.
4. **Bedding and Backfill for Gravity Sewer Pipelines:**
- a. **Source Approval, Bedding and Initial Backfill Material:** Test material for deleterious materials and gradation prior to the first placement of backfill, and then not less than once monthly thereafter. Test and report relative density relationships of acceptable material in accordance with ASTM D4252 and ASTM D4254. Determine In – Place Density by DOTD TR 401.
 - b. **Source Approval, Final Backfill Material:** Test material for deleterious materials and gradation prior to the first placement of backfill, and then



not less than once monthly thereafter. Test and report moisture – density relationships of acceptable material in accordance with DOTD TR 418. Determine In – Place Density and Determination of In – Place Moisture Content by DOTD TR 401 and DOTD TR 403, respectively.

- c. **Bedding Material, In Place Testing:** Conduct a minimum one In – Place moisture - density test per each per lift per 100 LF of pipeline installed for Initial backfill material.
- d. **Initial Backfill Material, In Place Testing:** Conduct a minimum one In – Place moisture - density test per each per lift per 100 LF of pipeline installed for Initial backfill material.
- e. **Final Backfill Material, In Place Testing:** Conduct a minimum one In – Place moisture - density test per each per lift per 100 LF of pipeline installed for final backfill material in paved areas. Unpaved areas will not require testing of final backfill.

3.5 REQUIRED TESTING, SECTION 03 20 10 – CONCRETE REINFORCEMENT

- A. Reinforcement will not be tested unless questionable.

3.6 REQUIRED TESTING, SECTION 03 31 00 – STRUCTURAL CONCRETE

- 1. **Compressive Strength (Plastic Concrete/Cured Concrete):** Take six (6) 4x8 cylinders for compressive strength testing for each lot. Test one for compressive strength at three (3) days, one at seven (7) days, and three at twenty-eight days. Reserve the final cylinder for testing at fifty-six (56) days curing.
 - 2. **Aggregates:** Test aggregates for gradation and deleterious material at least once per 50 cubic yards of concrete production.
 - 3. **Cement:** Testing of cement is not required.
 - 4. **Mix Temperature (Plastic Concrete):** Take a minimum of one per each one half day of concrete placement.
 - 5. **Entrained Air (Plastic Concrete):** Take a minimum of one entrained air test per half day.
 - 6. **Slump (Plastic Concrete):** Take a minimum of one slump test per half day.
- B. **Precast Structural Concrete:** that the following quality control tests are performed as required and in accordance with the ASTM International standards indicated.
 - 1) **Slump:** Perform one slump test for each 150 cubic yards of concrete produced per mix design, or once a day, whichever comes first. Perform slump tests in accordance with LDOTD TR 207.
 - 2) **Temperature:** Measure the temperature of concrete when slump or air content tests are made and when compressive test specimens are made in accordance with ASTM C 1064.



- 3) **Compressive Strength:** Make at least four compressive strength specimens for each 150 cubic yards of concrete of each mix design in accordance with LDOTD TR 226 and LDOTD TR 227.
- 4) **Air Content:** Make test for air content on wet-cast concrete for each 150 cu yd of concrete, per mix design, but not less often than once each day when air-entrained concrete is used. Determine the air content in accordance with LDOTD TR 202.
- 5) **Density (Unit Weight):** Perform tests for density a minimum of once per week to verify the yield of batch mixes. Perform density test for each 100 cu yd of lightweight concrete in accordance with LDOTD TR 201. P density tests each 100 cubic yards of concrete per mix design, but not less often than once per day when volumetric batch equipment is used.

3.7 REQUIRED TESTING, SECTION 03 31 00 – INCIDENTAL WALKS AND DRIVES

1. **Compressive Strength (Plastic Concrete/Cured Concrete):** Take six (6) 4x8 cylinders for compressive strength testing for each lot. Test one for compressive strength at three (3) days, one at seven (7) days, and three at twenty-eight days. Reserve the final cylinder for testing at fifty-six (56) days curing.
2. **Cement:** Testing of cement is not required.
3. **Mix Temperature (Plastic Concrete):** Take a minimum of one per each one half day of concrete placement.
4. **Entrained Air (Plastic Concrete):** Take a minimum of one entrained air test per half day.
5. **Slump (Plastic Concrete):** Take a minimum of one slump test per half day.

END OF SECTION



SECTION 09 96 00 – PROTECTIVE COATINGS (REVISED – ADDENDUM 1)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. Provide protective coatings, complete and in place, in accordance with the Contract Documents.
- B. Definitions
 - 1. The term "paint," "coatings," or "finishes" as used herein, includes surface treatments, emulsions, enamels, paints, epoxy resins, and all other protective coatings, excepting galvanizing or anodizing, whether used as a pretreatment, primer, intermediate coat, or finish coat.
 - 2. The term "DFT" means minimum dry film thickness, without any negative tolerance.
- C. Do not coat the following surfaces:
 - 1. Concrete, unless required by items on the concrete coating schedule below or the Drawings.
 - 2. Stainless steel
 - 3. Machined surfaces
 - 4. Grease fittings
 - 5. Glass
 - 6. Equipment nameplates
 - 7. Platform gratings, stair treads, door thresholds, and other walk surfaces, unless specifically indicated to be coated.
- D. The coating system schedules included herein and/or on the drawings summarize the surfaces to be coated, the required surface preparation, and the coating systems to be applied. Coating notes on the Drawings are used to show or extend the limits of coating schedules, to show exceptions to the schedules, or to clarify or show details for application of the coating systems.
- E. Where protective coatings are to be performed by a subcontractor, provide 5 references which show that the painting subcontractor has previous successful experience with the indicated or comparable coating systems. Include the name, address, and the telephone number for the owner of each installation for which the painting subcontractor provided the protective coating.

1.2 REFERENCE STANDARDS



- A.** American Water Works Association (AWWA)
 - AWWA/ANSI C213 Fusion Bonded Epoxy Coating
- B.** ASTM International (ASTM)
 - ASTM C309 Standard Specification for Liquid Membrane Forming Compounds for Curing Concrete
 - ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
 - ASTM D624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- C.** Code of Federal Regulations
 - 29CFR1910.1200 Occupational Safety and Health Standards
- D.** United States Environmental Protection Agency (US EPA)
 - Method 524.1 Measurement of Volatile Organic Compounds in Water by Purge and Trap Gas Chromatography/Mass Spectrometry
 - Method 524.2 Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry
- E.** Federal Specifications
 - TT-P-28 Paint, Aluminum, Heat Resisting
- F.** National Association of Corrosion Engineers (NACE)
 - TM-01-70 Standard Test Method – Visual Standard for Surfaces of New Steel Air – Blast Cleaned with Sand Abrasive
 - TM-01-75 Visual Standard for Surfaces of New Steel Centrifugally Blast Cleaned with Steel Grit and Shot
- G.** National Sanitation Foundation (NSF)
 - NSF 61 Drinking Water System Components – Health Effects
- H.** Society for Protective Coatings (SSPC)
 - SSPC SP1 Surface Preparation – Solvent Cleaning
 - SSPC SP2 Surface Preparation – Hand Tool Cleaning
 - SSPC SP3 Surface Preparation – Power Tool Cleaning



SSPC SP5	Surface Preparation – White Metal Blasting
SSPC SP6	Surface Preparation – Commercial Blasting
SSPC SP7	Surface Preparation – Brush Off Blasting
SSPC SP10	Surface Preparation – Near White Blasting

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

- A. Provide submittals, samples for testing, and testing of materials in accordance with Section 01 33 00 – Contractor Submittals and Section 01 45 00 – Quality Control.
- B. Submit the following:
 - 1. A coating materials list showing the manufacturer and the coating number, keyed to the coating systems herein
 - 2. Paint Manufacturer's Information: For each coating system to be used, the following data:
 - 1) Paint manufacturer's data sheet for each product proposed, including statements on the suitability of the material for the intended use.
 - 2) Technical and performance information that demonstrates compliance with the system performance and material requirements.
 - 3) Paint manufacturer's instructions and recommendations on surface preparation and application.
 - 4) Colors available for each product (where applicable).
 - 5) Compatibility of shop and field applied coatings (where applicable).
 - 6) Material Safety Data Sheet for each product used.
 - 3. **Piping and Valve Identification:** Submit product information for piping and valve identification materials.

1.4 SPECIAL CORRECTION OF DEFECTS REQUIREMENTS

- A. **Warranty Inspection:** Conduct a warranty inspection during the eleventh month following completion of all coating and painting work with the CONTRACTOR and a representative of the coating material manufacturer in attendance. Repair any defective work in accordance with these specifications and to the satisfaction of the OWNER. The OWNER may, by written notice to the CONTRACTOR, reschedule the warranty inspection to another date within the one-year correction period, or may cancel the warranty inspection altogether. If



a warranty inspection is not held, the CONTRACTOR is not relieved of its responsibilities under the Contract Documents.

1.5 PIPING AND VALVE IDENTIFICATION

- A. Provide identification for exposed piping and valves, complete and in place, in accordance with the Contract Documents.

PART 2 -- PRODUCTS

2.1 GENERAL

- A. **Suitability:** Use suitable coating materials as recommended by the manufacturer. Comply with Volatile Organic Compound (VOC) limits applicable at the Site.
- B. **Material Sources:** Where manufacturers and product numbers are listed, it is to show the type and quality of coatings that are required. If a named product does not comply with VOC limits in effect at the time of bid opening, that product will not be accepted. Propose a compliant substitution product of equal quality. Unless indicated otherwise, proposed substitute materials will be considered as indicated above. Coating materials must have a record of satisfactory performance in industrial plants, manufacturing facilities, and water and wastewater treatment plants.
- C. **Compatibility:** In any coating system use only compatible materials from a single manufacturer in the work. Direct particular attention to compatibility of primers and finish coats. If necessary, apply a barrier coat between existing prime coat and subsequent field coats to ensure compatibility.
- D. **Containers:** Seal coating materials in containers that plainly show the designated name, formula or specification number, batch number, color, date of manufacture, and name of manufacturer at the time of use.
- E. **Colors:** Select all colors and shades of all coats of paint as indicated by the ENGINEER. Apply each coat in a slightly different shade to facilitate inspection of surface coverage of each coat. Select finish colors from the manufacturer's standard color samples provided by the ENGINEER.
- F. Substitute or "Or-Equal" Products
 - 1. Establish equality of products in accordance with the Contract Documents, by furnishing satisfactory documentation from the manufacturer of the proposed substitute or "or-equal" product that the material meets the indicated requirements and is equivalent or better in the following properties:
 - 1. Quality
 - 2. Durability



3. Resistance to abrasion and physical damage
 4. Life expectancy
 5. Ability to recoat in future
 6. Solids content by volume
 7. Dry film thickness per coat
 8. Compatibility with other coatings
 9. Suitability for the intended service
 10. Resistance to chemical attack
 11. Temperature limitations in service and during application
 12. Type and quality of recommended undercoats and topcoats
 13. Ease of application
 14. Ease of repairing damaged areas
 15. Stability of colors
2. Utilize protective coating materials which are standard products produced by recognized manufacturers who are regularly engaged in production of such materials for essentially identical service conditions. Where requested, provide the ENGINEER with the names of not less than 10 successful applications of the proposed manufacturer's products that comply with these requirements.
 3. Bear all such costs involved as part of the WORK if a proposed substitution requires changes in the WORK.

2.2 INDUSTRIAL COATING SYSTEMS

- A. **System 4 - Aliphatic Polyurethane:** Provide a two component aliphatic acrylic polyurethane coating material with superior color and gloss retention, resistance to splash from acid and alkaline chemicals, resistance to chemical fumes and severe weathering and with a minimum solids content of 58 percent by volume. Provide primer with a rust inhibitive two component epoxy coating with a minimum solids content of 68 percent by volume.
 1. Prime coat DFT = 4 mils, **Ameron 385, Carboline 890, Tnemec 69, Sherwin – Williams Macropoxy 646 FC Epoxy B58-600 Series**, or equal.
 2. Finish coat (one or more, DFT = 3 mils), **Ameron Amersfield, Carbothane 134 HG, Tnemec 1074U, Sherwin – Williams Acroline 218 HS Polyurethane B65-600 Series**, or equal.



3. Total system DFT = 7 mils.
 4. Apply more than one finish coat as necessary to produce a finish with uniform color and texture.
- B. System 5 – Epoxy/Epoxy/Polyurethane:** Provide a prime coat and an intermediate coat with a high-build two component epoxy and a solids content of at least 69 percent by volume. Utilize a finish coats with a 2-component aliphatic acrylic or polyester polyurethane coating material that provides superior color and gloss retention, resistance to chemical fumes and severe weathering, and a minimum solids content of 58 percent by volume.
1. Prime coat DFT 4-5 mils = Tnemec N69, Sherwin Williams Macropoxy 646 FC or equal.
 2. Intermediate coat DFT 5-6 mils, **Tnemec N69, Sherwin Williams Macropoxy 646 FC or equal.**
 3. Finish coats (one or more, DFT = 3 mils), **Tnemec 1094, Sherwin Williams Acrolon 218 HS** or equal.
 4. Total system DFT = 12-14 mils.
 5. Apply more than one finish coat as necessary to produce a finish with uniform color and texture. If the inorganic zinc primer is used as a pre-construction or shop applied primer, spot abrasive blast and coat all damaged and uncoated areas after construction using the indicated material.
- C. System 7 - Acrylic Latex:** Provide single component, water based acrylic latex with a fungicide additive with a minimum solids content of 35 percent by volume. Provide prime coat as recommended by manufacturer. Select a coating material from the available ANSI safety colors.
1. Prime coat DFT = 2 mils, as recommended by manufacturer.
 2. Finish coats (2 or more, DFT = 6 mils), **Ameron Amercoat 220, Carboline Carbocrylic 3359 DTM, Tnemec 1028/1029, Sherwin – Williams DTM Acrylic Coating B66-1000 Series,** or equal.
 3. Total system DFT = 8 mils.

2.3 SUBMERGED AND SEVERE SERVICE COATING SYSTEMS

- A. Material Sources:** The manufacturers' products listed in this paragraph are materials which satisfy the material descriptions of this paragraph and have a documented successful record for long term submerged or severe service conditions. Proposed substitute products will be considered as indicated above.
- B. System 100 - Amine Cured Epoxy:** Provide a high build, amine cured, epoxy resin with a solids content of at least 80 percent by volume, that is suitable for long-term immersion service in potable water and municipal wastewater. For



potable water service, utilize a coating material indicated by the NSF International as in compliance with NSF Standard 61 - Drinking Water System Components - Health Effects.

1. Prime coat and finish coats (3 or more, DFT = 16 mils), **Ameron 395, Tnemec 104 for Water or Tnemec N140 for all other, Carboline Carboguard 891 HS, Sherwin – Williams Macropoxy 5500, or equal.**

C. System 106 - Fusion Bonded Epoxy: Provide a coating material with a 100 percent powder epoxy, certified as compliant with NSF Standard 61, applied in accordance with the ANSI/AWWA C213 - Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines, except with the surface preparation as listed in the coating system schedule of this Section. Apply the coating using the fluidized bed or electrostatic spray process.

1. Coating DFT = 16 mils, **Scotchkote 134 or 206N, or equal.**
2. For coating of valves, DFT = 12 mils.
3. Liquid Epoxy: For field repairs, the use of a liquid epoxy will be permitted, applied in not less than 3 coats to provide a DFT of 15 mils. Utilize a liquid epoxy with a 100 percent solids epoxy recommended by the powder epoxy manufacturer.

D. System 108 – Composite Lining System

1. Surface Preparation: As required by manufacturer.
2. Option 1: Madewell Mainstay System, first coat ML72 mortar to original thickness (3/8" minimum) or 3/8" thickness for new manholes, DS5 epoxy liner minimum 125 mils thick.
3. Option 2: Tnemec Permashield, first coat Tnemec 217 Mortar-Clad to original thickness (3/8" minimum) or 3/8" thickness for new manholes, Second coat Tnemec 424 Epoxy Liner minimum 125 mils thick.

E. System 113 – Ceramic Epoxy Lining for Ductile Iron: Induron Protecto 401, or approved equal (40 mils).

2.4 SPECIAL COATING SYSTEMS

- A. System 200 - PVC Tape:** Prior to wrapping the pipe with PVC tape, prime the pipe and fittings using a primer recommended by the PVC tape manufacturer. After being primed, wrap the pipe with a 20-mil adhesive PVC tape, half-lapped, to a total thickness of 40 mils.
- B. System 205 - Polyethylene Encasement:** Apply the polyethylene encasement in accordance with ANSI/AWWA C105 using Method C.
- C. System 208 - Aluminum Metal Isolation:** Two coats of a high build polyamide epoxy paint such as **Tnemec 66, PPG Amercoat 385, Carboguard 890, Sherwin Williams Macropoxy 646 FC, or equal (8 mils).** Total thickness of system DFT = 8.0



mils.

2.5 PIPING AND VALVE IDENTIFICATION

- A. Except as indicated below for very short pipe lengths, identify exposed piping larger than 2-inches nominal size for the pipe contents and direction of flow.
 - 1. Marker Type
 - 1. Stencil: Lettering painted directly on surface of pipe inside color coded marker area.
 - 2. Marker Area: Sized per pipe size according to ANSI A13.1; color from the table below.
 - 3. Lettering: Sized per pipe size according to ANSI A13.1; color from the table below.
 - 4. Arrows: at least 2 arrows at each marker area, showing direction of flow.
- B. Identify pipe 2-inches and smaller with plastic plates made from laminated 3-layer plastic with engraved black letters on white background.
- C. Utilize pipe identification as manufactured by **Brady, Seton**, or equal.

2.6 EXISTING PIPING IDENTIFICATION SYSTEMS

- A. Follow the existing system in installations where existing piping identification systems have been established. Where existing identification systems are incomplete, utilize the existing system as far as practical and supplement with the indicated system.

2.7 IDENTIFICATION OF VALVES AND SHORT PIPING LENGTHS

- A. Utilize metal or plastic tags as identifying devices for valves and the sections of pipe that are too short to be identified with markers and arrows.

PART 3 -- EXECUTION

3.1 MANUFACTURER'S SERVICES

- A. Require the protective coating manufacturer to furnish a qualified technical representative to visit the Site for technical support as may be necessary to resolve field problems attributable or associated with the manufacturer's products.

3.2 WORKMANSHIP

- A. Utilize a skilled craftsmen and experienced supervision on all WORK.
- B. Produce coatings in a workmanlike manner with an even film of uniform thickness. Treat edges, corners, crevices, and joints with special attention to



ensure thorough cleaning and an adequate thickness of coating material. Ensure finished surfaces are free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. Complete the hiding so that the addition of another coat would not increase the hiding. Give special attention to ensure that edges, corners, crevices, welds, and similar areas receive a film thickness equivalent to adjacent areas. Utilize drop cloths or other precautionary measures to protect adjacent areas and installations.

- C. Clean, repair, and refinish all damage to surfaces resulting from the WORK back to original condition.

3.3 STORAGE, MIXING, AND THINNING OF MATERIALS

- A. **Manufacturer's Recommendations:** Unless otherwise indicated, strictly observe the coating manufacturer's printed recommendations and instructions for thinning, mixing, handling, applying, and protecting its coating materials, for preparation of surfaces for coating, and for all other procedures relative to coating.
- B. Utilize all protective coating materials within the manufacturer's recommended shelf life.
- C. **Storage and Mixing:** Store coating materials under the conditions recommended by the Material Safety Data Sheets, and thoroughly stir, strain, and maintain a uniform consistency during application. Do not mix coatings of different manufactures together.

3.4 PREPARATION FOR COATING

- A. **General:** Clean all indicated surfaces receiving protective coatings prior to application of coatings. Examine all surfaces to be coated, and correct all surface defects before application of any coating material. Touch-up all marred or abraded spots on shop-primed and on factory-finished surfaces prior to any coating application. Ensure all surfaces to be coated are dry and free of visible dust.
- B. **Protection of Surfaces Not to be Coated:** Protect all surfaces not receiving protective coatings during surface preparation, cleaning, and coating operations.
- C. Remove, mask, or otherwise protect all hardware, lighting fixtures, switchplates, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not being painted. Utilize drop cloths to prevent coating materials from falling on or marring adjacent surfaces. Protect the working parts of all mechanical and electrical equipment from damage during surface preparation and coating operations. Mask openings in motors to prevent entry of coating or other materials.
- D. Exercise care not to damage adjacent work during blast cleaning operations. Conduct spray painting under carefully controlled conditions. Assume full responsibility and pay all costs for the prompt repair of any and all damage to



adjacent work or adjoining property occurring from blast cleaning or coating operations.

- E. **Protection of Painted Surfaces:** Coordinate cleaning and coating so that dust and other contaminants from the cleaning process will not fall on wet, newly coated surfaces.

3.5 SURFACE PREPARATION STANDARDS

- A. Include the following referenced surface preparation specifications of the Steel Structures Painting Council as part of this specification:
 1. Solvent Cleaning (SSPC SP1): Removal of oil, grease, soil, salts, and other soluble contaminants by cleaning with solvent, vapor, alkali, emulsion, or steam.
 2. Hand Tool Cleaning (SSPC SP2): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by hand chipping, scraping, sanding, and wire brushing.
 3. Power Tool Cleaning (SSPC SP3): Removal of loose rust, loose mill scale, loose paint, and other loose detrimental foreign matter, by power tool chipping, descaling, sanding, wire brushing, and grinding.
 4. White Metal Blast Cleaning (SSPC SP5): Removal of all visible rust, oil, grease, soil, dust, mill scale, paint, oxides, corrosion products and foreign matter by blast cleaning.
 5. Commercial Blast Cleaning (SSPC SP6): Removal of all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining is limited to no more than 33 percent of each square inch of surface area.
 6. Brush-Off Blast Cleaning (SSPC SP7): Removal of all visible oil, grease, soil, dust, loose mill scale, loose rust, and loose paint.
 7. Near-White Blast Cleaning (SSPC SP10): Removal of all visible oil, grease, soil, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except that staining is limited to no more than 5 percent of each square inch of surface area.

3.6 METAL SURFACE PREPARATION (UNGALVANIZED)

- A. Utilize the minimum abrasive blasting surface preparation as indicated in the coating system schedules included at the end of this Section. Utilize the higher degree of cleaning where there is a conflict between these specifications and the coating manufacturer's printed recommendations for the intended service.
- B. Provide workmanship for metal surface preparation in conformance with the current SSPC Standards and this Section. Match blast cleaned surfaces to the standard samples available from the National Association of Corrosion Engineers, NACE Standard TM-01-70 - Visual Standard for Surfaces of New Steel Airblast



Cleaned with Sand Abrasive and TM-01-75 - Visual Standard for Surfaces of New Steel Centrifugally Blast Cleaned with Steel Grit.

- C. Remove all oil, grease, welding fluxes, and other surface contaminants by solvent cleaning per SSPC SP1 - Solvent Cleaning prior to blast cleaning.
- D. Round or chamfer all sharp edges and grind smooth all burrs, surface defects and weld splatter prior to blast cleaning.
- E. Select the type and size of abrasive to produce a surface profile that meets the coating manufacturer's recommendation for the particular coating and service conditions. Provide clean, hard, sharp cutting crushed slag as abrasives for submerged and severe service coating systems. Do not utilize automated blasting systems for surfaces that will be in submerged service. Do not utilize metal shot or grit for surfaces that will be in submerged service, even if subsequent abrasive blasting is planned to be one with hard, sharp cutting crushed slag.
- F. Do not reuse abrasives unless an automated blasting system is used for surfaces that will be in non-submerged service. Maintain clean oil-free abrasives for automated blasting systems. Provide an abrasive mix with at least 50 percent grit.
- G. Comply with the applicable federal, state, and local air pollution control regulations for blast cleaning.
- H. Supply compressed air for air blast cleaning at adequate pressure from well maintained compressors equipped with oil and moisture separators that remove at least 95 percent of the contaminants.
- I. Clean surfaces of all dust and residual particles of the cleaning operation by dry air blast cleaning, vacuuming, or another approved method prior to painting.
- J. Vacuum clean all enclosed areas and other areas where dust settling is a problem and wipe area clean with a tack cloth.
- K. Remove damaged or defective coating by the blast cleaning to meet the clean surface requirements before recoating.
- L. Utilize SSPC SP2 or SSPC SP3 if the required abrasive blast cleaning will damage adjacent work, the area to be cleaned is less than 100 square feet, and the coated surface will not be submerged in service.
- M. Completely remove shop applied coatings of unknown composition before the indicated coatings are applied. Examine all valves, castings, ductile or cast iron pipe, and fabricated pipe or equipment for the presence of shop-applied temporary coatings. Completely remove temporary coatings by solvent cleaning per SSPC SP1 before the abrasive blast cleaning work has been started.
- N. Solvent clean shop primed equipment in the field before finish coats are applied.



3.7 SURFACE PREPARATION OF FERROUS SURFACES WITH EXISTING COATINGS, EXCLUDING STEEL RESERVOIR INTERIORS

- A. **General:** Remove all grease, oil, heavy chalk, dirt, or other contaminants by solvent or detergent cleaning prior to abrasive blast cleaning. Determine the generic type of the existing coatings by laboratory testing.
- B. **Abrasive Blast Cleaning:** Provide the degree of cleaning indicated in the coating system schedule for the entire surface to be coated. If the degree of cleaning is not indicated in the schedule, deteriorated coatings remove by abrasive blast cleaning to SSPC SP6. Clean areas of tightly adhering coatings to SSPC SP7, with the remaining thickness of existing coating not to exceed 3 mils.
- C. **Incompatible Coatings:** If coatings to be applied are not compatible with existing coatings, apply intermediate coatings per the paint manufacturer's recommendation for the indicated coating system or completely remove the existing coating prior to abrasive blast cleaning. Conduct a small trial application for compatibility prior to painting large areas.
- D. **Unknown Coatings:** Completely remove coatings of unknown composition prior to application of new coatings.
- E. **Water Abrasive or Wet Abrasive Blast Cleaning:** Where indicated or where Site conditions do not permit dry abrasive blasting for industrial coating systems due to dust or air pollution considerations, water abrasive blasting or wet abrasive blasting may be used. In both methods, use paint-compatible corrosion inhibitors, and begin coating application as soon as the surfaces are dry. Utilize water abrasive blasting with high pressure water with sand injection. In both methods, utilize equipment commercially produced equipment with a successful service record. Do not use wet blasting methods for submerged and severe service coating systems unless indicated.

3.8 CONCRETE AND CONCRETE BLOCK MASONRY SURFACE PREPARATION

A. Concrete Block

1. Allow new mortar to cure a minimum of 14 days prior to coating.
2. Level protrusions and mortar spatter.

B. Nonsubmerged Concrete

1. Do not begin surface preparation until at least 28 days after the concrete or masonry has been placed. Verify moisture levels are within the limitations of the coating manufacturer.
2. Remove all oil, grease, and form release and curing compounds by detergent cleaning before abrasive blast cleaning.
3. Abrasive blast coat concrete surfaces to be coated to remove existing coatings, laitance, deteriorated concrete, and to roughen the surface



equivalent to the surface of the No. 80 grit flint sandpaper.

C. Submerged Concrete

1. Do not begin surface preparation until at least 28 days after the concrete or masonry has been placed. Verify moisture levels are within the limitations of the coating manufacturer.
2. Remove all oil, grease, and form release and curing compounds by detergent cleaning before abrasive blast cleaning.
3. Abrasive blast clean all concrete surfaces to be coated to remove existing coatings, laitance, sealers, deteriorated concrete, and to roughen the surface equivalent to ICRI CSP 5.

D. Ensure all surfaces are clean as recommended by the coating manufacturer before coating is started.

E. Ensure all surfaces are dry prior to coating unless required for proper adhesion. Determine the presence of moisture with a moisture detection device such as **Delmhorst Model DB**, or equal.

3.9 PLASTIC, FIBER GLASS AND NONFERROUS METALS SURFACE PREPARATION

A. Sand or brush off blast cleaned plastic and fiber glass surfaces prior to solvent cleaning with a chemical compatible with the coating system primer.

B. Solvent-clean all non-ferrous metal surface to remove all soluble surface contaminants followed by brush-off blast cleaning to remove insoluble contaminants and to achieve a uniformly profiled surface.

C. Clean and dry all surfaces prior to coating application.

3.10 SHOP COATING REQUIREMENTS

A. Unless otherwise indicated, shop prime and then finish coat in the field after installation with the indicated or selected color all items of equipment, or parts of equipment which are not submerged in service. Ensure all methods, materials, application equipment and all other details of shop painting comply with this section. If the shop primer requires topcoating within a specified period of time, finish coat the equipment in the shop and then touch-up painted after installation.

B. Perform all surface preparation and coating work in the field for all items of equipment, or parts and surfaces of equipment which are submerged or inside an enclosed hydraulic structure when in service, with the exception of pumps and valves.

C. Perform all surface preparation and coating work in the field for the interior surfaces of steel water reservoirs, except for Part A surfaces

D. For certain pieces of equipment, it may be undesirable or impractical to apply



finish coatings in the field. Such equipment may include engine generator sets, equipment such as electrical control panels, switchgear or main control boards, submerged parts of pumps, ferrous metal passages in valves, or other items where it is not possible to obtain the indicated quality in the field. Prime and finish coat such equipment in the shop and touch up in the field with the identical material after installation. Require the manufacturer of each such piece of equipment to certify as part of its Shop Drawings that the surface preparation is in accordance with these specifications. Submit the coating material data sheet with the Shop Drawings for the equipment.

- E. For certain small pieces of equipment, the manufacturer may have a standard coating system that is suitable for the intended service conditions. In such cases, the final determination of suitability will be made during review of the Shop Drawing submittals. Equipment of this type generally includes only indoor equipment such as instruments, small compressors, and chemical metering pumps.
- F. Protect shop painted surfaces during shipment and handling by suitable provisions including padding, blocking, and the use of canvas or nylon slings. Do not expose primed surfaces to the weather for more than 2 months before being topcoated, or less time if recommended by the coating manufacturer.
- G. Repair damage to shop-applied coatings in accordance with this Section and the coating manufacturer's printed instructions.
- H. Ensure shop primers and field topcoats are compatible and meet the requirements of this Section. Submit copies of applicable coating manufacturer's data sheets with equipment Shop Drawings.

3.11 APPLICATION OF COATINGS

- A. Ensure the application of protective coatings to steel substrates is in accordance with SSPC PA1 - Paint Application Specification No. 1.
- B. Inspect all cleaned surfaces and all coats prior to each succeeding coat. Schedule such inspection in advance with the ENGINEER.
- C. Paint blast cleaned ferrous metal surfaces before any rusting or other deterioration of the surface occurs. Limit blast cleaning to only those surfaces that can be coated in the same working day.
- D. Apply coatings in accordance with the manufacturer's instructions and recommendations, and this Section, whichever has the most stringent requirements.
- E. Give special attention to edges, angles, weld seams, flanges, nuts and bolts, and other places where insufficient film thicknesses are likely to be present. Use stripe painting for these areas.
- F. Give special attention to materials that will be joined so closely that proper surface preparation and application are not possible. Coat such contact



surfaces prior to assembly or installation.

- G. Apply finish coats, including touch-up and damage repair coats in a manner that will present a uniform texture and color matched appearance.
- H. Do not apply coatings under the following conditions:
 - 1. Temperature exceeding the manufacturer's recommended maximum and minimum allowable.
 - 2. Dust or smoke laden atmosphere.
 - 3. Damp or humid weather.
 - 4. When the substrate or air temperature is less than 5 degrees F above dewpoint.
 - 5. When air temperature is expected to drop below 40 degrees F or less than 5 degrees F above the dewpoint within 8 hours after application of coating.
 - 6. When wind conditions are not calm.
- I. Determine dewpoint by use of a sling psychrometer in conjunction with U.S. Dept. of Commerce, Weather Bureau psychrometric tables.
- J. Abrasive blast clean unburied steel piping and prime before installation.
- K. Apply the finish coat on all work after all concrete, masonry, and equipment installation is complete and the work areas are clean and dust free.

3.12 CURING OF COATINGS

- A. Maintain curing conditions in accordance with the conditions recommended by the coating material manufacturer or by this Section, whichever is the most stringent, prior to placing the completed coating system into service.
- B. In the case of enclosed areas, forced air ventilation, using heated air if necessary, may be required until the coatings have fully cured.
- C. **Forced Air Ventilation of Steel Reservoirs and Enclosed Hydraulic Structures:** Forced air ventilation is required for the application and curing of coatings on the interior surfaces of steel reservoirs and enclosed hydraulic structures. During application and curing periods, continuously exhaust air from a manhole in the lowest shell ring, or in the case of an enclosed hydraulic structure, from the lowest level of the structure using portable ducting. After all interior coating operations have been completed, provide a final curing period for a minimum of 10 days in which, which the forced ventilation system operates continuously. For additional requirements, refer to the specific coating system requirements in Part 2 above.



3.13 IDENTIFICATION OF PIPING

- A. Install markers and identification tags in accordance with the manufacturer's printed instructions, and ensure they are neat and uniform in appearance. Provide tags and markers that are readily visible from all normal working locations.
- B. Permanently attach valve tags to the valve or structure by means of 2 stainless steel bolts or screws.
- C. Label every valve or connection, where it may be possible for a worker to be exposed to a hazardous substance, per Occupational Safety and Health Standards 29CFR1910.1200.
- D. Color-code paint all unburied pipes in structures and in chemical pipe trenches. Colors will be selected by the ENGINEER, or as indicated.
- E. Color-code paint all unburied chemical pipes, including chemical pipes in structures and chemical pipe trenches.
- F. Mark each pipe at:
 - 1. Within 2-feet of turns, elbows, and valves.
 - 2. On the upstream side of tees, branches, and other distribution points.
- G. Conform identification Colors to the piping schedule below:

Color Schedule				
Pipe Contents		Pipe Color	Marker Color	Letter Color
Abbreviation	Identification			
FM	Sewer Force Main	Grey	Yellow	Black

3.14 SHOP AND FIELD INSPECTION AND TESTING

- A. General: Give the ENGINEER a minimum of 3 days advance notice of the start of any field surface preparation work or coating application work, and a minimum of 7 days advance notice of the start of any shop surface preparation work.
- B. Perform all such work only in the presence of the ENGINEER, unless the ENGINEER has granted prior approval to perform such work in its absence.
- C. Inspection by the ENGINEER, or the waiver of inspection of any particular portion of the WORK, does not relieve the CONTRACTOR of its responsibility to perform the work in accordance with these Specifications.



- D. Erect and move scaffolding to locations where requested by the ENGINEER to facilitate inspection. Furnish additional illumination to cover all areas to be inspected.
- E. **Inspection Devices:** Furnish, until final acceptance of such coatings, inspection devices in good working condition for the detection of holidays and measurement of dry-film thicknesses of protective coatings. Make dry-film thickness gauges available for the ENGINEER'S use at all times while coating is being done, until final acceptance of such coatings. Furnish the services of a trained operator of the holiday detection devices until the final acceptance of such coatings. Operate holiday detection devices only in the presence of the ENGINEER.
- F. **Holiday Testing:** Holiday test all coated ferrous surfaces inside a steel reservoir, other surfaces which will be submerged in water or other liquids, or surfaces which are enclosed in a vapor space in such structures and surfaces coated with any of the submerged and severe service coating systems. Mark, repair, or recoat areas that contain holidays in accordance with the coating manufacturer's printed instructions and then retested.
1. Coatings With Thickness Exceeding 20 Mils: For surfaces having a total dry film coating thickness exceeding 20 mils: utilize pulse-type holiday detector such as **Tinker & Rasor Model AP-W, D.E. Stearns Co. Model 14/20**, or equal. Adjust the unit to operate at the voltage required to cause a spark jump across an air gap equal to twice the required coating thickness.
 2. Coatings With Thickness of 20 Mils or Less: For surfaces having a total dry film coating thickness of 20 mils or less: use **Tinker & Rasor Model M1 non-destructive type holiday detector, K-D Bird Dog**, or equal. Operate the unit at less than 75-volts. For thicknesses between 10 and 20 mils, add a non-sudsing type wetting agent, such as **Kodak Photo-Flo**, or equal, to the water prior to wetting the detector sponge.
- G. **Film Thickness Testing:** On ferrous metals, measure the dry film coating thickness in accordance with the SSPC "Paint Application Specification No. 2" using a magnetic-type dry film thickness gauge such as **Mikrotest model FM, Elcometer model 111/1EZ**, or equal. Test each coat for the correct thickness. Do not take measurements until at least 8 hours after application of the coating. On non-ferrous metals and other substrates, measure the coating thicknesses at the time of application using a wet film gauge.
- H. **Surface Preparation:** Evaluation of blast cleaned surface preparation work will be based upon comparison of the blasted surfaces with the standard samples available from the NACE, using NACE standards TM-01-70 and TM-01-75.

3.15 COATING SYSTEM SCHEDULES - FERROUS METALS

- A. Coating System Schedule, Ferrous Metal - Not Galvanized:



	Item	Surface Prep.	System No.
FM-1	All surfaces indoors and outdoors, exposed or covered, except those included below, including exposed ductile iron piping	Near white metal blast cleaning SSPC SP10	(5) Epoxy epoxy urethane
FM-3	Exterior surfaces of valves, equipment and ferrous surfaces within the pump station wet wells and valve pits (excluding shop-coated couplings, and pumps).	White metal blast cleaning SSPC SP5	(100) amine-cured epoxy
FM-6	Buried small steel pipe.	Removal of dirt, grease, oil	(200) PVC tape
FM-7	Ferrous surfaces in water passages of all valves 2-inch size and larger	White metal blast cleaning SSPC SP5	(106) Fusion Bonded Epoxy

FM-14	Structural steel, miscellaneous metalwork (outside of wet well and valve pits)	Per Section 05 55 00 – Miscellaneous Metalwork	Hot Dip Galvanized per Section 05 55 00 – Miscellaneous Metalwork
FM-18	Buried pipe couplings, valves, and flanged joints (where piping is ductile or cast iron, not tape-coated), including factory-coated surfaces.	As specified by reference specification	(205) polyethylene encasement
FM-19	Interior Surfaces of all ductile iron pipe except for aeration piping	As recommended by manufacturer	(113) Ceramic Epoxy Lining for Ductile Iron Pipe

3.16 COATING SYSTEM SCHEDULE, NON-FERROUS METAL, PLASTIC, FIBER GLASS

- A. Where isolated non-ferrous parts are associated with equipment or piping, use the coating system for the adjacent connected surfaces. Do not coat handrails, gratings, frames or hatches. Only use primers recommended by the coating



manufacturer.

	Item	Surface Prep.	System No.
NFM-1	All exposed surfaces, indoors and outdoors, except those included below.	Solvent cleaned SSPC SP1	(4) aliphatic polyurethane
NFM-3	Aluminum surfaces in contact with concrete, or with any other metal except galvanized ferrous metal.	Solvent cleaned SSPC SP1	(208) aluminum metal isolation
NFM-4	Polyvinyl chloride plastic piping, indoors and outdoors, or in structures, not submerged.	Solvent cleaned SSPC SP1	(7) acrylic latex
NFM-6	Buried non-ferrous metal pipe.	Removal of dirt, grease, oil	(200) PVC tape

3.17 COATING SYSTEM SCHEDULE-CONCRETE

A. Coating System Schedule, Concrete

	Item	Surface Prep.	System No.
C-5	All Interior surfaces of sewer manholes, lift station wet wells, and including sidewalls, tops and bottoms. Coat new stations, new manholes, and existing manholes which new pipes are connected to.	See Concrete And Concrete Block Masonry Surface Preparation as specified herein	(108) Composite Liner System

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SECTION 31 05 16 – AGGREGATES (REVISED – ADDENDUM 1)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. Provide aggregates as specified herein and elsewhere required by the Contract Documents.

1.2 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

- A. Provide submittals, samples for testing, and testing of materials in accordance with Section 01 33 00 – Contractor Submittals and Section 01 45 00 – Quality Control.

1.3 REFERENCE STANDARDS

A. **American Association of State Highway and Transportation Officials (AASHTO)**

AASHTO PP 65-11	Standard Practice for Determining the Reactivity of Concrete Aggregates and Selecting Appropriate Measures for Preventing Deleterious Expansion in New Concrete Construction
AASHTO T 19	Standard Method of Test for Bulk Density (Unit Weight) and Voids in Aggregate
AASHTO T 21	Standard Method of Test for Organic Impurities in Fine Aggregates for Concrete
AASHTO T 71	Standard Method of Test for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
AASHTO T 84	Standard Method of Test for Specific Gravity and Absorption of Fine Aggregate
AASHTO T 85	Standard Method of Test for Specific Gravity and Absorption of Coarse Aggregate
AASHTO T 96	Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
AASHTO T 104	Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
AASHTO T 278	Standard Method of Test for Surface Frictional Properties Using the British Pendulum Tester
AASHTO T 279	Standard Method of Test for Accelerated Polishing of Aggregates Using the British Wheel
AASHTO T 327	Standard Method of Test for Resistance of Coarse



Aggregate to Degradation by Abrasion in the Micro-Deval Apparatus

AASHTO TP 57-99

Standard Method of Test for The Qualitative Detection of Harmful Clays of the Smectite Group in Aggregates Using Methylene Blue

B. ASTM International (ASTM)

ASTM C289

Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates

ASTM C586

Standard Test Method for Potential Alkali Reactivity of Carbonate Rocks as Concrete Aggregates

ASTM C1260

Standard Test Method for Potential Alkali Reactivity of Aggregates

ASTM D2321

Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications

ASTM D4791

Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate

C. Louisiana Department of Transportation and Development (DOTD)

LDOTD AML

Louisiana DOTD Approved Materials List

TR 111

Abrasion of Lightweight Coarse Aggregate

TR 112

Amount of Material Finer than No. 200 Sieve in Aggregate

TR 113

Sieve Analysis of Fine and Coarse Aggregates

TR 119

Determination of Deleterious Materials

TR 120

Sand Equivalent Value of Soils and Fine Aggregate

TR 121

Fine Aggregate Angularity - FAA (Uncompacted Void Content of Fine Aggregate)

TR 122

Determination of pH Value for Aggregates

TR 306

Determination of Percentage of Crushed Particles for Coarse Aggregates

TR 309

Mechanical Analysis of Extracted Aggregate

TR 322

Determining the Effect of Moisture on Asphaltic Concrete Paving Mixture



TR 413	Organic Material in Soil
TR 423	Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
TR 428	Determining the Atterberg Limits of Soils
TR 430	Determination of pH Value of Water or Soil

1.4 QUALITY CONTROL

- A.** Locate, select, deliver, and place material conforming to specification requirements and requirements shown on the drawings. Control processes, perform tests, and make adjustments as necessary to result in a uniform product meeting all the requirements of the drawings and specifications.
- B.** The following test methods will be utilized for the testing, classification and acceptance of aggregates:

Material Property	Test Procedure
Deleterious Materials	DOTD TR 119
Flat and Elongated Particles	ASTM D4791
Magnesium Sulfate Soundness	AASHTO T 104
Los Angeles Abrasion	AASHTO T 96
Alkali – Silica Reactivity (Chemical Method)	ASTM C289
Alkali Reactivity (Mortar – Bar Method)	ASTM C1260
Reactivity of Concrete Aggregates	AASHTO PP65-11
Alkali Reactivity of Carbonate Rocks (Rock – Cylinder Method)	ASTM C586
Organic Impurities	AASHTO T 21
Unit Weight	AASHTO T 19
Specific Gravity and Absorption of Fine Aggregate	AASHTO T 84
Specific Gravity and Absorption of Coarse Aggregate	AASHTO T 85
Polish Value	AASHTO T 278 and T 279



Amount of Material Finer than the No. 200 Sieve	DOTD TR 112
Sieve Analysis (Gradation)	DOTD TR 113
pH of Soil and Water	DOTD TR 430
pH of Aggregates	DOTD TR 122
Atterberg Limits	DOTD TR 428
Organic Content	DOTD TR 413
Percent Crushed	DOTD TR 306
Mechanical Analysis of Extracted Aggregate	DOTD TR 309
Sand Equivalent	DOTD TR 120
Fine Aggregate Angularity	DOTD TR 121
Micro – Deval	AASHTO T 327
Moisture Sensitivity	DOTD TR 322
Mortar Strength	AASHTO T 71
Methylene Blue	AASHTO TP 57-99

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle aggregates as recommended by the supplier of the aggregates and as specified herein. Prevent unwanted mixing or segregation of aggregate stockpiles.

PART 2 -- PRODUCTS

2.1 GENERAL REQUIREMENTS FOR AGGREGATES

- A. Use aggregates that are environmentally acceptable for the intended use from a source acceptable to the ENGINEER. For an aggregate source to be approved, comply with the general requirements within this subsection and requirements for specific aggregate applications contained within this section and other specifications sections.
- B. **Deleterious Materials:** Conform to the following deleterious materials table for source approval and/or project acceptance:



Property	Per Cent Maximum
Wood	0.05
Clay Lumps	0.5
Clay Lumps and Friable Particles	3.0
Coal and Lignite	1.0
Flat and Elongated Particles (5:1)	15.0
Flat and Elongated Particles (3:1)	25.0
Glassy Particles	10.0
Iron Ore	2.0
Total of Wood, Clay Lumps, Friable Particles, Iron Ore, Lignite and Other Foreign Matter	5.0

- C. Magnesium Sulfate Soundness:** For source approval coarse natural aggregates and recycled portland cement concrete (RPCC), the maximum soundness loss is 15 percent when subjected to 5 cycles of the magnesium sulfate soundness test.
- D. Los Angeles Abrasion:** For coarse natural aggregates and RPCC source approval, maximum Los Angeles abrasion loss is 40.0 percent.
- E. Friction Ratings:** Where specified herein or in other specifications sections, use aggregates which comply with the requirements for friction ratings as defined in the table below and as indicated on the LDOTD AML (formerly QPL 2).

Friction Rating	Description
I	Aggregates that have a Polish Value of greater than 37 or 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 or 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 or demonstrate the ability to retain acceptable friction numbers for the life of the pavement
IV	Aggregates with a Polish Value of less than 30



2.2 AGGREGATES FOR PORTLAND CEMENT CONCRETE

- A. **General:** Use aggregates from the Approved Materials List in Portland cement concrete and mortar.
- B. **Fine Aggregate for Portland Cement Concrete and Mortar:** Use natural silica sand. For fine aggregate used in all Portland cement concrete except Types B and D gradations, conform to the following gradations:

Gradation for Fine Aggregate for Portland Cement Concrete	
U.S. Sieve Size	Percent Passing by Weight
3/8 Inch	100
No. 4	95-100
No 16	45-90
No. 50	7-30
No. 100	0-7
No. 200	0 – 3
Gradation for Mortar Sand	
U.S. Sieve Size	Percent Passing by Weight
No. 4	100
No. 8	95-10
No. 100	0-25
No. 200	0-10

- C. **Uncrushed Coarse Aggregate:** For uncrushed coarse aggregate used in all Portland cement concrete except Types B and D gradations, use material which complies with the following:

Gradation for Uncrushed Coarse Aggregate for Portland Cement Concrete			
U.S. Sieve Size	Size 57M	Size 89M	Size 67
2 – ½ Inch	--	--	--
2 Inch	--	--	--



1 – ½ Inch	100	--	--
1 Inch	90-100	--	100
¾ Inch	--	100	90-100
½ Inch	25-60	90-100	--
3/8 Inch	--	--	20-55
No. 4	0-10	15-60	0-10
No. 8	0-5	0-30	0-5
No. 16	--	0-5	--
No. 200	0-1	0-1	0-1

D. Crushed Coarse Aggregate: For crushed coarse aggregate used in all portland cement concrete, except Types B and D gradations, comply with the uncrushed coarse aggregate gradations for uncrushed coarse aggregate, except that when the material finer than the No. 200 sieve consists of the dust fraction from crushing, essentially free of clay, this percentage is limited be 0-2 percent. When the total material passing the No. 200 sieve from the coarse and fine aggregates does not exceed 5 percent, the percent passing the No. 200 sieve from the crushed coarse aggregate may be increased to 3 percent.

E. Portland Cement Concrete Aggregates – Combined Gradations: For the combined aggregates for the proposed Portland cement concrete combined gradation mix, the percent retained based on the dry weight of the total aggregates must meet the requirements below for the type of concrete specified in in the Master Proportion Table for Portland Cement Concrete. Sample and test each type of aggregate stockpile to be used in the proposed mixture individually. Mathematically determine the percent of total combined aggregates retained using the proportions of the combined aggregate blend. Base all gradation calculations on percent of dry weight.

U.S. Sieve Size	Percent Retained of Total Combined Aggregates	
	Gradation Type	
	Type B	Type D
2 – ½ Inch	0	0
2 Inch	0	0-20
1 – ½ Inch	0-20	0-20



1 Inch	0-20	5-20
¾ Inch	5-20	5-20
½ Inch	5-20	5-20
3/8 Inch	5-20	5-20
No. 4	5-20	5-20
No. 8	5-20	5-20
No. 16	5-20	5-20
No. 30	5-20	5-20
No. 50	0-20	0-20
No. 100	0-20	0-20
No. 200	0-5	0-5

Note. For the sieves in the shaded areas, the sum of any two (2) adjacent sieves must be a minimum of 12 percent of the total combined aggregates.

2.3 GRANULAR MATERIAL

- A. Use a non-plastic siliceous material complying with the General Requirements for Aggregates and the following gradation:

U.S. Sieve Size	Percent Passing by Weight
½ Inch	100
No. 10	75-100
No. 270	0-10

2.4 AGGREGATES FOR BEDDING MATERIAL FOR STRUCTURES

- A. Comply with the General Requirements for Aggregates. Use stone as specified herein.
- B. **Stone for Bedding Material:** Comply with the following gradation.



U.S. Sieve Size	Percent Passing by Weight
1-1/2 Inches	100
1 Inch	90-100
¾ Inch	70-100
No. 4	35-65
No. 40	12-32
No. 200	5-12

For material passing the No. 40 (425 µm) sieve, comply with the following requirements:

Liquid Limit, Maximum	25
Plasticity Index, Maximum	5

2.5 TYPE A BACKFILL FOR DRAINAGE PIPE

- A. General:** Use crushed stone for bedding and initial backfill material for complying with the General Requirements for Aggregates for gravity sewer and manholes. Use stone of a #57 gradation as indicated on the drawings. Comply with gradations below.

US Sieve Size	Percent Passing
1-1/2"	100
1"	95-100
½"	25-60
#4	0-10
#8	0-5

2.6 BEDDING, AND BACKFILL MATERIAL FOR GRAVITY SEWER

- A. General:** Use crushed stone for bedding and initial backfill material for complying with the General Requirements for Aggregates for gravity sewer pipelines. Use stone of a #57 gradation as indicated on the drawings. Comply with gradations



below.

US Sieve Size	Percent Passing
1-1/2"	100
1"	95-100
1/2"	25-60
#4	0-10
#8	0-5

B. Use granular material as indicated on the drawings and as specified herein for final backfill.

2.7 BEDDING, HAUNGING, AND BACKFILL MATERIAL FOR SEWER FORCE MAINS

A. Use clean sand complying with ASTM 2321 Class II (SW or SP) and the general requirements for aggregates for the bedding, haunching, and initial backfill material for sewer force mains.

B. Use select material for non-paved areas as specified elsewhere for final backfill. Use clean sand complying with ASTM 2321 Class II (SW or SP) for final backfill in paved areas.

PART 3 -- EXECUTION

3.1 GENERAL

A. Execution requirements for aggregates are contained within the specific specifications sections for the WORK into which the aggregates are being incorporated.

- END OF SECTION -



SECTION 31 30 00 – EARTHWORK – (REVISED – ADDENDUM 1)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. Perform earthwork indicated and required for construction of the WORK, complete and in place, in accordance with the Contract Documents.

1.2 REFERENCE STANDARDS

A. ASTM International (ASTM)

ASTM D1140	Standard Test Methods for Amount of Material in Soils Finer Than the No. 200 (75-um) Sieve
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D2974	Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils
ASTM D3787	Standard Test Method for Bursting Strength of Textiles Constant-Rate-of-Traverse (CRT) Ball Burst Test
ASTM D4491	Standard Test Methods for Water Permeability of Geotextiles by Permittivity
ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4254	Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density
ASTM D4632	Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
ASTM D4751	Standard Test Methods for Determining Apparent Opening Size of a Geotextile
ASTM D4533	Standard Test Method for Trapezoid Tearing Strength of Geotextiles
ASTM D4833	Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
ASTM G154	Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

B. Louisiana Department of Transportation and Development (LDOTD)

LDOTD AML	Approved Materials List
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TR 401	The Determination of In-Place Density
TR 407	Mechanical Analysis of Soils
TR 411	Dry Preparation of Disturbed Samples for Test
TR 413	Organic Material in Soil
TR 415	Field Moisture-Density Relationships
TR 418	Moisture - Density Relationships
TR 423	Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
TR 428	Determining the Atterberg Limits of Soils
TR 430	Determination of pH Value of Water or Soil

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

- A.** Provide submittals, samples for testing, and testing of materials in accordance with Section 01 33 00 – Contractor Submittals and Section 01 45 00 – Quality Control.

1.4 QUALITY ASSURANCE

- A.** Locate, select, deliver, and place material conforming to specification requirements and requirements shown on the drawings. Control all processes, perform testing and make adjustments as necessary to result in a uniform product meeting all the requirements of the drawings and specifications.
- B.** Excavation, pile driving, shoring installation and removal and sheet pile installations may cause vibrations that may affect existing residences or underground utilities in the vicinity of WORK. Control particle velocities during the installation of and removal of shoring.
- C. Soil Usage and Classification:** Soils will be classified and tested in accordance with DOTD TR 423, TR 428, TR 413, TR 407, and TR 430.

1.5 DELIVERY, STORAGE, AND HANDLING

- A.** Deliver, store, and handle products for earthwork as recommended by the supplier of the materials and as specified herein. Prevent unwanted mixing or segregation of material stockpiles.

PART 2 -- PRODUCTS

2.1 SOIL USAGE

- A.** Do not blend soils which do not meet Liquid Limit or Plasticity Index to reduce Liquid Limit or Plasticity Index. Soils may be treated with Lime to reduce plasticity index only with the approval of the ENGINEER.



2.2 SELECTED SOILS

- A. Furnish natural soils with a maximum plasticity index (PI) of 20, maximum liquid limit of 35, and a maximum organic content of 5 percent. Soils with a silt content of 50 percent or greater and a PI of 10 or less will not be allowed.

2.3 TYPE "A" BACKFILL FOR DRAINAGE PIPE

- A. Use aggregate material as specified in Section 31 05 16 – Aggregates.

2.4 TYPE "B" BACKFILL FOR DRAINAGE PIPE

- A. Use granular material as specified in Section 31 05 16 - Aggregates or Select Soil as specified herein. Type "A" backfill material may be substituted for Type "B" material.

2.5 GRANULAR MATERIAL FOR STRUCTURES

- A. Use granular material as specified in Section 31 05 16 – Aggregates.

2.6 BEDDING MATERIAL FOR STRUCTURES

- A. Use aggregate material as specified in Section 31 05 16 – Aggregates.

2.7 BEDDING AND BACKFILL FOR GRAVITY SEWER PIPELINES

- A. **Bedding Material:** Use stone bedding material as specified in Section 31 05 16 – Aggregates.
- B. **Initial Backfill:** Use stone backfill material as specified in Section 31 05 16 – Aggregates.
- C. **Final Backfill:** For paved areas, compacted granular material as specified in Section 31 05 16 – Aggregates. For unpaved areas, use selected soils.

2.8 BEDDING, HAUNCHING, AND BACKFILL FOR SEWER FORCE MAIN PIPELINES

- A. **Bedding Material:** Use compacted granular material as specified in Section 31 05 16 – Aggregates.
- B. **Haunching and Initial Backfill:** Use compacted granular material as specified in Section 31 05 16 – Aggregates.
- C. **Final Backfill:** For paved areas, compacted granular material as specified in Section 31 05 16 – Aggregates. For unpaved areas, use selected soils.

2.9 TOPSOIL

- A. When available, use existing surface soil that has been stripped and stockpiled. When additional topsoil is required beyond the available topsoil from the stripping operation, provide topsoil material delivered and amended as recommended by soil tests. Obtain and pay for soil tests prior to delivery of topsoil to the site to determine the quantities and type of soil amendments



required to meet local growing conditions for the seed species provided. Test delivered topsoil, existing soil in smooth graded areas, and stockpiled topsoil for particle size, pH, organic content, textural class, chemical composition and soluble salts. Provide topsoil which is free from slag, cinders, stones, lumps of soil, sticks, roots, trash or other material over 1 ½ inches diameter. Use topsoil which is free from viable plants and plant parts. Use material which be free from debris, noxious weeds, toxic substances, or other materials harmful to plant growth. Use topsoil with a a minimum PI of 4, a maximum PI of 12, a pH of 5.5-8.0, a minimum organic content of 2 percent. Provide material that is capable of supporting adequate vegetation.

- B. Deliver soil amendments to be blended with the topsoil to the site either in the original, unopened containers bearing the manufacturer's chemical analysis, or in bulk. Provide a chemical analysis for bulk deliveries.
- C. Existing topsoil meeting the above requirements within construction limits may be used. If agricultural lime or organic matter is added to a soil to bring topsoil into conformance with these specifications, provide such amendments at no additional cost to the OWNER.

2.10 GEOTEXTILE FABRIC

- A. Provide geotextile fabric composed of at least 85 percent by weight (mass) of polyolefins, polyesters, or polyamides. Provide fabric that is resistant to chemical attack, rot, and mildew and that has no tears or defects which adversely alter its physical properties. When required, provide fabric which has stabilizers and/or inhibitors added to the base materials to make filaments resistant to deterioration due to ultraviolet and heat exposure. Provide geotextiles with finished edges to prevent the outer yarn from pulling away from the fabric. Fibers of other composition may be woven into the geotextile fabric for reinforcing purposes.
- B. Furnish geotextile fabric rolls with an opaque, waterproof wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Label each roll with the manufacturer's name, date of manufacture, lot number, and name of product.
- C. Provide geotextiles that are listed on the LDOTD AML as approved for the application that geotextile is to be used for at the time of incorporation into the WORK.

2.11 GEOGRID

- A. **General:** Provide a bi-axially oriented polymer grid structure composed of polypropylene or high-density polyethylene with apertures designed to interlock with the surrounding fill material. Weld or interweave joints at the crossover point in such a manner that the elements will not separate under handling and construction activities or under dynamic loads anticipated over the lifetime of the WORK. Use geogrid that is resistant to damage during construction, including ultraviolet light degradation, and that has long term resistance to chemical and biological degradation caused by the fill materials being reinforced.



- B. Provide geogrid that complies the following minimum requirements. Numerical values represent minimum average roll values required in the designated direction:

Property	Test Method	Requirements
Aperture Size	I.D. Calipered	1.0 – 1.5 inch
Open Area, min	Corps of Engineers Method	70%
Flexural Rigidity, Minimum	ASTM D1388	0.018 lb – ft
Tensile Modulus at 2% Strain, Minimum	ASTM D6637	14,000 lb – fit
Junction Efficiency	GRI GG2	90%

2.12 MATERIALS FOR SHEETING, SHORING, AND BRACING

- A. Where wood is used for sheeting, shoring and sheeting, use green, rough cut hardwood (i.e. oak or hickory). Use lumber with a minimum thickness of 2 inches for all planking, sheeting and foundation lumber. Assume responsibility for the design and installation of all wood sheeting unless wood shoring is indicated on the plans.
- B. Where steel sheet piling is used for sheeting, shoring and bracing, use steel sheet piling of a continuous interlock design. Use sheet piling in good condition and of a water tight interlocking connection, which will retard the infiltration of ground water. Provide cofferdams when constructing wet wells at pump station sites. Assume responsibility for and pay all costs for the for the design and installation of all cofferdams as a part of the WORK.
- C. Where trench boxes and shields are used for sheeting, shoring and bracing, use boxes in in good, sound condition which comply with all applicable OSHA requirements. Install, use, and remove of trench shields or accordance with the manufacturer's recommendations and in such a manner as to prevent damage to adjacent embankments, utilities, pavements, or other improvements. Assume responsibility and pay all costs for the design and installation of all trench boxes or shields as a part of the WORK. Depict the use of such implements within the CONTRACTOR's sheeting, shoring and bracing plan.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Except when specifically provided to the contrary, excavation includes the removal of materials, including obstructions that would interfere with the proper



execution and completion of the WORK. Conform to the lines and grades indicated or ordered. Unless otherwise indicated, the strip the entire site of vegetation and debris and grub the entire site. Remove such material from the Site prior to performing any excavation or placing any fill.

3.2 SHEETING, SHORING, AND BRACING

- A. Furnish, place, and maintain supports and shoring that may be required for the sides of all excavations regardless of type. Assume full responsibility for the stability and safety of all excavations, regardless of type.
- B. Slope or otherwise support excavations in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926). In accordance with OSHA Safety and Health Standards for Construction, excavations less than five (5) feet in depth will not require protective systems if a competent person under the employ of the CONTRACTOR has examined the excavation and found no danger of a potential cave in.
- C. Confine limits of all excavations to the right – of – way. Do not allow the limit of any excavation, shoring implement, excavation slopes, or excavation steps to encroach upon private property without a written agreement with the property owner.
- D. The use of horizontal strutting below the barrel of a pipe or structure or the use of a pipe as support for trench bracing will not be permitted.

3.3 EXCLUSION OF WATER

- A. Remove and exclude water, including storm water, groundwater, irrigation water, and wastewater, from excavations. Use dewatering wells, well-points, sump pumps, or other means remove water and continuously maintain groundwater at a level at least 2 feet below the bottom of excavations before the excavation WORK begins at each location. Remove and exclude water from excavations until backfilling is complete and field soils testing has been completed.

3.4 OVER – EXCAVATION

- A. **Indicated:** Where areas are indicated to be over-excavated, excavate to the depth indicated, and install backfill to the grade indicated.
- B. **Not Indicated:** When ordered to over-excavate areas deeper and/or wider than required by the Contract Documents, over-excavate to the dimensions ordered and backfill to the indicated grade.
- C. **Neither Indicated nor Ordered:** Backfill any over-excavation carried below the grade ordered or indicated to the required grade with granular material or non – plastic embankment as part of the WORK.



3.5 DISPOSAL OF EXCESS MATERIAL

- A. Unless otherwise indicated, take possession of and dispose of excess material. Assume full responsibility for the removal and disposal of excess excavated material. Dispose of material of an approved on-Site disposal area or off-Site at a location arranged by the CONTRACTOR in accordance with laws and regulations regarding disposal of such material.

3.6 DRAINAGE AND UTILITY PIPELINE EXCAVATION

- A. **General:** Unless otherwise indicated or ordered, install pipelines and utilities within open-cut trenches with minimum widths as indicated.
- B. **Trench Bottom:** Except where pipe bedding is required, excavate the bottom of the trench uniformly to the grade of the bottom of the pipe. Make excavations for pipe bells and welding as required. Where pipe bedding is required, the bottom of the trench uniformly to the grade of the bottom of the pipe bedding.
- C. **Open Trench:** The maximum amount of open trench permitted in any one location is 500-feet or the length necessary to accommodate the amount of pipe installed in a single Day, whichever is greater. Fully backfill trenches at the end of each day or, in lieu thereof, cover trenches by heavy steel plates adequately braced and capable of supporting vehicular traffic in those locations where it is impractical to backfill at the end of each Day. These requirements for backfilling or use of steel plate will be waived in cases where the trench is located further than 100-feet from any traveled roadway or occupied structure. In such cases, however, provide and maintain barricades and warning lights meeting appropriate safety requirements.
- D. Where pipelines are to be installed in embankments, fills, or structure backfills, construct the fill to a level at least one-foot above the top of the pipe before the trench is excavated. Upon completion of the embankment or structural backfill, excavate a trench conforming to the appropriate detail and install the pipe.
- E. Where moveable trench shield is used during excavation operations, excavate the trench width slightly wider than the shield so that the shield is free to be lifted and then moved horizontally without binding against the trench sidewalls and causing sloughing or caving of the trench walls.
- F. If a moveable trench shield is used during excavation, pipe installation, and backfill operations, move the shield by lifting the shield free of the trench bottom or backfill and then moving the shield horizontally. Do not drag trench shields along the trench causing damage or displacement to the trench sidewalls, the pipe, or the bedding and backfill.

3.7 DRAINAGE PIPELINE BACKFILL AND COMPACTION

- A. Prior to backfilling, remove and reinstall or replace pipes found to be damaged or out of alignment or grade as directed by the ENGINEER.
- B. **Paved Areas:** Backfill cross and side drains in paved areas subject to traffic loads such as roadway travel lanes, shoulders, and turnouts with Type A material. Use



Type B backfill material in all other paved areas including driveways, detour roads and similar installations. Selected soils will not be allowed as backfill material. Place and compact backfill as specified below.

C. Non – Paved Areas: Use Type B material compacted as specified for non – paved areas except for plastic pipe. Backfill plastic pipe with granular material or Type A backfill Material.

D. Placement and Compaction:

1. When corrugated metal pipe is used, use backfill material with a resistivity greater than 1500 ohm-cm and a pH greater than 5 when tested in accordance with DOTD TR 429 and DOTD TR 430 respectively.
2. If the top of pipe is even with or below the top of the trench, bring up backfill material up evenly on both sides of pipe for its full length to an elevation of 12 inches (300 mm) above the top of pipe or to subgrade if less than 12 inches (300 mm) or to natural ground elevation, whichever is greater.
3. When the top of the pipe is above the top of the trench, bring up backfill material evenly on both sides of pipe for its full length to 12 inches (300 mm) above the top of pipe or to subgrade if less than 12 inches (300 mm). Use backfill material in the trench and above the top of the trench for a distance on each side of the pipe equal to the horizontal outside diameter for corrugated metal or plastic pipe and 18 inches (450 mm) for concrete pipe, and to 12 inches (300 mm) above the top of pipe or to subgrade if less than 12 inches (300 mm).
4. Unless otherwise authorized by the ENGINEER where headroom is limited, construct embankment to a minimum of 24 inches (600 mm) over the pipe before heavy construction equipment is allowed to cross the installation. Where practical, construct installations with less than 24 inches (600 mm) of cover over the top of the pipe after heavy hauling is completed over the pipe location. After completion of hauling operations, remove excess cover material. Remove and reinstall, or replace pipe damaged by hauling and backfilling operations at no additional cost to the OWNER as directed by the ENGINEER.

E. Backfill Methods: Compaction of backfill for drainage pipe as indicated below. Compaction by flooding will not be allowed unless authorized by the ENGINEER.

1. **Selected Soils:** Place at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418 in layers not exceeding 8 inches (200 mm) compacted thickness. Thoroughly compact backfill material under the haunches of the pipe. Compact each layer by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer.
2. **Granular Material:** Place backfill; at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Thoroughly compact material under the haunches of the pipe and then compact material in layers not exceeding 12 inches compacted thickness. Compact each layer



by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. Cover exposed slopes at the pipe ends by at least 12 inches (300 mm) compacted thickness of plastic soil blanket.

3. **Stone:** Place backfill at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Thoroughly compact backfill material under the pipe haunches and then compact in layers not exceeding 8 inches (200 mm) compacted thickness. With approval of the ENGINEER, layer thickness may be increased to 12 inches (300 mm) with verification of satisfactory installation and performance. Compact each layer by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. Control placement and compaction operations so as not to damage protective coatings on metal pipes. Repair damaged coatings at no additional cost to the OWNER.

3.8 BEDDING MATERIAL FOR MANHOLES AND SEWER LIFT STATION STRUCTURES

- A. **Placement of Bedding:** Unless otherwise noted on the drawings, place geotextile material in accordance with plan details prior to placing bedding material. Take care to prevent damage to geotextile fabric during placement of bedding material. Place materials in lifts not exceeding 12 inches. Shape the layers and uniformly compact.
- B. **Compaction Requirements:** Compact material to 75% relative density as determined by ASTM D 4253 and D 4254. In place density will be determined in accordance with DOTD TR 401.
- C. Adjacent rolls of fabric will be overlapped or sewn. When rolls are overlapped, overlap a minimum of 18 inches, including the ends of the rolls. Place the top layer of the fabric parallel with adjacent rolls and in the direction of bedding materials placement. When rolls are sewn, join adjacent rolls by sewing with polyester, or Kevlar thread. Employ the "J" seam or "Butterfly" seam for field sewing with the two pieces of geotextile fabric mated together, turned in order to sew through 4 layers of fabric and sewn with 2 rows of Type 401, two-threaded locking chain stitch. Factory seams other than specified may be submitted to the ENGINEER for approval. When the ground is covered with water or supersaturated soil, sewing of the fabric will be required.
- D. Remove and replace damaged fabric with new fabric or cover with a second layer of fabric extending 2 feet in each direction from the damaged area.

3.9 EXCAVATION AND BACKFILL FOR MANHOLES AND SEWER LIFT STATION STRUCTURES

- A. Except where otherwise indicated for a particular structure or where ordered by the ENGINEER, carry the excavation to an elevation 6-inches below the bottom of the footing or slab and brought back to grade with compacted materials acceptable for placement beneath structures. Where indicated or ordered, over – excavate beneath structures. When such over-excavation is indicated, perform both over-excavation and subsequent backfill to the required grade.
- B. Backfill excavations with granular material compacted in lifts. Place and spread backfill material evenly in approximately horizontal layers. Moisten or aerate



each layer as necessary. Unless otherwise approved by the ENGINEER, do not allow any layer to exceed 6-inches of compacted thickness. Compact backfill to a minimum of 95 percent of maximum dry density. Use equipment that is consistently capable of achieving the required degree of compaction and compact each layer over its entire area while the material is at the required moisture content.

- C. Do not deposit material on reservoir and structure roofs sooner than 30 Days after the concrete roof slab has been placed. Do not use equipment weighing more than 10,000 pounds when loaded on a roof.
- D. Do not use flooding, ponding, and jetting for fill on roofs, backfill around structures, backfill around reservoir walls, for final backfill materials, or aggregate base materials.
- E. Do not use equipment weighing more than 10,000 pounds closer to walls than a horizontal distance equal to the vertical depth of the fill above undisturbed soil at that time. Use hand operated power compaction equipment where use of heavier equipment is impractical or restricted due to weight limitations.

3.10 GRAVITY SEWER PIPELINE BEDDING AND BACKFILL AND COMPACTION

- A. **Bedding Material:** Place bedding material and compact to 75% relative density as determined by ASTM D 4253 and D 4254. In place density will be determined in accordance with DOTD TR 401.
- B. **Initial Backfill:** Place initial backfill material and compact to 75% relative density as determined by ASTM D 4253 and D 4254. In place density will be determined in accordance with DOTD TR 401.
- C. **Final Backfill:** For paved areas, place backfill; at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Thoroughly compact material in layers not exceeding 12 inches compacted thickness. Compact each layer by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. For unpaved areas, compact to the density of the surrounding soils.

3.11 SEWER FORCE MAIN BEDDING AND BACKFILL AND COMPACTION

- A. **Bedding:** Place bedding at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Thoroughly compact material in layers not exceeding 12 inches compacted thickness. Compact each layer by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer.
- B. **Haunching and Initial Backfill:** Place initial at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Thoroughly compact material in layers not exceeding 12 inches compacted thickness. Compact each layer by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer.



- C. Final Backfill:** For paved areas, place backfill; at or near optimum moisture content determined in accordance with DOTD TR 415 or TR 418. Compact material in layers not exceeding 12 inches compacted thickness. Compact each layer by approved methods to at least 95 percent of maximum dry density prior to placement of a subsequent layer. For unpaved areas, compact to the density of the surrounding soils.

3.12 GEOTEXTILE FABRIC

- A.** Unless noted otherwise, on the drawings or elsewhere in the Contract Documents, utilize geotextile fabric as indicated in the table below:

Application		Use Geotextile Class
Drainage Sewerage	Underdrains	A, B, C, or D
	Pipe and Precast Manhole Joints	A, B, C, or D
	Weepholes	A, B, C, or D
	Bedding Fabric	B, C, or D
	Geocomposite Drainage Systems	B, C, or D
Stabilization	Bulkheads	C or D
	Flexible Revetments	C or D
	Rip Rap	D
	Railroad Crossings	D
	Base Course	D
	Subgrade Layer	D
	Soil Stabilization	C, D, or S
Paving	Paving Fabric	B or C
Silt Fencing	Self Supported Silt Fencing	F
	Wire Supported Silt Fencing	G

- B.** Keep rolls of geotextile covered and protected from ultraviolet degradation at all times until use. Cover geotextile fabric that has been installed with



embankment within 7 calendar days. When ultraviolet damage occurs, remove and replace the geotextile. Place fabric at the locations shown on the plans or as directed. Overlap or sew adjacent rolls of geotextile fabric. When rolls are overlapped, provide an overlap of a minimum of 18 inches (450 mm), or as specified in the plans, including the ends of the rolls. Place the top layer of the geotextile fabric parallel with adjacent rolls and in the direction of embankment placement. When rolls are sewn, join adjacent rolls by sewing with polyester or Kevlar thread. Employ the "J" seam or "Butterfly" seam for field sewing with the two pieces of geotextile fabric mated together, turned in order to sew through 4 layers of fabric and sewn with 2 rows of Type 401, two-thread chain stitch. Factory seams other than specified may be submitted to the ENGINEER for approval. Where the ground is covered with water or soil is saturated, sew the geotextile fabric.

- C. Place geotextile fabric as smooth as possible with no wrinkles or folds, except in curved road sections. For curved road sections, fold the geotextile fabric to accommodate the curve. Fold in the direction of construction and pinned or stapled. Fill and compact ruts that occur during construction prior to placement of geotextile fabric.
- D. Remove and replace damaged geotextile fabric with new geotextile fabric or covered with a second layer of geotextile fabric extending 2 feet in each direction from the damaged area

3.13 TOPSOIL

- A. Scarify areas to receive topsoil as directed. Spread topsoil uniformly over the areas to a depth of 6 inches and roll to a uniform surface with a cultipacker or other suitable equipment.

3.14 GEOGRID

- A. Place geogrid in continuous sheets parallel to the roadway or pipeline centerline. Ensure that geogrid sections do not separate during construction.
- B. Cut geogrid to ensure that placement is maintained parallel to the centerline of the roadway or the pipeline.
- C. Do not allow tracked equipment to operate directly on the geogrid. Remove and replace damaged geogrid with new geogrid or cover geogrid with new geogrid extending three (3) feet in each direction.

- END OF SECTION -



**SECTION 40 91 02 – VARIABLE FREQUENCY DRIVE PUMP CONTROL PANEL (ISSUED –
ADDENDUM 1)**

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A.** Furnish and install Duplex Pump Control systems which will control pumps in an energy conservation mode of operation. Furnish control systems which can adapt to changing inflow conditions and which automatically regulate pumped outflow based on inflow conditions and which seek an optimal energy efficiency for the pump station. Furnish systems which accomplish these requirements by providing Variable Frequency Drives with built in integral logic software that is SCADA ready for operation.

- B.** Furnish panels specified under this section at the Tchefuncte Parc and Three Rivers stations. Furnish a panel with motor starters at the Fairfield Oaks Pump Station.

1.2 REFERENCE STANDARDS

A. European Standards (EN)

EN 61800-5-1	Adjustable speed electrical power drive systems. Safety requirements. Electrical, thermal and energy.
EN 61800-3	Adjustable speed electrical power drive systems. EMC requirements and specific test methods
EN 55011	Limits and Methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment (EMC)
EN60529	Specifications for degrees of protection provided by enclosures

B. National Fire Prevention Association (NFPA)

NFPA 70	National Electrical Code
NFPA 820	Standard for Fire Protection in Wastewater Treatment and Collection Facilities

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

- A.** Provide submittals in accordance with Section 01 33 00 – Contractor Submittals.

- B.** Submit the following:
 - 1.** Operations and Maintenance Manual

- C.** Quality assurance requirements are continued throughout this specifications



section.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Fully protect all materials and equipment against damage from any cause. Cover all materials and equipment, both in storage and during construction, in such a manner that no finished surfaces will be damaged, marred, or splattered with water, foam, plaster, or paint. Keep all moving parts clean and dry. Replace or refinish all damaged materials or equipment, including face plates of panels and switchboard sections, at no additional expense to the OWNER.

1.5 CLOG FREE GUARANTEE

- A. In addition to the manufacturer's warranty, provide a (2) year clog free guarantee. If the pump clogs with typical solids and/or debris normally found in domestic wastewater during this period (within 24 months of pump station start-up), the manufacturer or the manufacturer's representative will reimburse the Owner for reasonable cost to remove the pump, clear the obstruction and reinstall the affected pump, or the manufacturer's representative will provide a service technician to perform this work at no cost to the Owner.

PART 2 -- PRODUCTS

2.1 ELECTRICAL CONTROL PANEL

- A. **General:** Furnish NEMA 3R stainless steel control panel which will house VFD's, each equipped with integral liquid level control, moisture and thermal protection modules and/or PLC and provided with the minimum of the following:
 1. **Main Lugs:** Furnish lugs of the appropriate size for connecting the incoming supply power. Furnish lugs suitable for use with aluminum or copper conductors
 2. **Breakers:** Furnish system in which each pump motor protected by a properly sized E frame molded case circuit breaker. Furnish breakers which provide inverse time delay overload protection and instantaneous short circuit protection by means of a thermal magnetic element. Furnish breakers operated by a toggle type handle and which have a Quick-make, Quick-break over center switching mechanism that is mechanically trip free from the handle so that the contacts cannot be held closed against short circuits and abnormal currents. Furnish breakers in which tripping due to overload or short circuit is clearly indicated by the handle automatically assuming a position midway between the manual "ON" and "OFF" position. Furnish breakers having minimum interrupting rating of the breaker 35,000 amps at 230 VAC. Furnish breakers with motor circuit breaker toggle which is operable through a cutout in the inner door.
 3. **HOA Switches:** Furnish Hand-Off-Automatic (integral the VFD HMI) switches to select the operating mode for each pump installed on the control panel inner deadfront door. In the event either pump operation selector switch is in the "Off" position, the control system software automatically designates the operating pump motor as the "next pump motor to operate" after that



pump motor is started

4. **Elapsed Time Meter:** Furnish Elapsed time meters for each pump motor.
 5. **Inner Door:** Furnish enclosures with hinged inner doors from 5052-H32.080, marine alloy aluminum. Furnish enclosures with hinged inner door which contain cutouts for all circuit breaker toggles. Furnish labels for control switches and indicators which are mounted mounted to the hinged inner door to keep operators from entering the live electrical compartment. Furnish warning sign stating "DANGER -- Disconnect All Sources Of Power Before Opening Door" on the inner door. Furnish inner door which is completely removable for ease of service and which is held closed by at least (2) hand operated 1/4 turn fasteners.
 6. **Pilot Lights:** Furnish pilot lights for Alarm, pump run, and pump fail. Furnish HOA lights integral to the VFD operator interface.
- B. **Removable Back Panel:** Furnish control system enclosure including a removable back-panel. Furnish back panel which is painted and fabricated from cold roll steel. Fasten components to the back-panel using stainless steel pinhead machine screws. Clearly label all devices in accordance with the schematic ladder diagram.
 - C. **TVSS:** Furnish TVSS on the 120VAC circuit.
 - D. **Accessories:** Furnish a Loop Power Surge Suppressor, lightning arrestors, and fan kit with adjustable thermostat for panel cooling.

2.2 VARIABLE FREQUENCY DRIVES

- A. Provide Frequency pump drives for each pump in the system, sized for the appropriate voltage and power. Furnish drive manufactured by the pump manufacturer and designed for wastewater pumping and with functionality pre-programmed for the specific pump model used or a PLC of equivalent functionality. Provide system in which the pump drive provides all level control functionality, hand/auto operation, pump alternation, pump over temperature monitoring, seal leakage monitoring, pump self-cleaning, sump cleaning and pipe cleaning algorithms. Provide pump drives with capability to monitor station inflow, pump speed and energy consumption in order to automatically operate the pump station at optimal energy efficiency.
- B. Furnish pump drives which have been tested and approved in accordance with national and international standards and comply with Directive 98/37/EC, Safety of Machinery and EN60204-1.
- C. Furnish pump drives which conform to the relevant safety provisions of the Low Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC and has been designed and manufactured in accordance with the following harmonized European standards:



Standard	Title
EN 61800-5-1: 2003	Adjustable speed electrical power drive systems. Safety requirements. Electrical, thermal and energy.
EN 61800-3 2nd Ed: 2004	Adjustable speed electrical power drive systems. EMC requirements and specific test methods
EN 55011: 2007	Limits and Methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment (EMC)
EN60529 : 1992	Specifications for degrees of protection provided by enclosures

- D. Furnish variable frequency drive units having ampere rating equal to or greater than the ampere rating listed on the motor being driven by the variable frequency drive
- E. Furnish drive units which are modularly constructed. Furnish drives having printed circuit boards connected in such manner that they are easily removed from the unit. Furnish drives in which power components are readily accessible and be connected in such manner that they are easily removed from the unit. Furnish drives pump for cabinet installation construction, for 230V, 60HZ 3Phase power supply. Furnish drives having an IP55 and IP66 isolation class.

2.3 REQUIRED SYSTEM OPERATION

- A. **General:** Furnish controls system with high/low level sump control, run time averaging, pump cleaning function, and sump cleaning function.
- B. **High Low/Level Sump Control:** Furnish pump controls which comply with the following:
 1. Provides automatic level control via means of a submersible pressure transducer (4-20mADC) and one (1) non-mercury liquid level float switch. User-programmable Start Level sets the point at which the pump will start. Upon activation the pump runs at maximum speed for a pre-determined period, then ramps down to the energy efficient Optimal speed, calculated by the pump drive. When the water level reaches the Stop Level, the pump stops. The Optimal Speed is either be calculated by the pump drive or manually entered by the user
 2. In case of case of high inflow, the pump drive increases pump speed until the water level begins to decrease. When the water level reaches the Stop Level, the pump stops
 3. In case of case of very high inflow, in a duplex installation, when a single



pump is unable to overcome the inflow conditions even at maximum speed, additional pumps are activated and run at maximum speed until the Stop Level is reached. If water levels continue to rise, a High Level Alarm is activated.

4. Furnish pump drives which incorporate a Minimum Speed function that prevents the pump from operating at speeds too low to move water based on the pump curve.
- C. Run Time Averaging (Duplex Application Only): Furnish pump controls which comply with the following:
1. For of duplex pumps/drives, the pump drives provide capability to balance run times for even wear. This is to be accomplished by internal function of the drive and may not require external devices, such as an Alternating Relay. The function operates by determining a "random" start level based on the Start Level setting. Each drive determines its own random start level independent of each other. New random start levels will be determined every 24 hours. The pump with the lowest random start level is first to start on any given pump cycle. The second pump remains in Standby capacity in case the lead pump is not be able to lower the water level as described in the section above. By recalculating the random start levels every 24 hours, balanced run times are accomplished.
- D. Pump Cleaning Function: Furnish pump controls which comply with the following:
1. The Pump drive incorproates a "self-cleaning" function to remove debris from the impeller. The cleaning is triggered by three circumstances, soft clogging (When motor current equals 20% or greater above rated motor current, in the drive, for a period of 7 seconds), hard clogging (When motor current equals 80% or greater above rated current for a period of 0.01 seconds), and/or scheduled cleaning (pump drive is pre-programmed to perform cleaning regularly).
 2. Furnish cleaning function which consist of forced stopping, reversal and forward runs timed to allow for debris to fall from the impeller. After cleaning cycle is complete, drive resumes to automatic operation.
- E. Sump Clearing Function: Furnish pump drives which incorporate a pipe cleaning function to avoid discharge pipe sedimentation and clogging due to reduced pump speed. Furnish this as an automatic feature that initiates with every pump cycle. Upon reaching Pump Start Level, the drive operates the pump at 100% speed for a determined time before ramping down to the most energy efficient speed for the duration of the cycle.
- F. Pipe Cleaning Function: Furnish drives which incorporate a pipe cleaning function to avoid discharge pipe sedimentation and clogging due to reduced pump speed. Furnish drives in which this function an automatic feature that initiates with every pump cycle. Upon reaching Pump Start Level, the drive operates the pump at 100% speed for a determined time before ramping down to the most energy efficient speed for the duration of the cycle.



- G. **Energy Efficient Speed Finder:** Furnish drives provide a function that automatically calculates the most energy efficient speed for the pump based on station inflow characteristics. An algorithm calculates the optimal speed whereby the most water is pumped using the least amount of energy, the optimal speed is constantly adjusted to account for changes inflow without requiring operator adjustment, multiple setpoints, etc. The energy efficient function prevents the drive from running off of the system curve for the pump. This will ensure maximum hydraulic efficiency as well as electrical efficiency is maintained.
- H. **Alarms and Monitoring:** Furnish pump drive which provide alarms and monitoring for the drive, pump and sump. Furnish alarms to be presented on the LCD display, via a Summary Alarm relay and via Modbus registers. All alarms, when occurring, remain active until reset. Alarms have a built-in 4 second delay to prevent nuisance tripping. Provide alarms as follows:
 1. **Pump Monitoring:** pump over temperature (thermal contacts in motor stator); pump seal leak (leakage sensor).
 2. **Sump Monitoring:** High Sump Level (via level float switch or submersible transducer), Submersible transducer Sensor Error (Submersible transducer is not connected, reports faulty values or the wrong start level is used)
 3. **Pump Drive Monitoring:** Drive overcurrent, drive overload trip, drive overvoltage; drive undervoltage; drive overtemperature (internal); drive overtemperature (ambient); drive undertemperature (ambient)' input phase loss; drive output max torque exceeded).

2.4 SUBMERSIBLE PRESSURE TRANSDUCER

- A. Furnish system in which liquid level of the wet wells are sensed by a submersible level transducer. Furnish transducers of a 2-wire type to operate from the level controller's regulated loop power supply and produce an instrumentation signal (4-20mA) in direct proportion to the measured level excursion over a factory-calibrated range of zero to (30) feet of water.
- B. Furnish transducers of the ceramic capacitive, relative pressure sensing type, suitable for continuous submergence and operation and which are installed in accordance with manufacturer's instructions. Unless otherwise directed, install bottom diaphragm face of the sensor approximately 6 inches above the wet well floor. Install sensor in the wet well using a cable bracket including two sliding cable locking jaws in a location in the wet well and as shown on the job plans.
- C. Furnish transducer having housing fabricated of PPS (polyphenylene sulfide) with a ceramic bottom diaphragm.
- D. Furnish transducer element having high over-pressure protection and be designed to withstand intermittent overpressures (10) times the full-scale range being sensed. Metallic diaphragms will not be acceptable in that they are subject to damage or distortion. Sensing principles employing LVDTs, resistive or pneumatic elements will not be acceptable.



- E. Furnish transducer in which the internal pressure of the lower transducer assembly is relieved to atmospheric pressure through a heavy-duty urethane jacketed hose/cable assembly and a slack PVC bellows mounted in the control panel. Furnish sealed breather system to compensate for variations in barometric pressure and expansion and contraction of air due to temperature changes and altitude as well as prevent fouling from moisture and other corrosive elements.
- F. Furnish transducer having programming feature using a standard USB interface and a laptop computer, the servicing transmitter can be programmed on-the-fly to the required measuring range. The design without sharp edges prevents particles, textiles and paper from sticking to the housing or the diaphragm. Furnish surge resistant transducer.
- G. Furnish transducer with cable of steel reinforced PUR cable with high tensile stretch.

2.5 BACKUP FLOAT SWITCH

- A. Furnish non – mercury float switch for backup control as specified herein.

PART 3 -- EXECUTION

3.1 INSTALLATION

- A. Install the control panel in accordance with the Manufacturer's instructions, NFPA 70, NFPA 820, and as shown in the drawings. Mount panels straight and true. Do not drill any mounting holes in the enclosure. Use weatherproof hubs for all conduit entries into the enclosure to prevent water intrusion.
- B. As soon as conduits are connected to the control panel, and even before wires are installed, seal conduits with approved sealers to prevent sewer gases or moisture, especially from the wet well, from entering panel.

- END OF SECTION -



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SECTION 40 91 04 – MOTOR STARTER CONTROL PANEL (ISSUED – ADDENDUM 1)

PART 1 -- GENERAL

1.1 THE REQUIREMENT

- A. Furnish and install control panels to provide un-attended automatic operation of pumps. Furnish and install control panels that are fully assembled, wired and tested. Provide panels from a supplier certified by Underwriters Laboratories (UL) to manufacture UL 508A control panels. Present such certification documentation with submittal drawings.
- B. Furnish control panel for each station as indicated on the drawings and as specified herein.

1.2 REFERENCE STANDARDS

- A. National Electrical Manufacturer's Association (NEMA)
NEMA 250 Enclosures for Electrical Equipment, 1000 Volts Maximum
- B. National Fire Protection Association (NFPA)
NFPA 70 National Electrical Code
- C. Underwriter's Laboratory (UL)
UL 508 Industrial Control Panels

1.3 CONTRACTOR SUBMITTALS, SAMPLING, AND TESTING

- A. Provide submittals in accordance with Section 01 33 00 – Contractor Submittals.
- B. Quality assurance requirements are continued throughout this specifications section.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Fully protect all materials and equipment against damage from any cause. Cover all materials and equipment, both in storage and during construction, in such a manner that no finished surfaces will be damaged, marred, or splattered with water, foam, plaster, or paint. Keep all moving parts clean and dry. Replace or refinish all damaged materials or equipment, including face plates of panels and switchboard sections, at no additional expense to the OWNER.

PART 2 -- PRODUCTS

2.1 PUMP CONTROL PANEL AND ACCESSORIES:

- A. **General:** Provide control panel and components as indicated on the electrical drawings for the Fairfield Oaks Pump Station. Provide NEMA 4X enclosure and



audible and visual alarm.

PART 3 -- EXECUTION

3.1 INSTALLATION

- A.** Install the control panel in accordance with the Manufacturer's instructions, NFPA 70, NFPA 820, and as shown in the drawings. Mount panels straight and true. Do not drill any mounting holes in the enclosure. Use weatherproof hubs for all conduit entries into the enclosure to prevent water intrusion.

- B.** As soon as conduits are connected to the control panel, and even before wires are installed, seal conduits with approved sealers to prevent sewer gases or moisture, especially from the wet well, from entering panel.

- END OF SECTION -



SECTION 43 25 06 - SUBMERSIBLE SOLIDS-HANDLING PUMPS (REVISED – ADDENDUM 1)

PART 1 -- PRODUCTS

1.1 THE REQUIREMENT

- A. Furnish, install, and place into service submersible solids-handling pumps and appurtenant WORK, complete and operable, in accordance with the Contract Documents.
- B. The requirements of Section 43 20 00 - Pumps, General apply to this Section.
- C. Require the supplier to examine the Site conditions, intended application, and operation of the pump system and recommend the pump that will best satisfy the indicated requirements.

1.2 EXTENDED PERIOD FOR CORRECTION OF DEFECTS

- A. Correct defects in the pumping system upon notification from the OWNER within 5 years from the date of Substantial Completion. Complete corrections within 5 Days after notification.

PART 2 -- GENERAL

2.1 GENERAL DESCRIPTION

- A. **Operating Conditions:** Furnish pumping units suitable for long-term operation within a sewerage pumping station.
- B. **Performance Requirements:** Furnish pumping units meet the performance requirements as indicated in the drawings.

2.2 PUMP CONFIGURATION

- A. Furnish pumps which are automatically and firmly connected to the discharge connection, guided by no less than two guide bars extending from the top of the station to the discharge connection. Furnish pumps configured such that there is no need for personnel to enter the wet-well for removal of the pumps. Furnish pumps in which the sealing of the pumping unit to the discharge connection is accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. Furnish pumps configured so that no portion of the pump bears directly on the sump floor.

2.3 PUMP CONSTRUCTION

- A. Furnish pumps having major components of grey cast iron, ASTM A-48, Class 35B, with smooth surfaces devoid of blow holes or other irregularities. Furnish pumps having lifting handle of stainless steel. Furnish pumps having exposed nuts or bolts all of stainless steel construction. Furnish pumps in which all metal surfaces coming into contact with the pumpage, other than stainless steel or brass, are protected by a factory applied spray coating of acrylic dispersion zinc phosphate primer with a polyester resin paint finish on the exterior of the pump.



- B. Furnish pumps in which sealing is accomplished by **metal-to-metal contact** between machined surfaces. Furnish pumps in which critical mating surfaces where watertight sealing is required are machined and fitted with Nitrile rubber O-rings. Fittings is to be the result of controlled compression of rubber O-rings in two planes and O-ring contact of four sides without the requirement of a specific torque limit.
- C. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression will not be considered adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices may be used.

2.4 CABLE ENTRY SEAL

- A. Furnish pumps which are designed and constructed as to preclude specific torque requirements to insure a watertight and submersible seal. Furnish pump having cable entry consisting of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. Furnish pumps having grommets compressed by the cable entry unit, thus providing a strain relief function. Furnish pumps with assembly designed and functional to provide ease of changing the cable when necessary using the same entry seal. Furnish pumps in which cable entry junction chamber and motor are sealed from each other, and in which the stator housing is isolated foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems will not be considered equal.

2.5 MOTOR

- A. Furnish pumps having motors of NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. Furnish pumps having stator windings insulated with moisture resistant Class H insulation rated for 180°C (356°F). Furnish pumps having stator insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95%. Furnish motors which are inverter duty rated in accordance with NEMA MG1, Part 31. Furnish pumps having stators which are heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is not acceptable. The use of pins, bolts, screws or other fastening devices used to locate or hold the stator and that penetrate the stator housing are not acceptable. Furnish pumps having motors designed for continuous duty while handling pumped media of up to 104°F and which are capable of no less than 30 evenly spaced starts per hour. Furnish motors with rotor bars and short circuit rings made of aluminum. Furnish motors having thermal switches embedded in the stator end coils, one per phase winding, to monitor the stator temperature. Provide these thermal switches to be used in conjunction with and supplemental to external motor overload protection and which are connected to the main control panel.
- B. Furnish pumps having junction chambers which are sealed off from the stator housing and which contain a terminal board for connection of power and pilot sensor cables using threaded compression type terminals. The use of wire nuts or crimp-type connectors is not acceptable. Furnish pumps in which the motor and the pump are produced by the same manufacturer.



- C. Furnish pump motors having motor service factor (combined effect of voltage, frequency and specific gravity) of 1.15. Furnish motors having a voltage tolerance of +/- 10%. Furnish motors designed for continuous operation in up to a 40°C ambient and which have a NEMA Class B maximum operating temperature rise of 80°C. Furnish a motor performance chart exhibiting curves for motor torque, current, power factor, input/output kW and efficiency. Furnish chart which also includes data on motor starting and no-load characteristics.
- D. Furnish pumps having motors with horsepower sufficient so that the pump is non-overloading throughout its entire performance curve, from shut-off to run-out. Furnish pump with motor and cable which are capable of operation during of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.
- E. Furnish power cables sized according to the NEC and ICEA standards and which are of sufficient length to reach the junction box without the need of any splices. Furnish power cables having a shielded design in which an overall tinned copper shield is included and each individual phase conductor is shielded with an aluminum coated foil wrap. Furnish cable having outer jacket of oil resistant chlorinated polyethylene rubber. Furnish cable which is capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.

2.6 BEARINGS

- A. Furnish pumps in which integral pump/motor shafts rotate on two bearings. Furnish pumps having motor bearings sealed and permanently grease lubricated with high temperature grease. Furnish pumps having upper motor of a two row angular contact ball bearing. Furnish pumps having lower bearing of a two row angular contact ball bearing to handle the thrust and radial forces. Furnish pumps having minimum L10 bearing life of 50,000 hours at any usable portion of the pump curve.

2.7 MECHANICAL SEALS

- A. Furnish pumps provided with a positively driven dual, tandem mechanical shaft seal system consisting of two seal sets, each having an independent spring. Furnish pumps with lower primary seal, located between the pump and seal chamber, which contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide ring. Furnish pumps having upper secondary seal, located between the seal chamber and the seal inspection chamber of a leakage-free seal. Furnish pumps having upper seal which contain one stationary and one positively driven rotating corrosion and abrasion resistant tungsten-carbide seal ring. Furnish pumps having rotating seal ring featuring small back-swept grooves laser inscribed upon its face to act as a pump as it rotates, returning any fluid that should enter the dry motor chamber back into the lubricant chamber. Furnish pumps in which all seal rings are individual solid sintered rings. Furnish pumps in which each seal ring is held in place by its own spring system and in which the seals do not depend upon direction of rotation for sealing. Mounting of the lower seal on the impeller hub is not acceptable. Shaft seals without positively driven rotating members or conventional double mechanical seals containing either a common single or



double spring acting between the upper and lower seal faces are not acceptable. Furnish pumps having seal springs which are isolated from the pumped media to prevent materials from packing around them, limiting their performance.

- B. Furnish each pump having a lubricant chamber for the shaft sealing system. Furnish pumps having lubricant chambers which
- C. Furnish pumps having one drain and one inspection plug that are accessible from the exterior of the motor unit. Furnish pumps in which the seal system does not rely upon the pumped media for lubrication.
- D. Furnish pumps in which the area about the exterior of the lower mechanical seal in the cast iron housing have cast in an integral concentric spiral groove. Furnish pumps having groove which protects the seals by causing abrasive particulate entering the seal cavity to be forced out away from the seal due to centrifugal action.
- E. Furnish pumps having a separate seal leakage chamber provided so that any leakage that may occur past the upper, secondary mechanical seal will be captured prior to entry into the motor stator housing. Furnish pumps designed and constructed such that such seal leakage will contaminate the motor lower bearing. Furnish pumps having leakage chamber equipped with a float type switch that will signal if the chamber should reach 50% capacity.
- F. Furnish pumps having non – hazardous seal lubricant.

2.8 PUMP SHAFT

- A. Furnish pumps having pump and motor shafts of a single piece unit. The pump shaft is an extension of the motor shaft. Shafts using mechanical couplings will not be acceptable. Furnish pumps having shafts constructed of stainless steel – ASTM A479 S43100-T. Shaft sleeves will not be acceptable.

2.9 IMPELLER

- A. Furnish impellers of Hard-Iron (ASTM A-532 (Alloy III A) 25% chrome cast iron), dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. Furnish pumps in which impeller leading edges are mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. Furnish pumps having leading edges of the impeller hardened to Rc 60 and capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. Furnish impellers having screw shape of the impeller inlet which provides an inducing effect for the handling of up to 5% sludge and rag-laden wastewater and which are spring loaded to allow the impeller to move axially up the shaft, allowing large solids to pass, without reduced efficiency. Furnish pumps in which the impeller to volute clearance is readily adjustable by the means of a single trim screw. Furnish pumps having impeller locked to the shaft, held by an impeller bolt, without the need for external adjustment screws on the wear plate/pump volute, and which are coated with alkyd resin primer.



2.10 VOLUTE/SUCTION COVER

- A.** Furnish pump volutes of a single piece grey cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Furnish minimum inlet and discharge sizes be as specified. Furnish pumps having volute with a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). Furnish pumps having volutes with spiral groove(s) to provide trash release pathways and sharp edge(s) across which each impeller vane leading edge which cross during rotation so to remain unobstructed. Furnish pumps having insert rings cast of Hard-Iron (ASTM A-532 (Alloy III A) 25% chrome cast iron) and provide effective sealing between the multi-vane semi-open impeller and the volute housing.

2.11 PROTECTION

- A.** Furnish each pump motor having three thermal switches, one per stator phase winding and be connected in series, to monitor the temperature of the motor. Should the thermal switches open, the motor stops and the controller activates an alarm. Furnish pumps having a float switch in the seal leakage chamber and will activate if leakage into the chamber reaches 50% chamber capacity, signaling the need to schedule an inspection.
- B.** Furnish pumps in which the thermal switches and float switch are connected to a control and status monitoring unit. Furnish pumps having control and status monitoring units designed to be mounted in the pump control panel.

2.12 PUMP CONTROLS

- A.** Furnish pumps which are compatible with the control panels supplied under Section 40 91 02.

2.13 FACTORY TESTING AND SHIPMENT

- A.** In addition to the factory tests in Section 43 20 00, require the supplier to complete the following procedures with the factory test prior to shipment:
 1. Verification of the pump characteristic curves by testing at 1/4, 1/2, 3/4, and full flow and recording the measured head and motor current for each flow.
 2. Verification of cavitation-free service and absence of motor overheating during conditions simulating the actual operating conditions after installation, whether submerged, semi-submerged, or dry.
 3. Submit data on factory testing and quality control of pump seals with the submittals.
 4. Ensure that parts are properly lubricated and protected so that no damage or deterioration will occur even during a prolonged delay from the time of shipment until installation is completed and the pumps are ready for operation.
 5. Protect finished ferrous surfaces not painted to prevent rust and corrosion.



6. Protect the finished surfaces of exposed flanges by strong wooden blind flanges.
7. Properly crate each pump to protect against damage during shipment.

2.14 MANUFACTURERS, OR EQUAL

A. Flygt Corporation

PART 3 -- EXECUTION

3.1 INSTALLATION

- A.** In addition to the requirements of Section 43 20 00, ensure that anchor bolts are set only after the discharge piping has been properly installed, to ensure exact fit with embedded piping components.

3.2 SERVICES OF MANUFACTURER

- A.** Inspection, Startup, and Field Adjustment: Require the service representative of the manufacturer to be present continuously at the Site to furnish the services required by Section 43 20 00 – Pumps, General.
- B.** Instruction of OWNER'S Personnel: Require the training representative of the manufacturer to be present at the Site for three Days to furnish the services required by Section 43 20 00 – Pumps, General.
- C.** For the purposes of this paragraph, a Day is defined as an 8 hour period at the Site, excluding travel time.
- D.** The ENGINEER may require that the inspection, startup, and field adjustment services above be furnished in three separate trips.

END OF SECTION



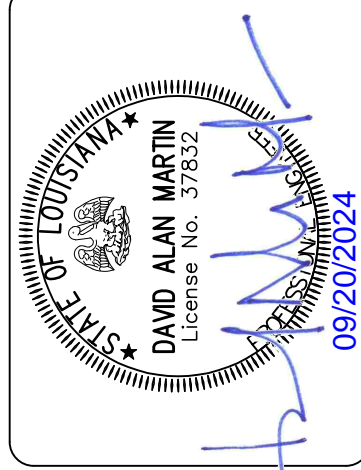


DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

NO.	DATE	BY	CHECKED BY	PROJECT NO.	ISSUE DATE	APPROVED BY	SHEET SIZE	SCALE:
1	08/20/2024	M. LOKER	J. CATLANOTTO	175, 177	08/20/2024	D. MARTIN	ANSI D 34x22	AS NOTED

DESIGNED BY: M. LOKER
DRAWN BY: J. HITT
CHECKED BY: J. CATLANOTTO
SUBMITTED BY: FAIRWAY CE
PROJECT NO.: DU 168,170,
175, 177
ISSUE DATE: 08/20/2024
APPROVED BY: D. MARTIN
SHEET SIZE: ANSI D 34x22
SCALE: AS NOTED

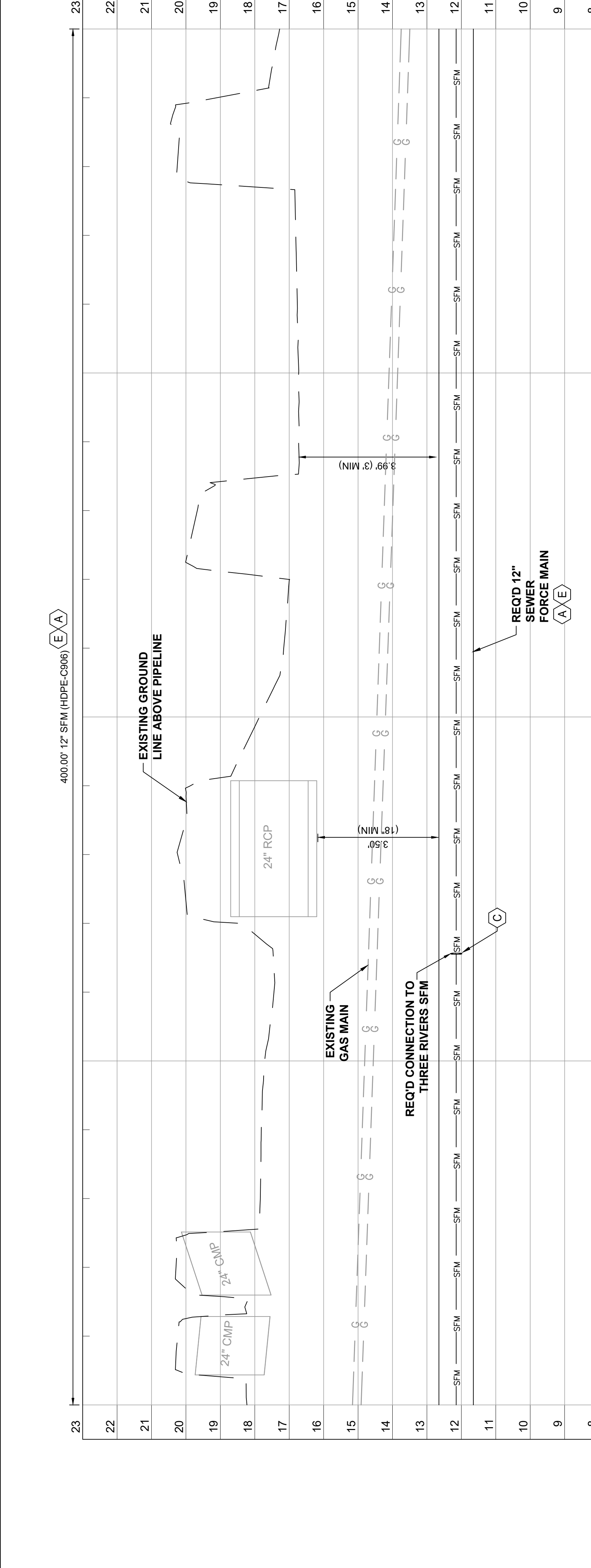
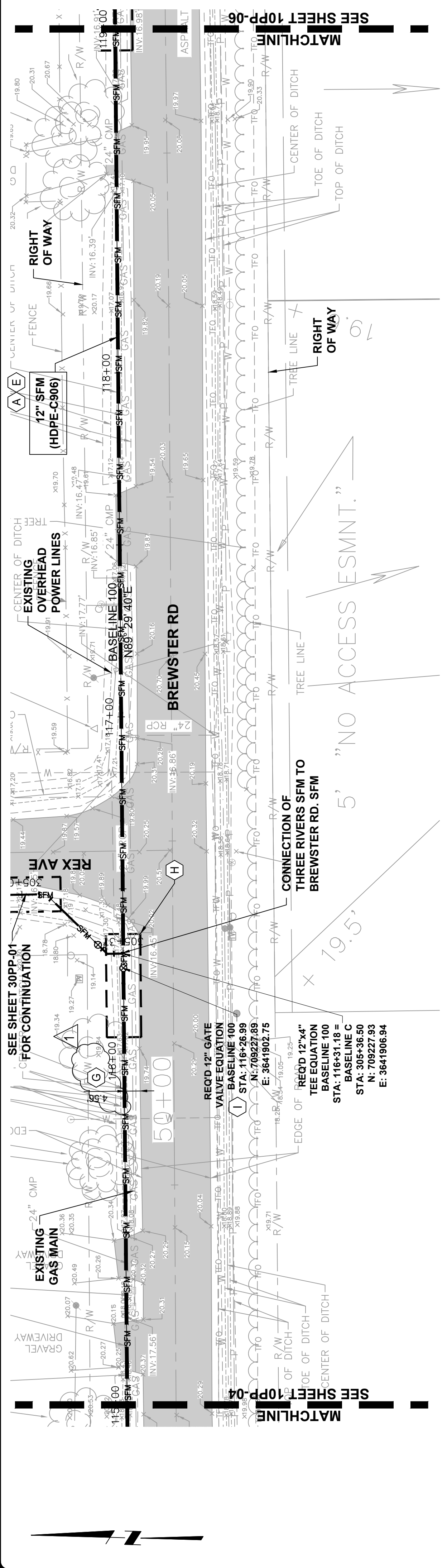
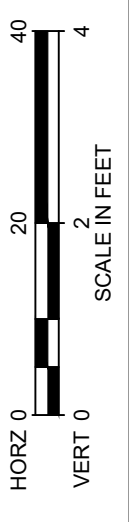


BREWSTER ROAD SEWER
CONSOLIDATION
FORCE MAIN PLAN & PROFILES - BASELINE 100 - V

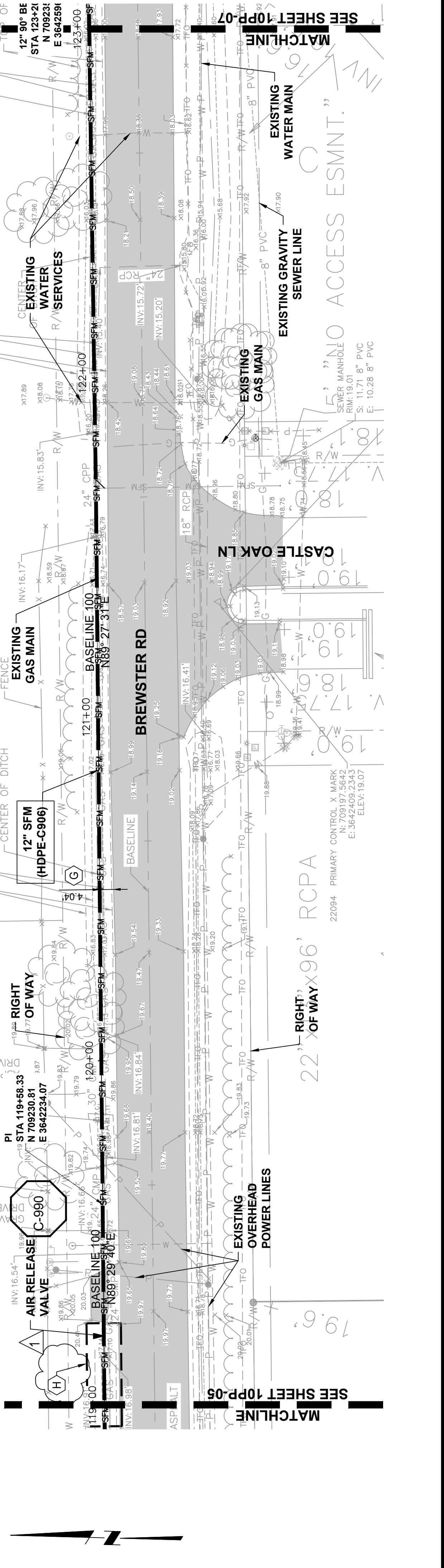
SHEET NO.
10PP-05

- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING DRAWINGS BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHEFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION
 - AT EACH LOCATION WHERE THE REQUIRED SEWER FORCE MAIN CROSSES AN EXISTING UTILITY, OR TIES INTO AN EXISTING UTILITY CONDUIT EXPLORATORY EXCAVATIONS AS NECESSARY TO POSITIVELY DETERMINE LOCATION, ELEVATION, AND SIZE OF UTILITY CONDUIT SUCH AS EXPLORATORY EXCAVATIONS AND REPORT FINDINGS TO ENGINEER PRIOR TO ANY HORIZONTAL DIRECTIONAL DRILLING OPERATIONS. COORDINATE WITH THE ENGINEER IN ADJUSTING THE ALIGNMENT OF THE REQUIRED PIPELINE TO MAINTAIN REQUIRED CLEARANCES. THE CONTRACTOR WILL NOT BE ENTITLED TO ANY ADJUSTMENT IN PAY FOR SUCH ADJUSTMENTS EXCEPT FOR ADDITIONAL QUANTITIES.
 - PROVIDE TEMPORARY TRAFFIC CONTROL PER THE ACCEPTED TEMPORARY TRAFFIC CONTROL PLAN. SEE SPECIFICATIONS AND MINIMUM STANDARDS FOR ADDITIONAL REQUIREMENTS.
 - PIPE SIZES NOTED ON PLANS REFERENCE NOMINAL PIPE DIAMETER.
 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
 - CONTRACTOR TO MAINTAIN A MINIMUM 6' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SEWER FORCE MAIN AND WATER MAIN.
 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

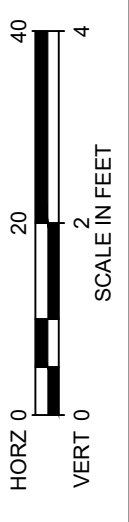
- PLAN AND PROFILE NOTES BY SYMBOLS**
- REQ'D 12" BREWSTER RD. SFM TO DISCHARGE INTO TCHEFUNCTE PARC SPS
 - REQ'D 4" FAIRFIELD OAKS SEWER FORCE MAIN TO DISCHARGE INTO BREWSTER RD. SFM
 - REQ'D 4" THREE RIVERS SFM TO DISCHARGE INTO BREWSTER RD. SFM.
 - REQ'D 14" TCHEFUNCTE PARC SFM TO DISCHARGE TO FAUBOURG NO 2 SPS.
 - PIPE TO BE INSTALLED BY HORIZONTALLY DIRECTIONALLY DRILLING
 - PIPE TO BE INSTALLED BY OPEN CUT
 - HORIZONTAL DISTANCE FROM EDGE OF ROADWAY
 - REQ'D LAUNCHING AND RECEIVING PIT FOR HORIZONTAL DIRECTIONAL DRILLING
 - REQ'D FULLY RESTRAINED GATE VALVE WITH STEM EXTENSION PER DETAIL
 - REQ'D AIR RELEASE VALVE AND VAULT PER DETAIL
 - REQ'D VERTICAL CURVE. SEE CURVE TABLE ON SHEET G-102 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
 - REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN
 - REQ'D 14" TCHEFUNCTE PARC SFM TO DISCHARGE INTO FAUBORG NO. 2 LIFT STATION



STATION	EXIST GND EL	VERTICAL PIPE GEOMETRY	PIPE ELEV DATA (COVER INV)
115+00	18.23	2009' @ 0.0%	5.58(C) 11.65(I)
116+00	17.72		5.06(C) 11.65(I)
117+00	17.87		5.22(C) 11.65(I)
118+00	16.73		4.07(C) 11.65(I)
119+00	17.28		4.63(C) 11.65(I)



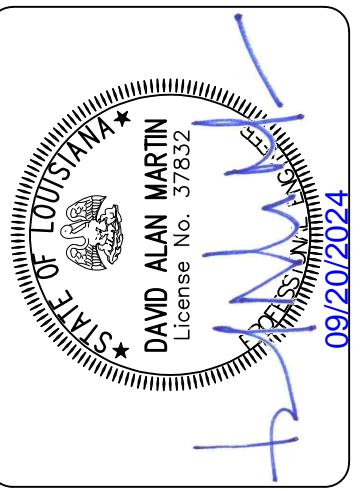
STATION	EXIST GND EL	VERTICAL PIPE GEOMETRY	PIPE ELEV DATA (COVER INV)
119+00	17.28	2009' @ 0.0%	11.65(I) 4.63(C)
120+00	20.00	0' @ 0.0%	11.65(I) 7.35(C)
121+00	16.36	78.37' @ 0.7%	7.13(C) 8.23(I) 7.94(C) 7.41(I)
122+00	15.96	601' @ -0.9%	12.60(C) 4.85(I) 10.47(C) 4.49(I) 11.12(C) 3.57(I)



SHEET NO.
10PP-06

BREWSTER ROAD SEWER CONSOLIDATION

FORCE MAIN PLAN & PROFILES - BASELINE 100 - VI



DESIGNED BY: M. LOKER	DRAWN BY: J. HITT
CHECKED BY: J. CATLANOTTO	SUBMITTED BY: FAIRWAY CE
PROJECT No.: DU 168,170.	ISSUE DATE: 08/20/2024
APPROVED BY: D. MARTIN	SHEET SIZE: ANSI D 34x22
AS NOTED:	

DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
 620 N. TYLER STREET
 COVINGTON, LA 70433

- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHEFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION.
 - AT EACH LOCATION WHERE THE REQUIRED SEWER FORCE MAIN CROSSES AN EXISTING UTILITY, OR TIES INTO AN EXISTING UTILITY CONDUIT EXPLORATORY EXCAVATIONS AS NECESSARY TO POSITIVELY DETERMINE LOCATION, ELEVATION, AND SIZE OF UTILITY CONDUIT SUCH AS EXPLORATORY EXCAVATIONS AND REPORT FINDINGS TO ENGINEER PRIOR TO ANY HORIZONTAL DIRECTIONAL DRILLING OPERATIONS. COORDINATE WITH THE ENGINEER IN ADJUSTING THE ALIGNMENT OF THE REQUIRED PIPELINE TO MAINTAIN REQUIRED CLEARANCES. THE CONTRACTOR WILL NOT BE ENTITLED TO ANY ADJUSTMENT IN PAY FOR SUCH ADJUSTMENTS EXCEPT FOR ADDITIONAL QUANTITIES.
 - PROVIDE TEMPORARY TRAFFIC CONTROLS PER THE ACCEPTED TEMPORARY TRAFFIC CONTROL STANDARDS FOR ADDITIONAL REQUIREMENTS.
 - PIPE SIZES NOTED ON PLANS REFERENCE NOMINAL PIPE DIAMETER.
 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
 - CONTRACTOR TO MAINTAIN A MINIMUM 6' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SEWER FORCE MAIN AND WATER MAIN.
 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

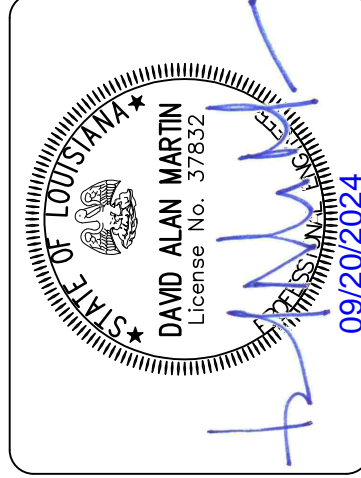
- PLAN AND PROFILE NOTES BY SYMBOLS**
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 - PIPE TO BE INSTALLED BY OPEN CUT
 - HORIZONTAL DISTANCE FROM EDGE OF ROADWAY
 - REQD LAUNCHING AND RECEIVING PIT FOR HORIZONTAL DIRECTIONAL DRILLING
 - REQD FULLY RESTRAINED GATE VALVE WITH STEM EXTENSION PER DETAIL
 - REQD AIR RELEASE VALVE AND VAULT PER DETAIL
 - REQD VERTICAL CURVE. SEE CURVE TABLE ON SHEET G-102 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
 - REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN
 - REQD 14" TCHEFUNCTE PARC SFM TO DISCHARGE INTO FAUBORG NO. 2 LIFT STATION



DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

DESIGNED BY: M. LOKER	DRAWN BY: J. HITT
CHECKED BY: J. CATLANOTTO	PROJECT No.: FAIRWAY CE 175, 177, DU 168,170.
ISSUE DATE: 08/20/2024	APPROVED BY: D. MARTIN
SHEET SIZE: ANSI D 34x22	AS NOTED

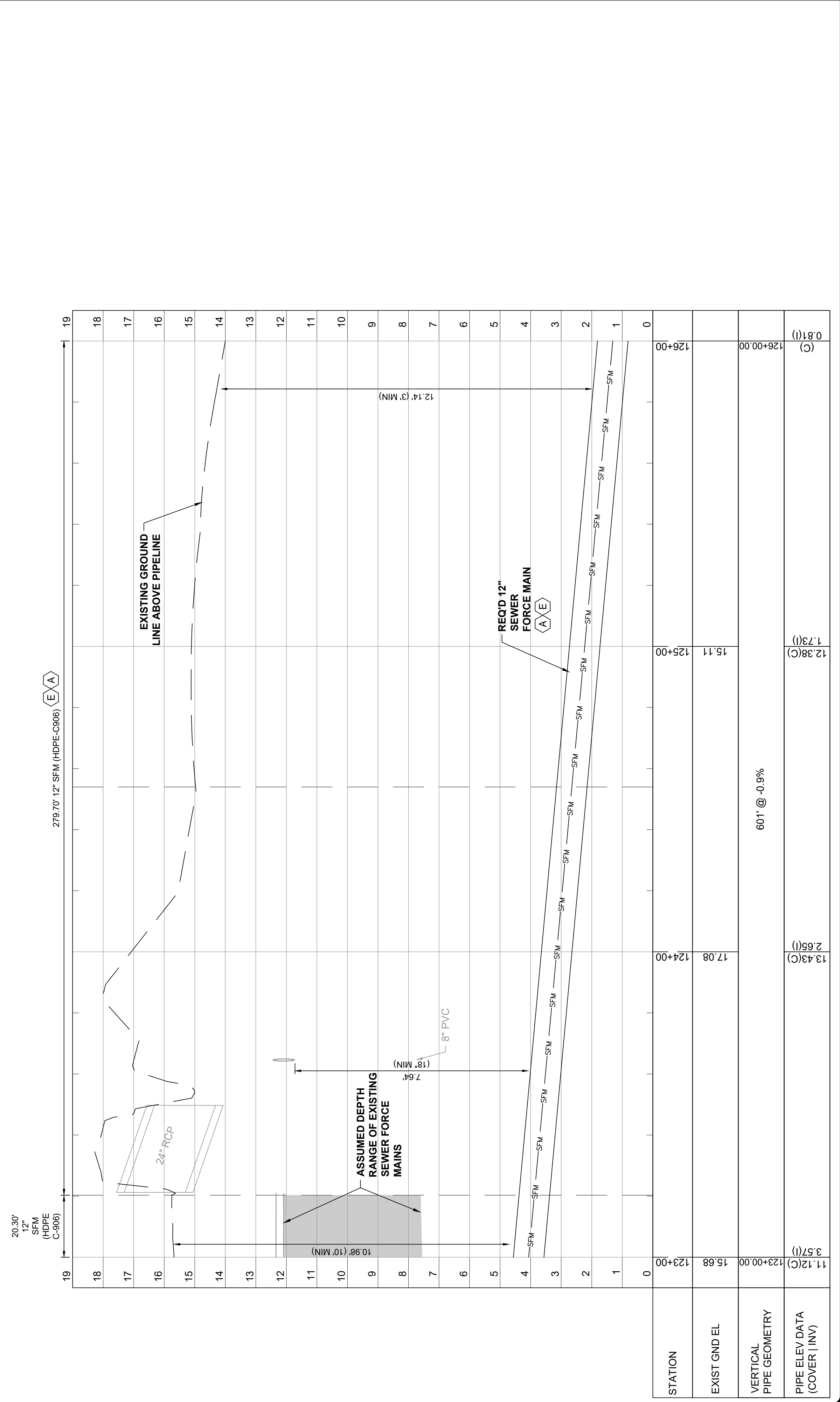
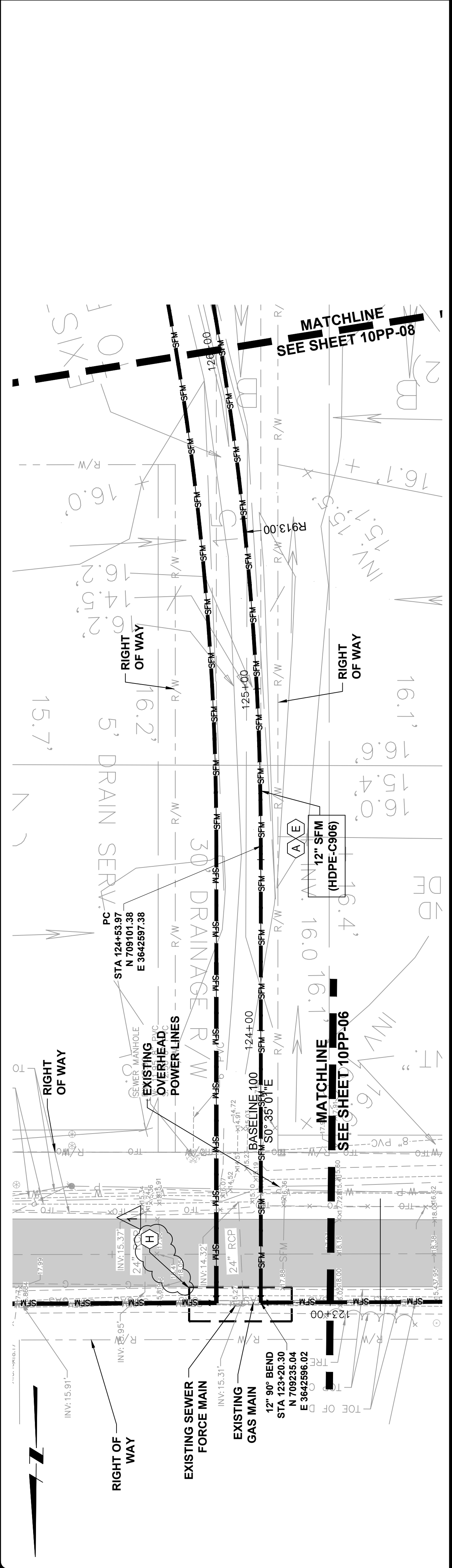
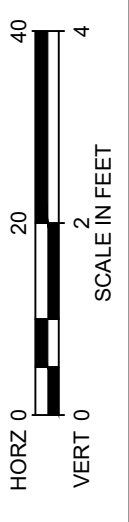


BREWSTER ROAD SEWER
CONSOLIDATION
FORCE MAIN PLAN & PROFILES - BASELINE 100 - VII

SHEET NO.
10PP-07

- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING DRAWINGS BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHEFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION
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 - PIPE SIZES NOTED ON PLANS REFERENCE NOMINAL PIPE DIAMETER.
 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
 - CONTRACTOR TO MAINTAIN A MINIMUM 6' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SEWER FORCE MAIN AND WATER MAIN.
 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

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 - REQ'D LAUNCHING AND RECEIVING PIT FOR HORIZONTAL DIRECTIONAL DRILLING
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 - REQ'D AIR RELEASE VALVE AND VAULT PER DETAIL
 - REQ'D VERTICAL CURVE. SEE CURVE TABLE ON SHEET G-102 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
 - REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN INTO FAUBORG NO. 2 LIFT STATION

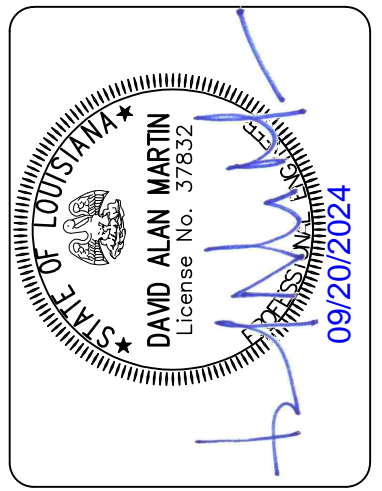




DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

DESIGNED BY: M. LOKER	DRAWN BY: J. HITT
CHECKED BY: J. CATLANOTTO	PROJECT No.: DU 168,170.
ISSUE DATE: 08/20/2024	APPROVED BY: D. MARTIN
SHEET SIZE: ANSI D 34x22	SCALE: AS NOTED

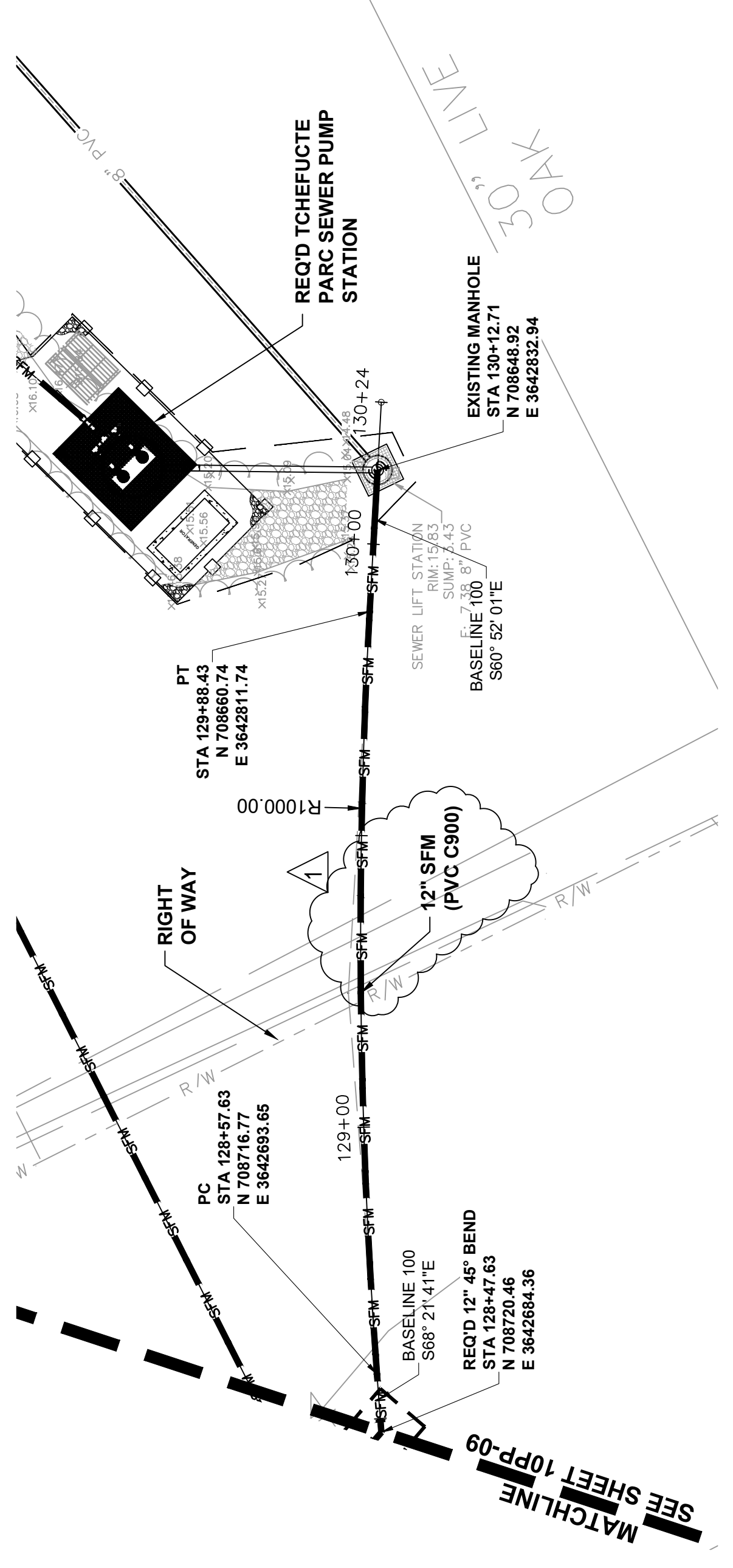
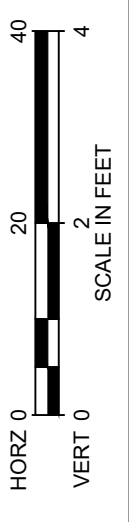


BREWSTER ROAD SEWER
CONSOLIDATION
FORCE MAIN PLAN & PROFILES - BASELINE 100 - IX

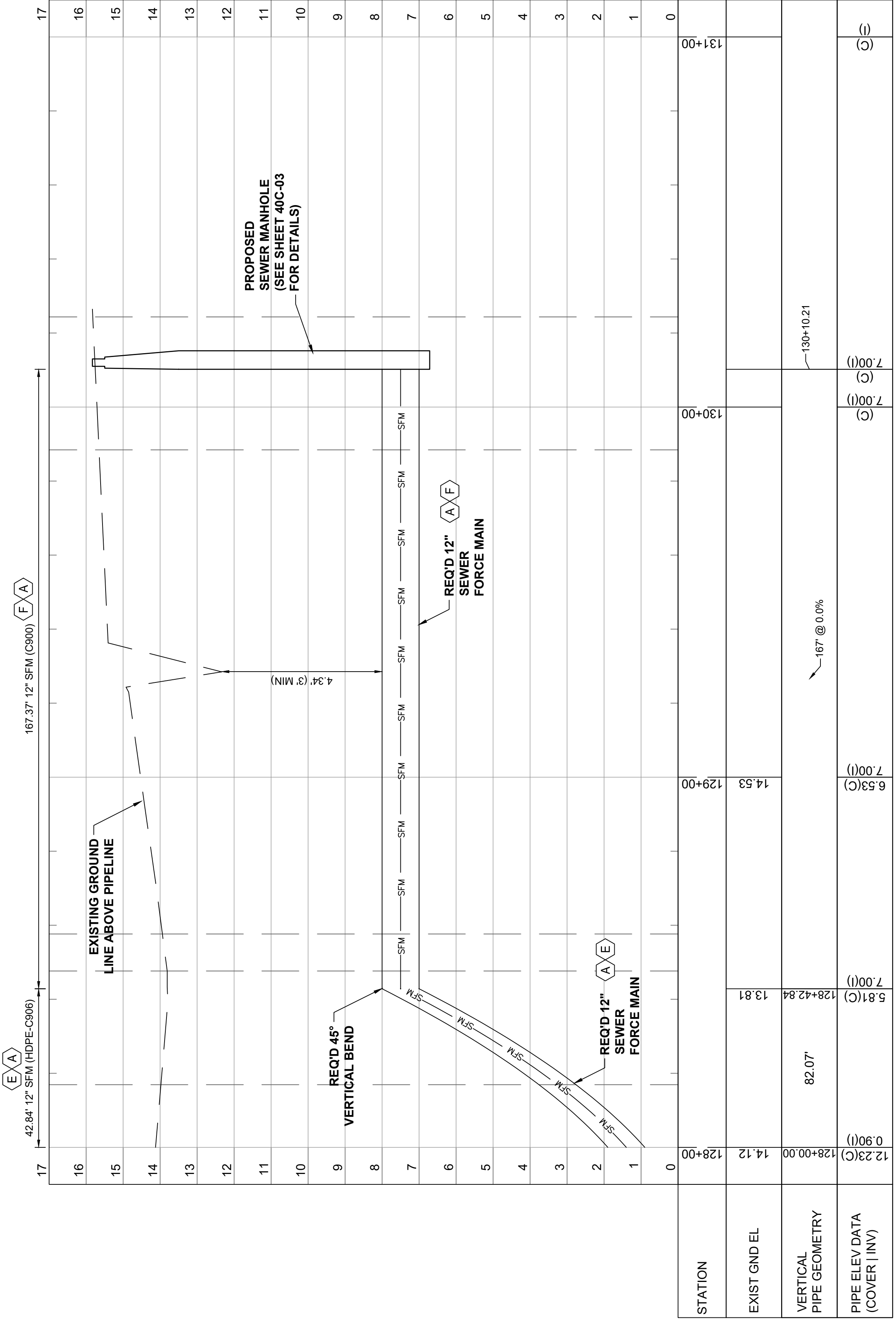
SHEET NO.
10PP-09

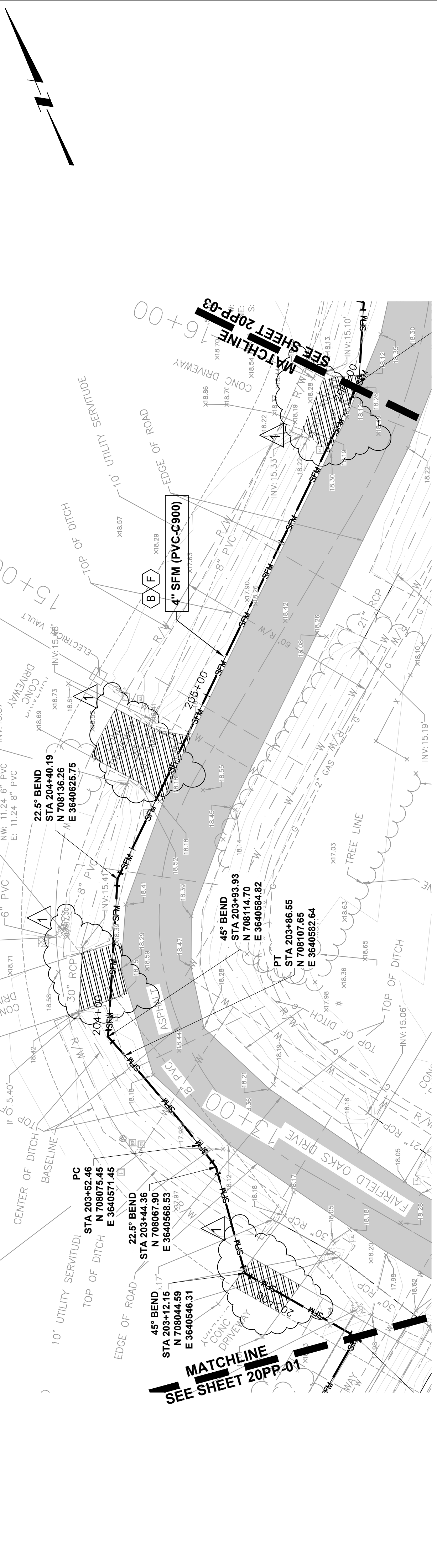
- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING DRAWINGS BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHEFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION
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 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
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 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

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 - REQ'D FULLY RESTRAINED GATE VALVE WITH STEM EXTENSION PER DETAIL
 - REQ'D AIR RELEASE VALVE AND VAULT PER DETAIL
 - REQ'D VERTICAL CURVE. SEE CURVE TABLE ON SHEET G-102 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
 - REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN
 - REQ'D 14" TCHEFUNCTE PARC SFM TO DISCHARGE INTO FAUBORG NO. 2 LIFT STATION

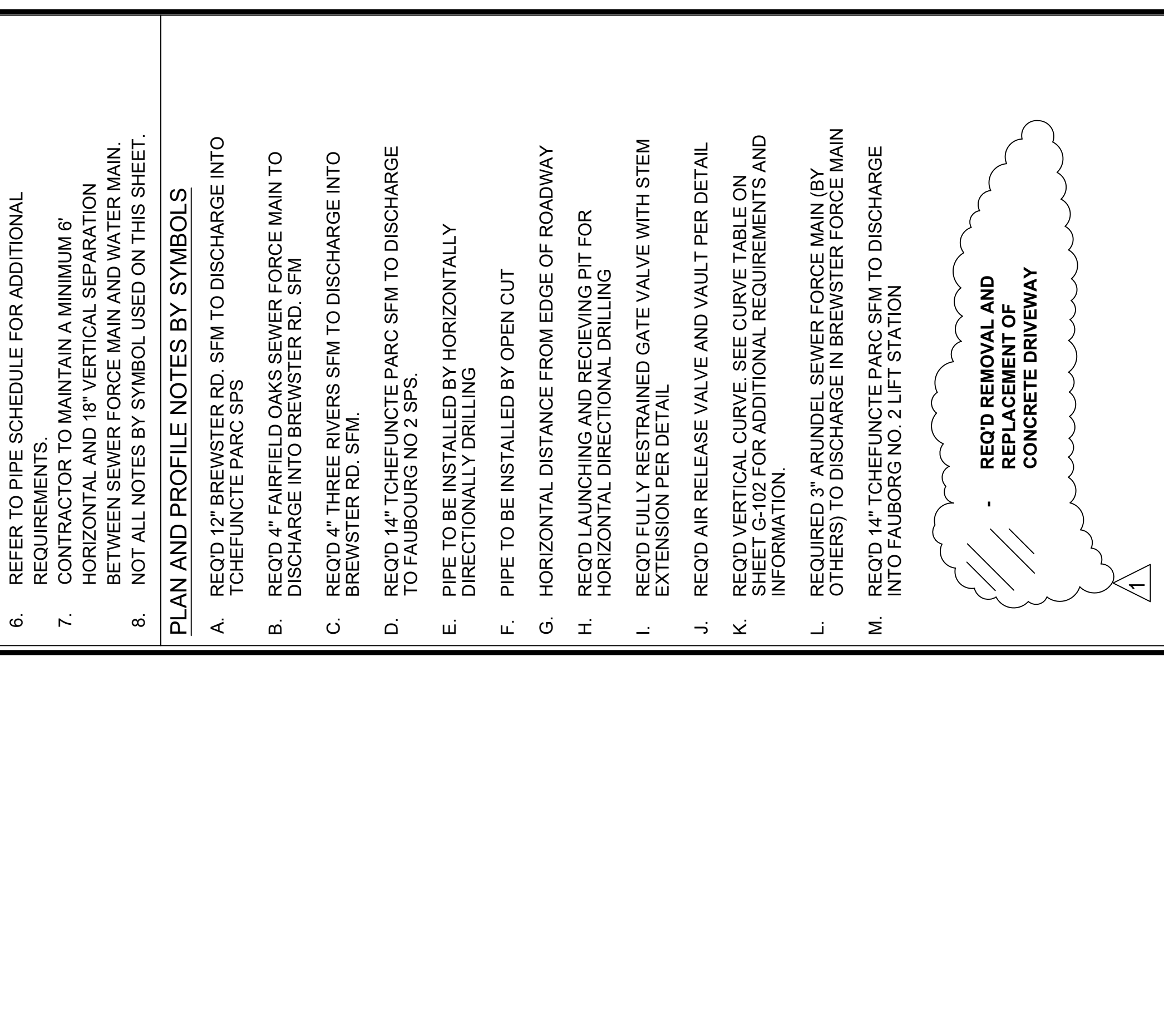


STATION	EXIST GND EL	VERTICAL PIPE GEOMETRY	PIPE ELEV DATA (COVER INV)
128+00	14.12	82.07'	12.23(C) 0.90(I)
128+00	14.12		5.81(C) 7.00(I)
128+00	13.81		128+42.84 7.00(I)
129+00	14.53		6.53(C) 7.00(I)
130+00			7.00(C) 7.00(I)
130+00			7.00(C) 7.00(I)
131+00			7.00(C) 7.00(I)



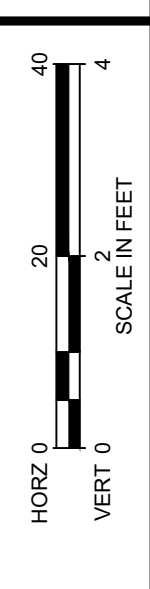
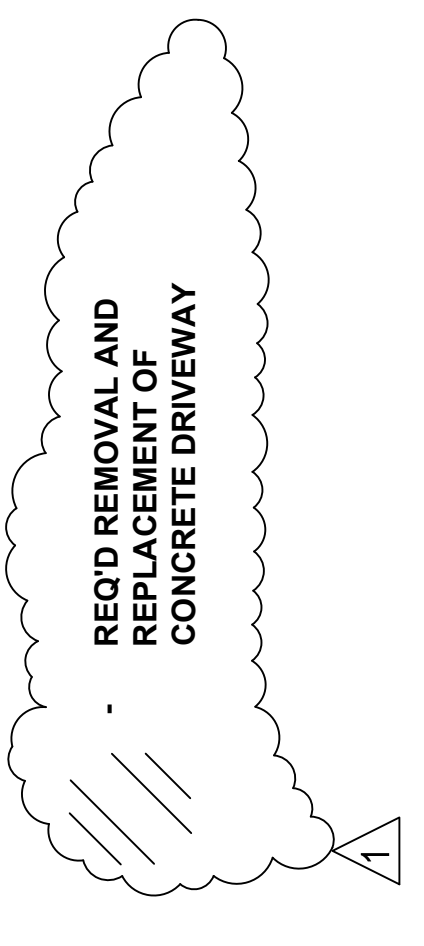



STATION	EXIST GND EL	VERTICAL PIPE GEOMETRY	PIPE ELEV DATA (COVER INV)
202+75	14.90	171' @ -0.0%	3.10(C) 14.56(I)
202+74.62	14.90	45' @ 0.0%	3.10(C) 14.56(I)
203+23.67	14.90	4' @ -100.0%	3.10(C) 14.56(I)
203+26.40	12.17	3 @ 100.0%	5.33(C) 12.13
203+71.69	14.00	1 @ -100.0%	4.13(C) 13.67(I)
204+77.11	14.00	20' @ 0.0%	4.26(C) 13.06(I)
204+77.87	13.24	20' @ 0.0%	4.94(C) 12.90(I)
204+99.64	15.00	2' @ 100.0%	13.24
205+00	15.00	109' @ 0.0%	14.67(I) 12.90(I) 3.18(C)
206+00	15.00		3.24(C) 14.67(I)



- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING DRAWINGS BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHEFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION.
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 - PIPE SIZES NOTED ON PLANS REFERENCE NOMINAL PIPE DIAMETER.
 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
 - CONTRACTOR TO MAINTAIN A MINIMUM 6" HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SEWER FORCE MAIN AND WATER MAIN.
 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

- PLAN AND PROFILE NOTES BY SYMBOLS**
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 - REQ'D AIR RELEASE VALVE AND VAULT PER DETAIL
 - REQ'D VERTICAL CURVE. SEE CURVE TABLE ON SHEET G-102 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
 - REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN INTO FAUBORG NO. 2 LIFT STATION





DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

DESIGNED BY: M. LOKER
CHECKED BY: J. CATLANOTTO
SUBMITTED BY: FAIRWAY CE
PROJECT No.: DU 168,170.
ISSUE DATE: 08/20/2024
APPROVED BY: D. MARTIN
SHEET SIZE: ANSI D 34x22
SCALE: AS NOTED

FORCE MAIN PLAN & PROFILES - BASELINE 200 - II

BREWSTER ROAD SEWER
CONSOLIDATION

DESCRIPTION OF REVISION

NO.	DATE	DESCRIPTION
1	09/20/24	APPENDUM 1

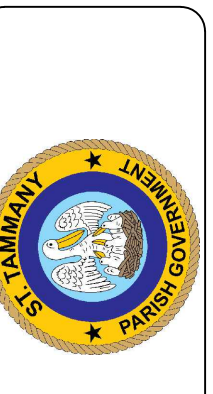
DATE: 09/20/24

ST. TAMMANY PARISH GOVERNMENT
DAVID ALAN MARTIN
License No. 37832

09/20/2024

SHEET NO. 20PP-02

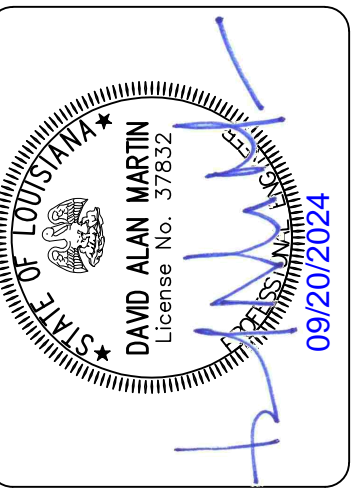
APPENDUM 1



DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

DESIGNED BY:	M. LOKER
DRAWN BY:	J. HITT
CHECKED BY:	J. CATALANOTTO
PROJECT No.:	175, 177
ISSUE DATE:	08/20/2024
APPROVED BY:	D. MARTIN
SHEET SIZE:	ANSI D 34x22
SCALE:	AS NOTED



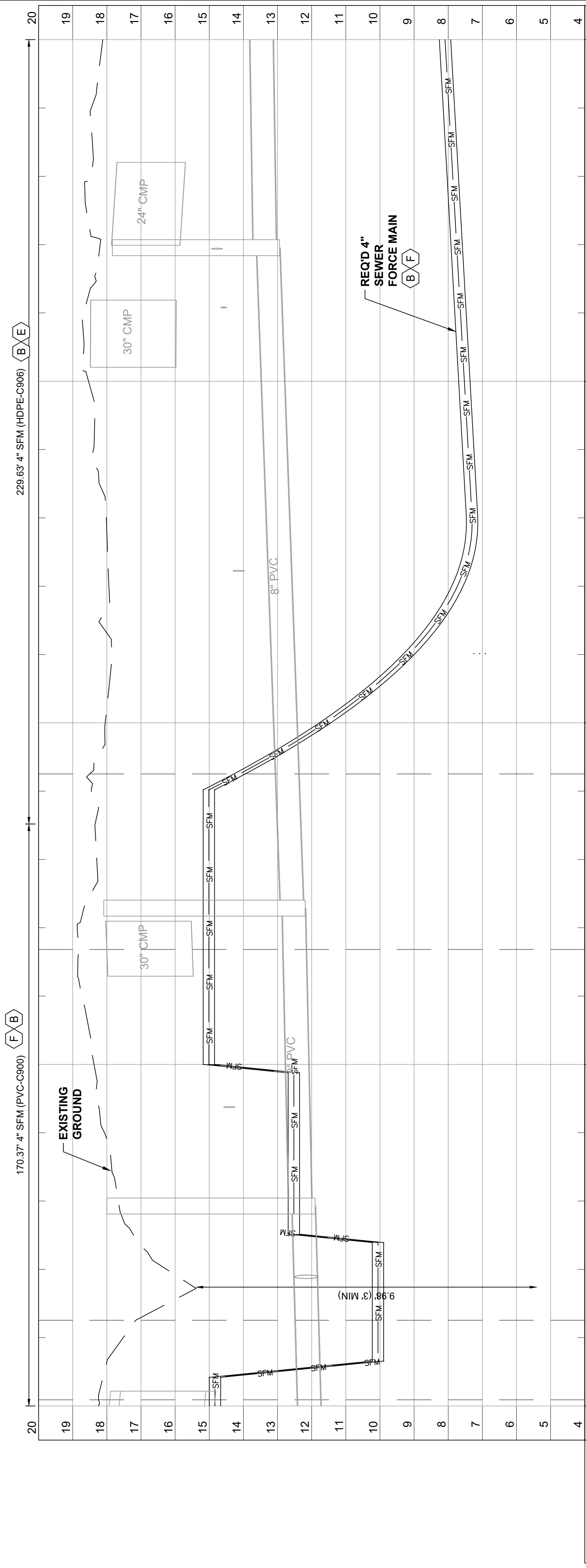
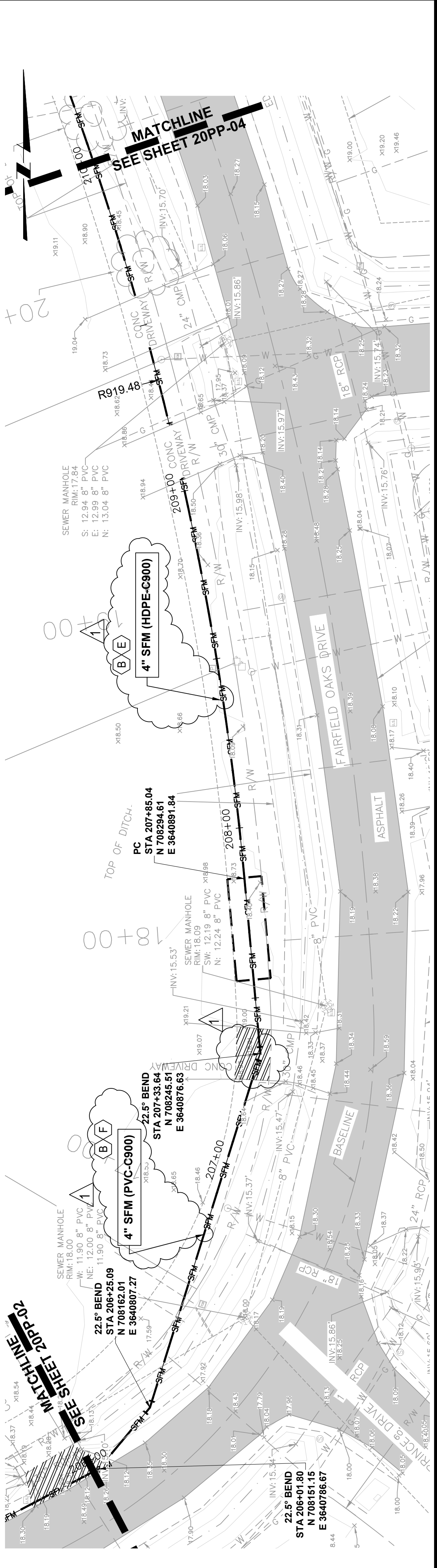
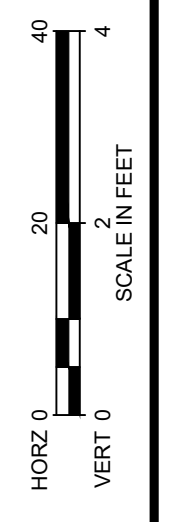
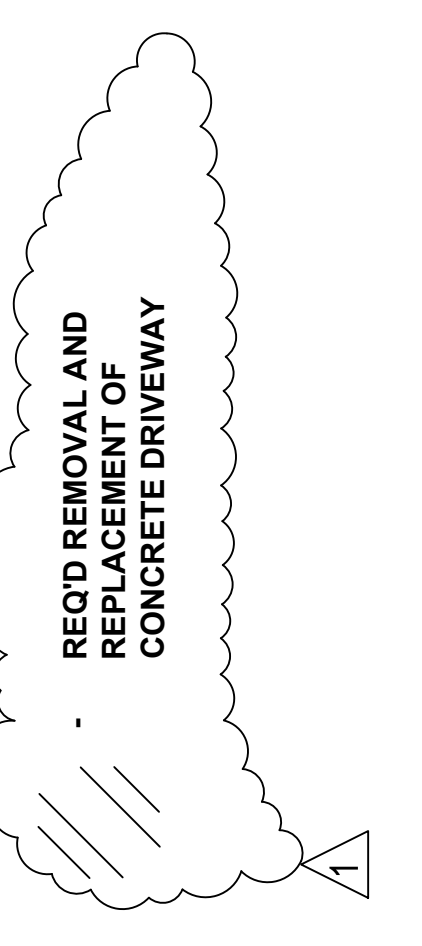
BREWSTER ROAD SEWER CONSOLIDATION
FORCE MAIN PLAN & PROFILES - BASELINE 200 - III

SHEET NO.
20PP-03

- ### PLAN AND PROFILE GENERAL NOTES
- PLAN AND PROFILE DRAWING BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION
 - AT EACH LOCATION WHERE THE REQUIRED SEWER FORCE MAIN CROSSES AN EXISTING UTILITY, OR TIES INTO AN EXISTING UTILITY, CONDUCT EXPLORATORY EXCAVATIONS AS NECESSARY TO POSITIVELY DETERMINE LOCATION, ELEVATION, AND SIZE OF UTILITY CONDUCT SUCH EXPLORATORY EXCAVATIONS AND REPORT FINDINGS TO ENGINEER PRIOR TO ANY HORIZONTAL DIRECTIONAL DRILLING OPERATIONS. COORDINATE WITH THE ENGINEER IN ADJUSTING THE ALIGNMENT OF THE REQUIRED PIPELINE TO MAINTAIN REQUIRED CLEARANCES. THE CONTRACTOR WILL NOT BE ENTITLED TO ANY ADJUSTMENT IN PAY FOR SUCH ADJUSTMENTS EXCEPT FOR ADDITIONAL QUANTITIES.
 - PROVIDE TEMPORARY TRAFFIC CONTROLS PER THE ACCEPTED TEMPORARY TRAFFIC CONTROL PLAN. SEE SPECIFICATIONS AND MINIMUM STANDARDS FOR ADDITIONAL REQUIREMENTS.
 - PIPE SIZES NOTED ON PLANS REFERENCE NOMINAL PIPE DIAMETER.
 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
 - CONTRACTOR TO MAINTAIN A MINIMUM 6' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SEWER FORCE MAIN AND WATER MAIN.
 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

PLAN AND PROFILE NOTES BY SYMBOLS

- REQD 12" BREWSTER RD. SFM TO DISCHARGE INTO TCHFUNCTE PARC SPS
- REQD 4" FAIRFIELD OAKS SEWER FORCE MAIN TO DISCHARGE INTO BREWSTER RD. SFM
- REQD 4" THREE RIVERS SFM TO DISCHARGE INTO BREWSTER RD. SFM.
- REQD 14" TCHFUNCTE PARC SFM TO DISCHARGE TO FAUBOURG NO 2 SPS.
- PIPE TO BE INSTALLED BY HORIZONTALLY DIRECTIONALLY DRILLING
- PIPE TO BE INSTALLED BY OPEN CUT
- HORIZONTAL DISTANCE FROM EDGE OF ROADWAY
- REQD LAUNCHING AND RECEIVING PIT FOR HORIZONTAL DIRECTIONAL DRILLING
- REQD FULLY RESTRAINED GATE VALVE WITH STEM EXTENSION PER DETAIL
- REQD AIR RELEASE VALVE AND VAULT PER DETAIL
- REQD VERTICAL CURVE. SEE CURVE TABLE ON SHEET G-102 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
- REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN INTO FAUBORG NO. 2 LIFT STATION



STATION	EXIST GND EL	VERTICAL PIPE GEOMETRY	PIPE ELEV DATA (COVER INV)
206+00	15.00	7' @ -100.0% 35' @ 0.0% 105' @ 0.0%	3.11(C) 14.67(I) 206+08.36
206+10	10.23		14.67(I) 3.11(C)
206+20	10.23		14.67(I) 3.11(C)
206+30	12.69		14.67(I) 3.11(C)
206+40	10.23		14.67(I) 3.11(C)
206+50	12.69	206+50.30 47' @ 0.0% 3' @ 100.0%	14.67(I) 3.11(C) 12.35(I) 4.55(C) 12.35(I)
206+60	12.69		14.67(I) 3.11(C)
206+70	12.69		14.67(I) 3.11(C)
206+80	15.18		14.84(I) 6.28(C)
206+90	11.77		6.28(C) 11.44(I)
207+00	11.77	80 @ 0.0%	11.44(I) 6.28(C)
207+10	7.47	4' @ 100.0% 206+89.99	7.47 10.55(C) 7.14(I)
207+20	7.47		10.55(C) 7.14(I)
207+30	7.47		10.55(C) 7.14(I)
207+40	7.47		10.55(C) 7.14(I)
207+50	7.47		10.55(C) 7.14(I)
207+60	7.47		10.55(C) 7.14(I)
207+70	7.47		10.55(C) 7.14(I)
207+80	7.47		10.55(C) 7.14(I)
207+90	7.47		10.55(C) 7.14(I)
208+00	7.47		10.55(C) 7.14(I)
208+10	7.47		10.55(C) 7.14(I)
208+20	7.47		10.55(C) 7.14(I)
208+30	7.47		10.55(C) 7.14(I)
208+40	7.47		10.55(C) 7.14(I)
208+50	7.47		10.55(C) 7.14(I)
208+60	7.47		10.55(C) 7.14(I)
208+70	7.47		10.55(C) 7.14(I)
208+80	7.47		10.55(C) 7.14(I)
208+90	7.47		10.55(C) 7.14(I)
209+00	7.47		10.55(C) 7.14(I)
209+10	7.47		10.55(C) 7.14(I)
209+20	7.47		10.55(C) 7.14(I)
209+30	7.47		10.55(C) 7.14(I)
209+40	7.47		10.55(C) 7.14(I)
209+50	7.47		10.55(C) 7.14(I)
209+60	7.47		10.55(C) 7.14(I)
209+70	7.47		10.55(C) 7.14(I)
209+80	7.47		10.55(C) 7.14(I)
209+90	7.47		10.55(C) 7.14(I)
210+00	7.47		10.55(C) 7.14(I)

SEE SHEET 20PP-02 MATCHLINE

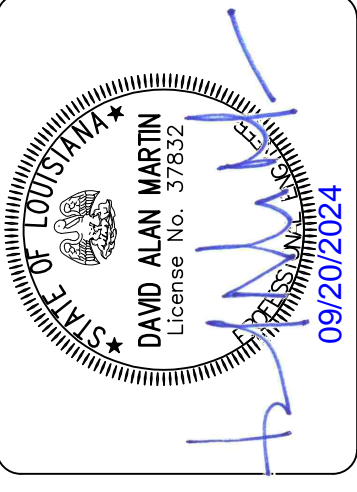
SEE SHEET 20PP-04 MATCHLINE



DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

DESIGNED BY: M. LOKER	DRAWN BY: J. HITT
CHECKED BY: J. CATLANOTTO	PROJECT No.: DU 168,170.
ISSUE DATE: 08/20/2024	APPROVED BY: D. MARTIN
SHEET SIZE: ANSI D 34x22	SCALE: AS NOTED

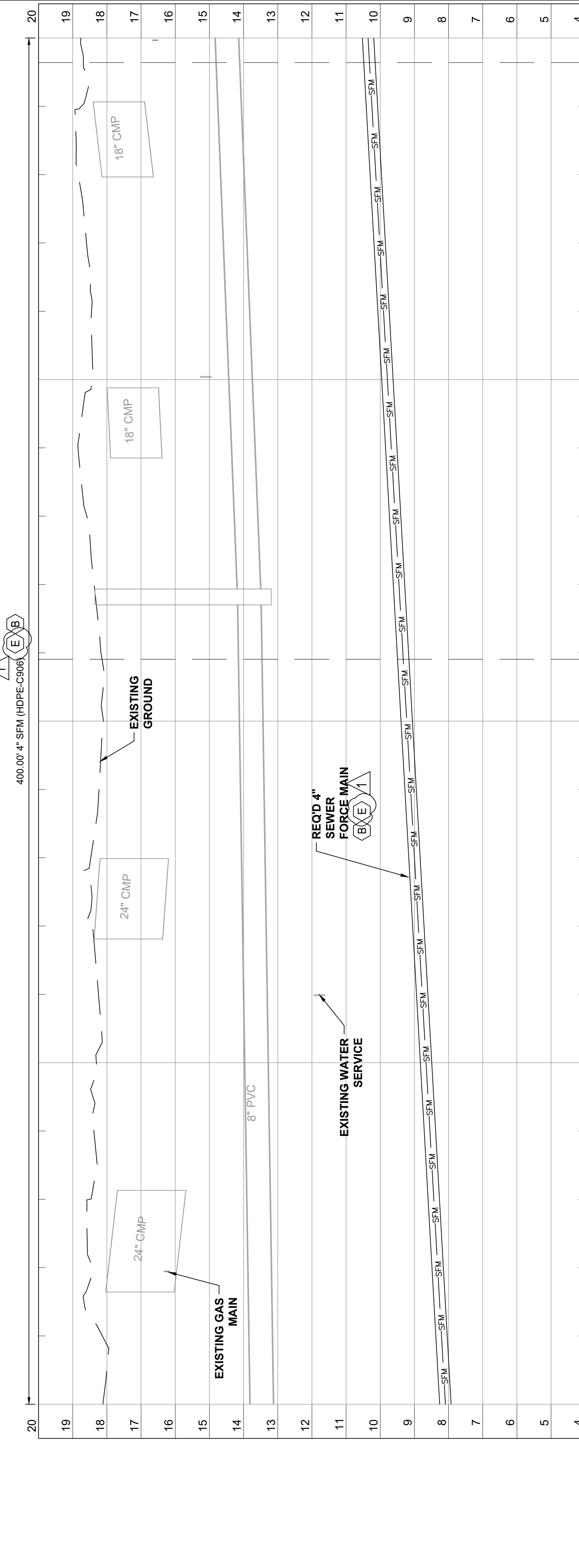
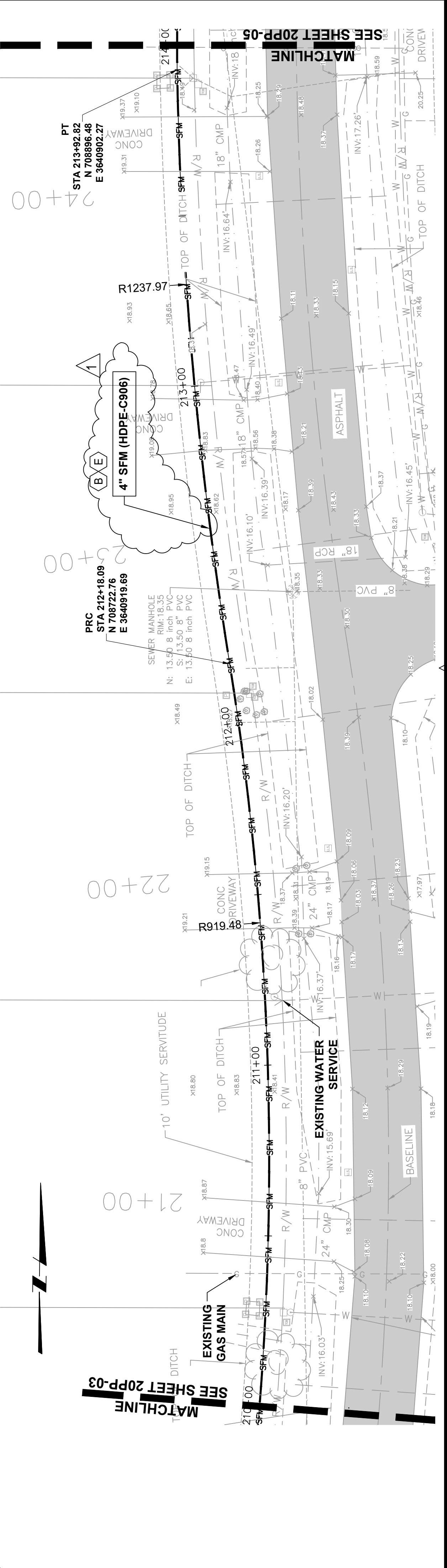
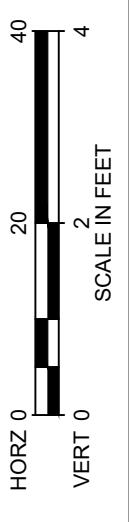


BREWSTER ROAD SEWER
CONSOLIDATION
FORCE MAIN PLAN & PROFILES - BASELINE 200 - IV

SHEET NO.
20PP-04

- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING DRAWINGS BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHEFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION
 - AT EACH LOCATION WHERE THE REQUIRED SEWER FORCE MAIN CROSSES AN EXISTING UTILITY, OR TIES INTO AN EXISTING UTILITY CONDUIT EXPLORATORY EXCAVATIONS AS NECESSARY TO POSITIVELY DETERMINE LOCATION, ELEVATION, AND SIZE OF UTILITY CONDUIT SUCH EXPLORATORY EXCAVATIONS AND REPORT FINDINGS TO ENGINEER PRIOR TO ANY HORIZONTAL DIRECTIONAL DRILLING OPERATIONS. COORDINATE WITH THE ENGINEER IN ADJUSTING THE ALIGNMENT OF THE REQUIRED PIPELINE TO MAINTAIN REQUIRED CLEARANCES. THE CONTRACTOR WILL NOT BE ENTITLED TO ANY ADJUSTMENT IN PAY FOR SUCH ADJUSTMENTS EXCEPT FOR ADDITIONAL QUANTITIES.
 - PROVIDE TEMPORARY TRAFFIC CONTROLS PER THE ACCEPTED TEMPORARY TRAFFIC CONTROL PLAN. SEE SPECIFICATIONS AND MINIMUM STANDARDS FOR ADDITIONAL REQUIREMENTS.
 - PIPE SIZES NOTED ON PLANS REFERENCE NOMINAL PIPE DIAMETER.
 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
 - CONTRACTOR TO MAINTAIN A MINIMUM 6' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SEWER FORCE MAIN AND WATER MAIN.
 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

- PLAN AND PROFILE NOTES BY SYMBOLS**
- REQD 12" BREWSTER RD. SFM TO DISCHARGE INTO TCHEFUNCTE PARC SPS
 - REQD 4" FAIRFIELD OAKS SEWER FORCE MAIN TO DISCHARGE INTO BREWSTER RD. SFM
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 - REQD 14" TCHEFUNCTE PARC SFM TO DISCHARGE TO FAUBOURG NO 2 SPS.
 - PIPE TO BE INSTALLED BY HORIZONTALLY DIRECTIONALLY DRILLING
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 - HORIZONTAL DISTANCE FROM EDGE OF ROADWAY
 - REQD LAUNCHING AND RECEIVING PIT FOR HORIZONTAL DIRECTIONAL DRILLING
 - REQD FULLY RESTRAINED GATE VALVE WITH STEM EXTENSION PER DETAIL
 - REQD AIR RELEASE VALVE AND VAULT PER DETAIL
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 - REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN
 - REQD 14" TCHEFUNCTE PARC SFM TO DISCHARGE INTO FAUBORG NO. 2 LIFT STATION



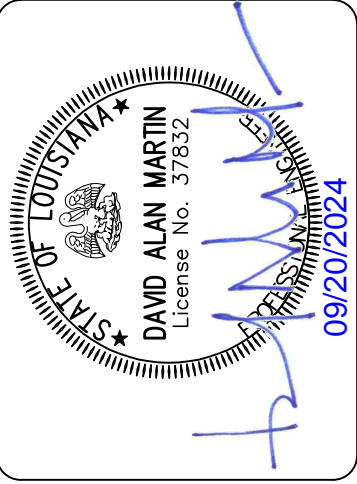
STATION	210+00	211+00	212+00	213+00	214+00	215+00	216+00	217+00	218+00	219+00	220+00	221+00	222+00	223+00	224+00
EXIST GND EL	8.26	8.83	9.39	9.96	10.52	11.08	11.64	12.20	12.76	13.32	13.88	14.44	15.00	15.56	16.12
VERTICAL PIPE GEOMETRY	856' @ 0.6%														
PIPE ELEV DATA (COVER INV)	7.93(C) 8.26	8.49(C) 8.83	8.71(C) 9.06(I)	8.97(C) 9.39	9.24(C) 9.62(I)	9.51(C) 9.89	9.78(C) 10.16	10.05(C) 10.43	10.32(C) 10.70	10.59(C) 10.97	10.86(C) 11.24	11.13(C) 11.51	11.40(C) 11.78	11.67(C) 12.05	11.94(C) 12.32



DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

DESIGNED BY:	M. LOKER
DRAWN BY:	J. HITT
CHECKED BY:	J. CATLANOTTO
PROJECT No.:	DU 168,170.
ISSUE DATE:	08/20/2024
APPROVED BY:	D. MARTIN
SHEET SIZE:	ANSI D 34x22
SCALE:	AS NOTED



BREWSTER ROAD SEWER
CONSOLIDATION

FORCE MAIN PLAN & PROFILES - BASELINE 200 - V

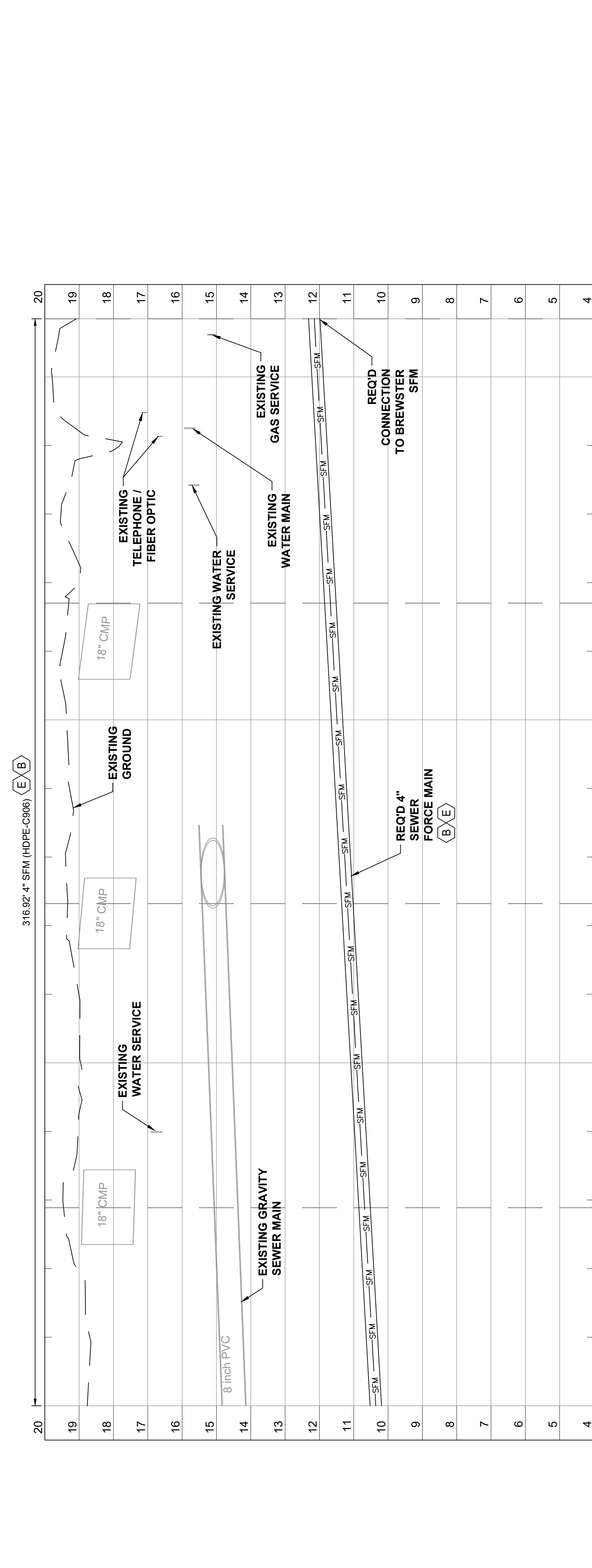
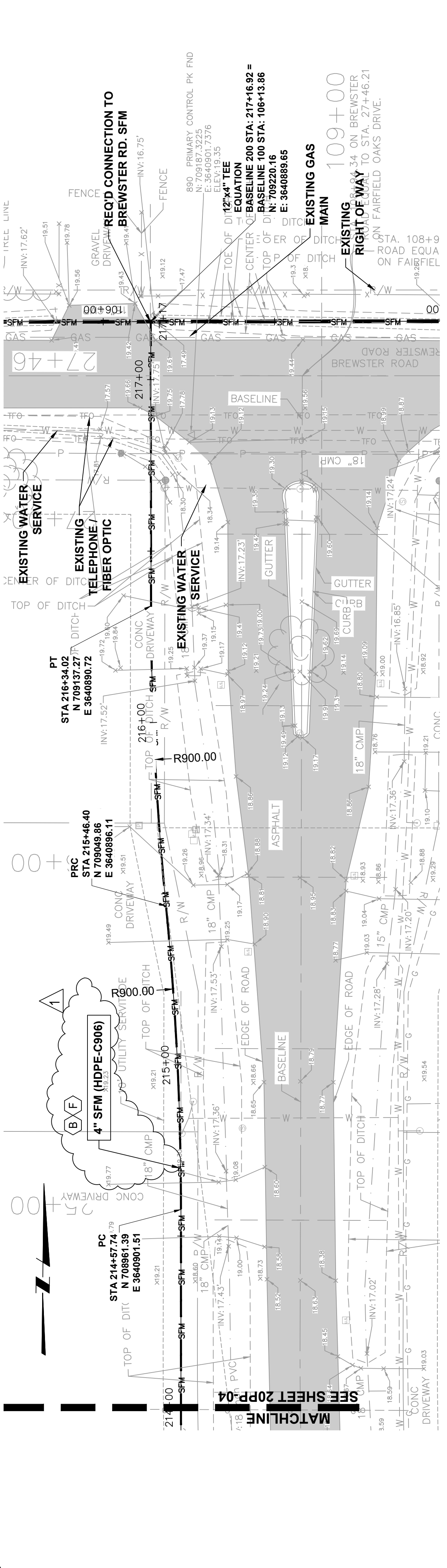
SHEET NO.
20PP-05

PLAN AND PROFILE GENERAL NOTES

- PLAN AND PROFILE DRAWING BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHEFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION
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- NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

PLAN AND PROFILE NOTES BY SYMBOLS

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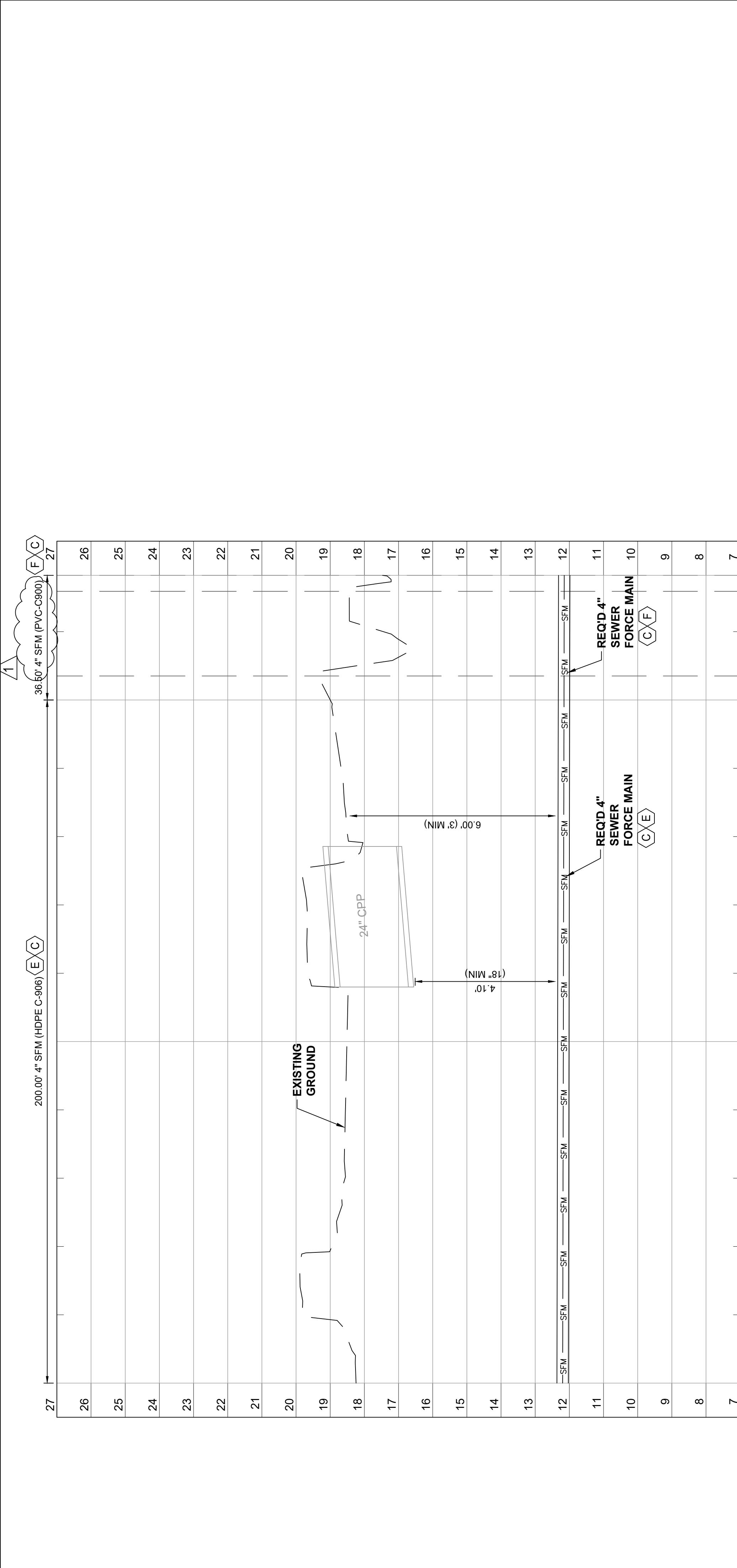
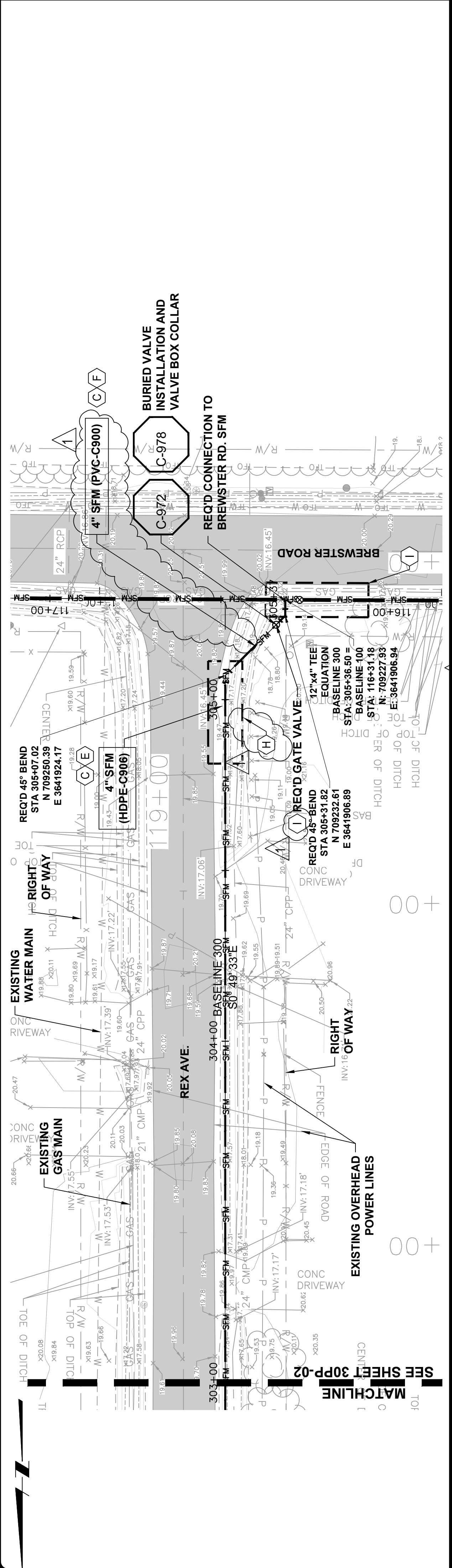


STATION	214+00	215+00	216+00	217+00	217+17
EXIST GND EL	10.52	11.09	11.65	12.22	12.32
VERTICAL PIPE GEOMETRY	8.24(C)	7.87(C)	7.71(C)	7.57(C)	6.77(C)
PIPE ELEV DATA (COVER INV)	10.19(I)	10.76(I)	11.32(I)	11.89(I)	11.98(I)

856' @ 0.6%

316.92' 4" SFM (HDPE-C906) (E) (B)

MATCHLINE SEE SHEET 20PP-04



STATION	EXIST GND EL	VERTICAL PIPE GEOMETRY	PIPE ELEV DATA (COVER INV)
303+00	18.24	5.88(C)	12.03(C)
304+00	18.51	6.17(C)	12.01(C)
305+00	19.00	6.68(C)	11.99(C)
305+37	17.47	5.15(C)	11.98(C)

51'0" @ -0.0%

- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING DRAWINGS BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION
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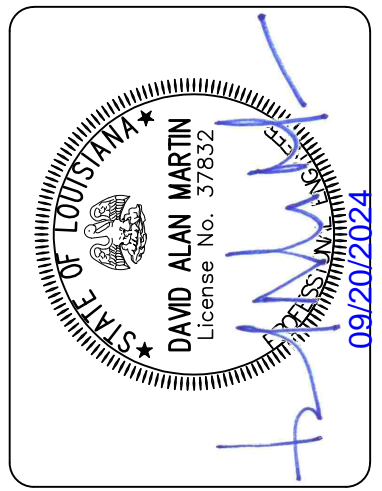
- PLAN AND PROFILE NOTES BY SYMBOLS**
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DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

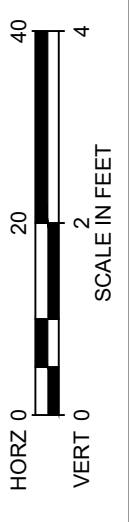
DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

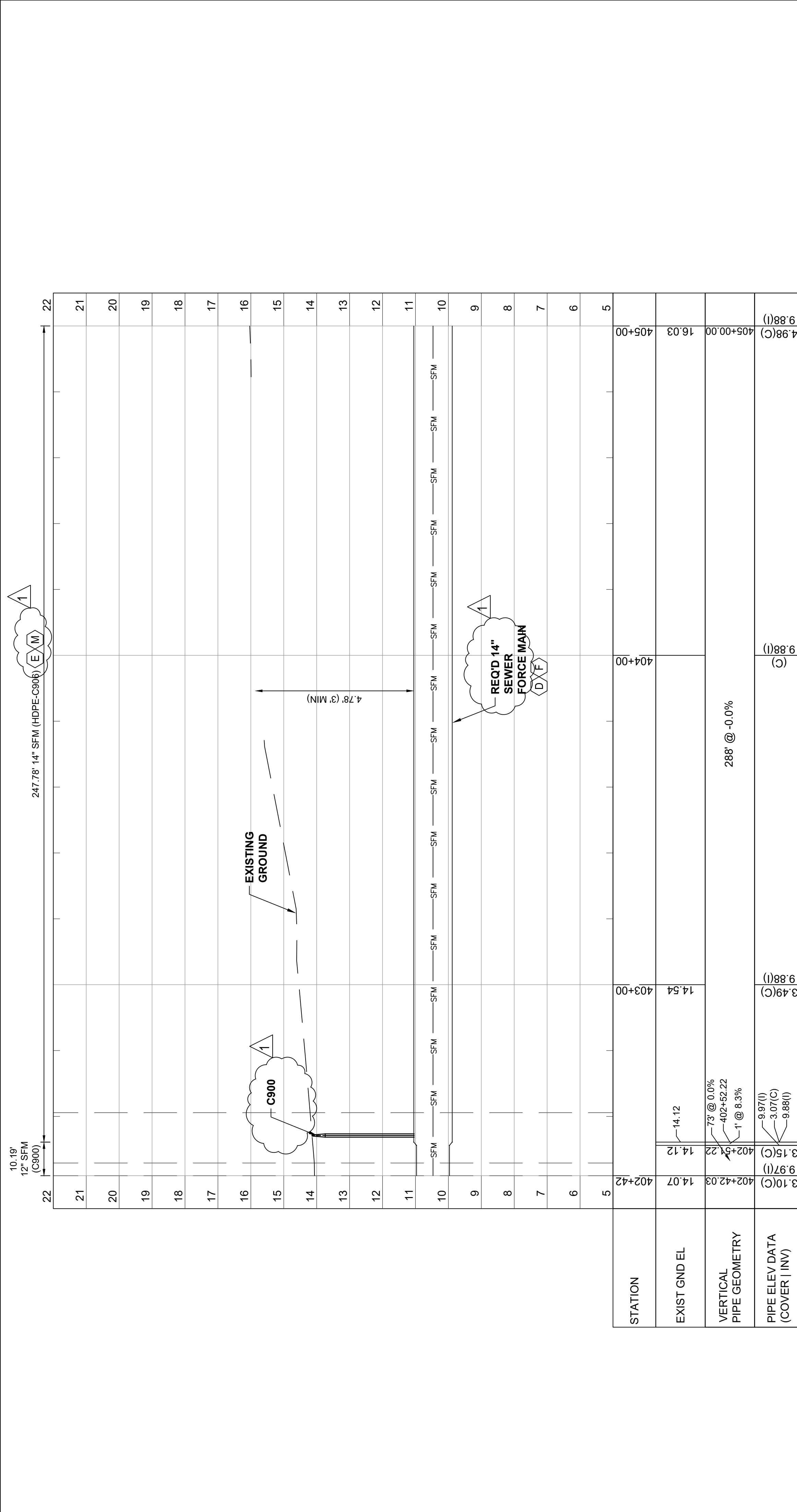
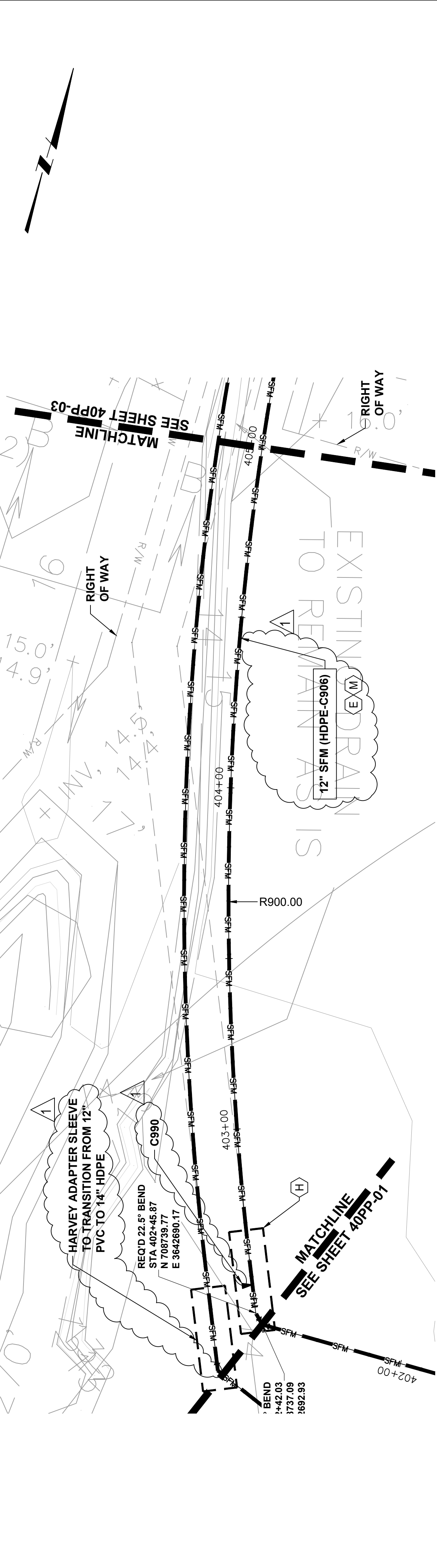
DESIGNED BY:	M. LOKER
DRAWN BY:	J. HITT
CHECKED BY:	J. CATLANOTTO
PROJECT NO.:	DU 168,170.
ISSUE DATE:	08/20/2024
APPROVED BY:	D. MARTIN
SHEET SIZE:	ANSI D 34x22
SCALE:	AS NOTED



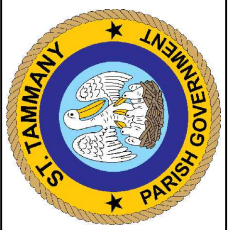
BREWSTER ROAD SEWER
CONSOLIDATION
FORCE MAIN PLAN & PROFILES - BASELINE 300 - III

SHEET NO.
30PP-03





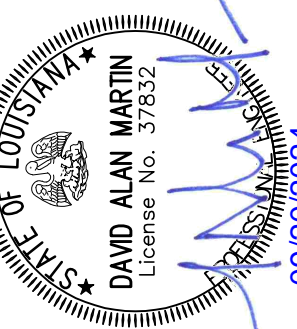
STATION	EXIST GND EL	VERTICAL PIPE GEOMETRY	PIPE ELEV./DATA (COVER INV)
402+42	14.07	14.12	3.10(C) 9.97(I) 402+42.03
403+00	14.54	14.12	3.15(C) 9.97(I) 402+51.22
404+00		288 @ -0.0%	
405+00	16.03		9.88(I) 405+00.00



DEPT. OF UTILITIES
ST. TAMMANY PARISH
GOVERNMENT
620 N. TYLER STREET
COVINGTON, LA 70433

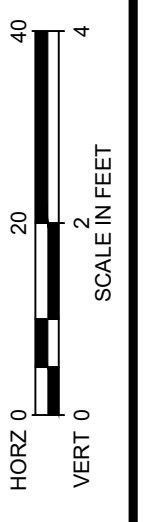
DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1

DESIGNED BY:	M. LOKER
DRAWN BY:	J. HITT
CHECKED BY:	J. CATLANOTTO
PROJECT No.:	DU 168,170.
ISSUE DATE:	08/20/2024
APPROVED BY:	D. MARTIN
SHEET SIZE:	ANSI D 34x22
SCALE:	AS NOTED



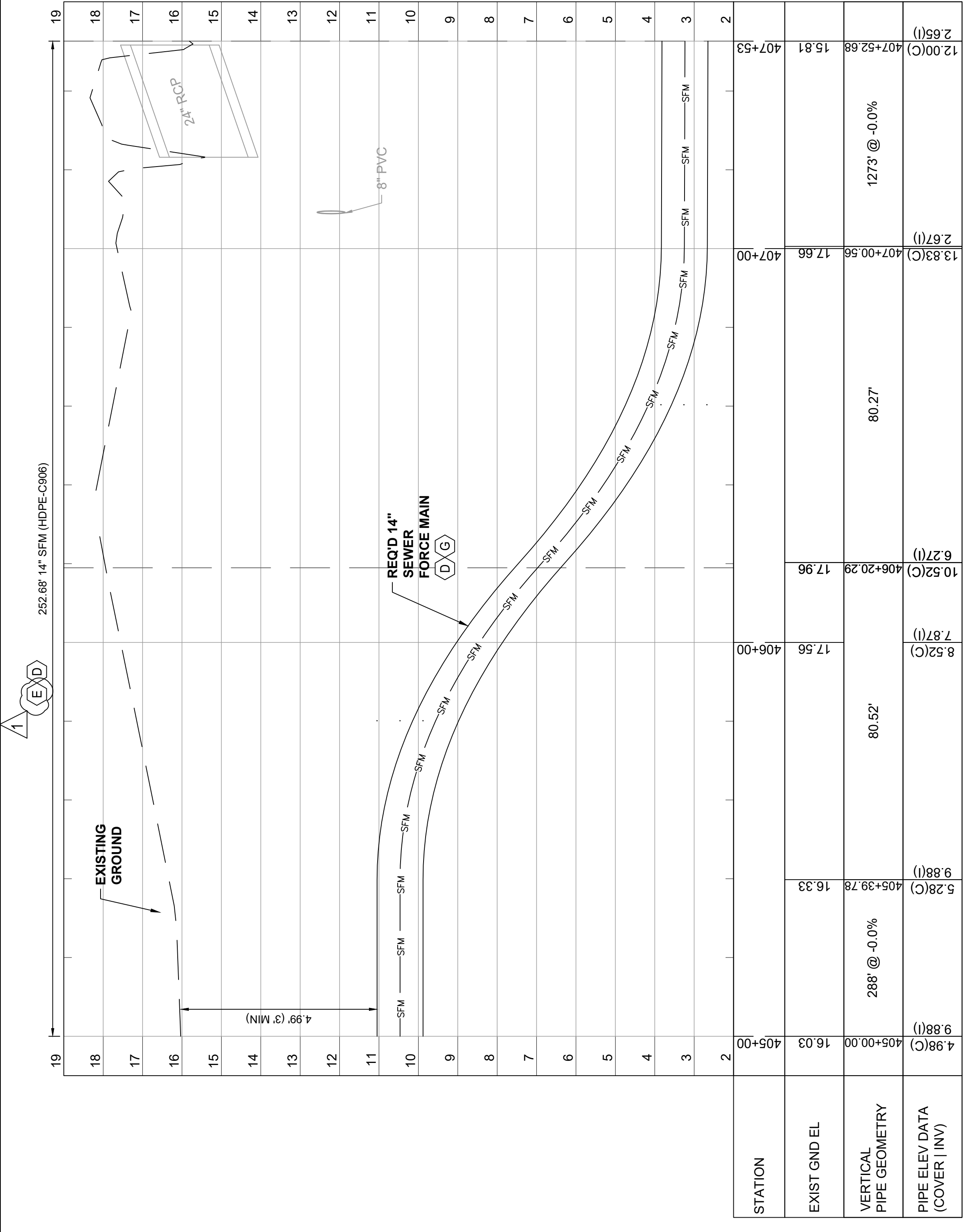
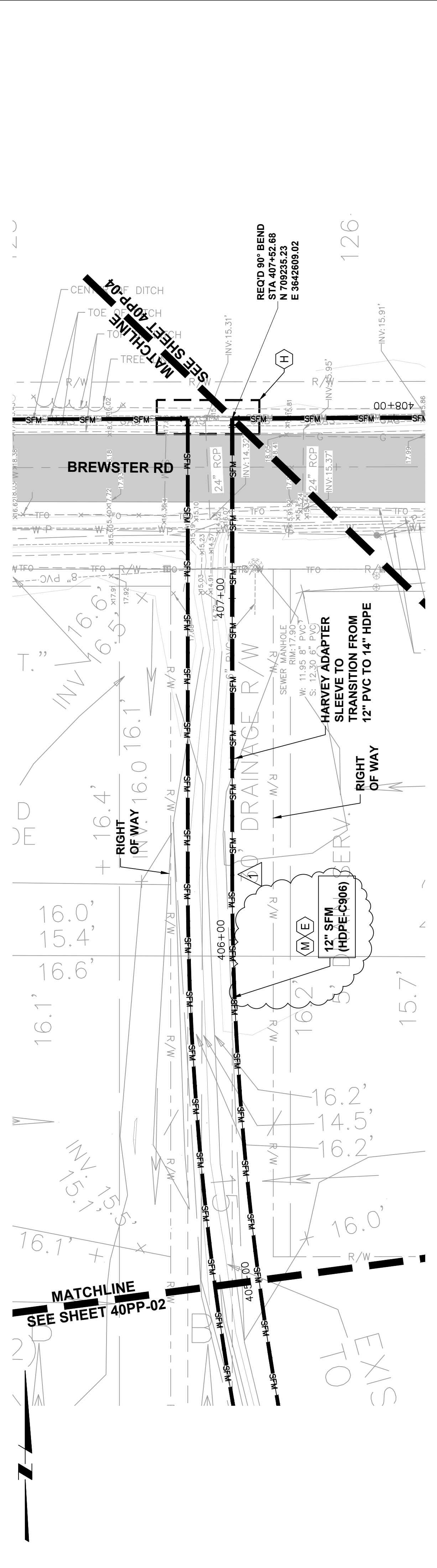
09/20/2024

BREWSTER ROAD SEWER
CONSOLIDATION
FORCE MAIN PLAN & PROFILES - BASELINE 400 - II



- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND Tchefuncte PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION. AT EACH LOCATION WHERE THE REQUIRED SEWER FORCE MAIN CROSSES AN EXISTING UTILITY, OR TIES INTO AN EXISTING UTILITY CONDUIT EXPLORATORY EXCAVATIONS AS NECESSARY TO POSITIVELY DETERMINE LOCATION, ELEVATION, AND SIZE OF UTILITY CONDUIT SUCH AS EXPLORATORY EXCAVATIONS AND REPORT FINDINGS TO ENGINEER PRIOR TO ANY HORIZONTAL DIRECTIONAL DRILLING OPERATIONS. COORDINATE WITH THE ENGINEER IN ADJUSTING THE ALIGNMENT OF THE REQUIRED PIPELINE TO MAINTAIN REQUIRED CLEARANCES. THE CONTRACTOR WILL NOT BE ENTITLED TO ANY ADJUSTMENT IN PAY FOR SUCH ADJUSTMENTS EXCEPT FOR ADDITIONAL QUANTITIES.
 - PROVIDE TEMPORARY TRAFFIC CONTROL PER THE ACCEPTED TEMPORARY TRAFFIC CONTROL PLAN. SEE SPECIFICATIONS AND MINIMUM STANDARDS FOR ADDITIONAL REQUIREMENTS.
 - PIPE SIZES NOTED ON PLANS REFERENCE NOMINAL PIPE DIAMETER.
 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
 - CONTRACTOR TO MAINTAIN A MINIMUM 6' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SEWER FORCE MAIN AND WATER MAIN.
 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

- PLAN AND PROFILE NOTES BY SYMBOLS**
- REQD 12" BREWSTER RD. SFM TO DISCHARGE INTO TCHEFUNCTE PARC SPS
 - REQD 4" FAIRFIELD OAKS SEWER FORCE MAIN TO DISCHARGE INTO BREWSTER RD. SFM
 - REQD 4" THREE RIVERS SFM TO DISCHARGE INTO BREWSTER RD. SFM.
 - REQD 14" TCHEFUNCTE PARC SFM TO DISCHARGE TO FAUBOURG NO 2 SPS.
 - PIPE TO BE INSTALLED BY HORIZONTALLY DIRECTIONALLY DRILLING
 - PIPE TO BE INSTALLED BY OPEN CUT
 - HORIZONTAL DISTANCE FROM EDGE OF ROADWAY
 - REQD LAUNCHING AND RECEIVING PIT FOR HORIZONTAL DIRECTIONAL DRILLING
 - REQD FULLY RESTRAINED GATE VALVE WITH STEM EXTENSION PER DETAIL
 - REQD AIR RELEASE VALVE AND VAULT PER DETAIL
 - REQD VERTICAL CURVE. SEE CURVE TABLE ON SHEET G-102 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
 - REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN
 - REQD 14" TCHEFUNCTE PARC SFM TO DISCHARGE INTO FAUBORG NO. 2 LIFT STATION



- PLAN AND PROFILE GENERAL NOTES**
- PLAN AND PROFILE DRAWING DRAWINGS BASED UPON SURVEY TITLED "ST. TAMMANY SEWER CONSOLIDATION SURVEY - FAIRFIELD OAKS, THREE RIVERS, AND TCHEFUNCTE PARK" PREPARED BY ALL - SOUTH CONSULTING ENGINEERS, DATED JULY 2023 AND AS-BUILT DRAINAGE PLAN FOR ARUNDEL SUBDIVISION
 - AT EACH LOCATION WHERE THE REQUIRED SEWER FORCE MAIN CROSSES AN EXISTING UTILITY, OR TIES INTO AN EXISTING UTILITY, CONDUCT EXPLORATORY EXCAVATIONS AS NECESSARY TO POSITIVELY DETERMINE LOCATION, ELEVATION, AND SIZE OF UTILITY CONDUCT SUCH EXPLORATORY EXCAVATIONS AND REPORT FINDINGS TO ENGINEER PRIOR TO ANY HORIZONTAL DIRECTIONAL DRILLING OPERATIONS. COORDINATE WITH THE ENGINEER IN ADJUSTING THE ALIGNMENT OF THE REQUIRED PIPELINE TO MAINTAIN REQUIRED CLEARANCES. THE CONTRACTOR WILL NOT BE ENTITLED TO ANY ADJUSTMENT IN PAY FOR SUCH ADJUSTMENTS EXCEPT FOR ADDITIONAL QUANTITIES.
 - PROVIDE TEMPORARY TRAFFIC CONTROL PER THE ACCEPTED TEMPORARY TRAFFIC CONTROL PLAN. SEE SPECIFICATIONS AND MINIMUM STANDARDS FOR ADDITIONAL REQUIREMENTS.
 - PIPE SIZES NOTED ON PLANS REFERENCE NOMINAL PIPE DIAMETER.
 - REFER TO PIPE SCHEDULE FOR ADDITIONAL REQUIREMENTS.
 - CONTRACTOR TO MAINTAIN A MINIMUM 6' HORIZONTAL AND 18" VERTICAL SEPARATION BETWEEN SEWER FORCE MAIN AND WATER MAIN.
 - NOT ALL NOTES BY SYMBOL USED ON THIS SHEET.

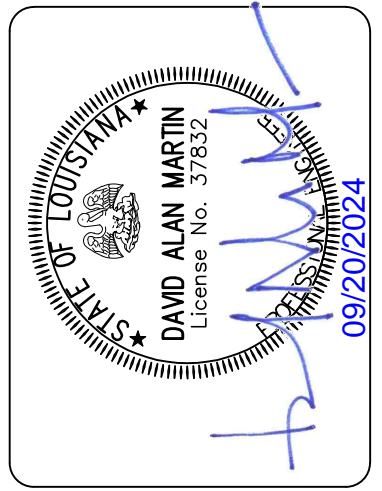
- PLAN AND PROFILE NOTES BY SYMBOLS**
- REQ'D 12" BREWSTER RD. SFM TO DISCHARGE INTO TCHEFUNCTE PARC SPS
 - REQ'D 4" FAIRFIELD OAKS SEWER FORCE MAIN TO DISCHARGE INTO BREWSTER RD. SFM
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 - REQ'D VERTICAL CURVE. SEE CURVE TABLE ON SHEET G-102 FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
 - REQUIRED 3" ARUNDEL SEWER FORCE MAIN (BY OTHERS) TO DISCHARGE IN BREWSTER FORCE MAIN INTO FAUBORG NO. 2 LIFT STATION



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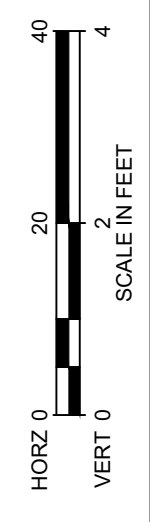
DATE:	DESCRIPTION OF REVISION
09/20/24	APPENDUM 1
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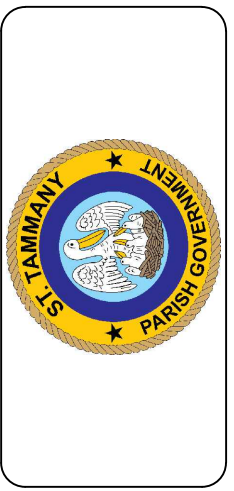
DESIGNED BY:	M. LOKER
CHECKED BY:	J. CATALANOTTO
PROJECT No.:	DU 168,170.
ISSUE DATE:	08/20/2024
APPROVED BY:	D. MARTIN
SHEET SIZE:	ANSI D 34x22
SCALE:	AS NOTED



BREWSTER ROAD SEWER
CONSOLIDATION
FORCE MAIN PLAN & PROFILES - BASELINE 400 - III

SHEET NO.
40PP-03

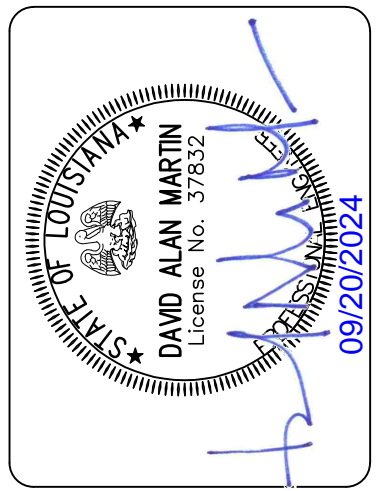




DEPT. OF UTILITIES
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DESIGNED BY:	M. LOKER
DRAWN BY:	J. HITT
CHECKED BY:	J. CATLANOTTO
PROJECT No.:	DU 168,170.
ISSUE DATE:	08/20/2024
APPROVED BY:	D. MARTIN
SHEET SIZE:	ANSI D 34x22
SCALE:	AS NOTED



BREWSTER ROAD SEWER
CONSOLIDATION
THEFUNCTIONE PARC - SINGLE
LINE DIAGRAM

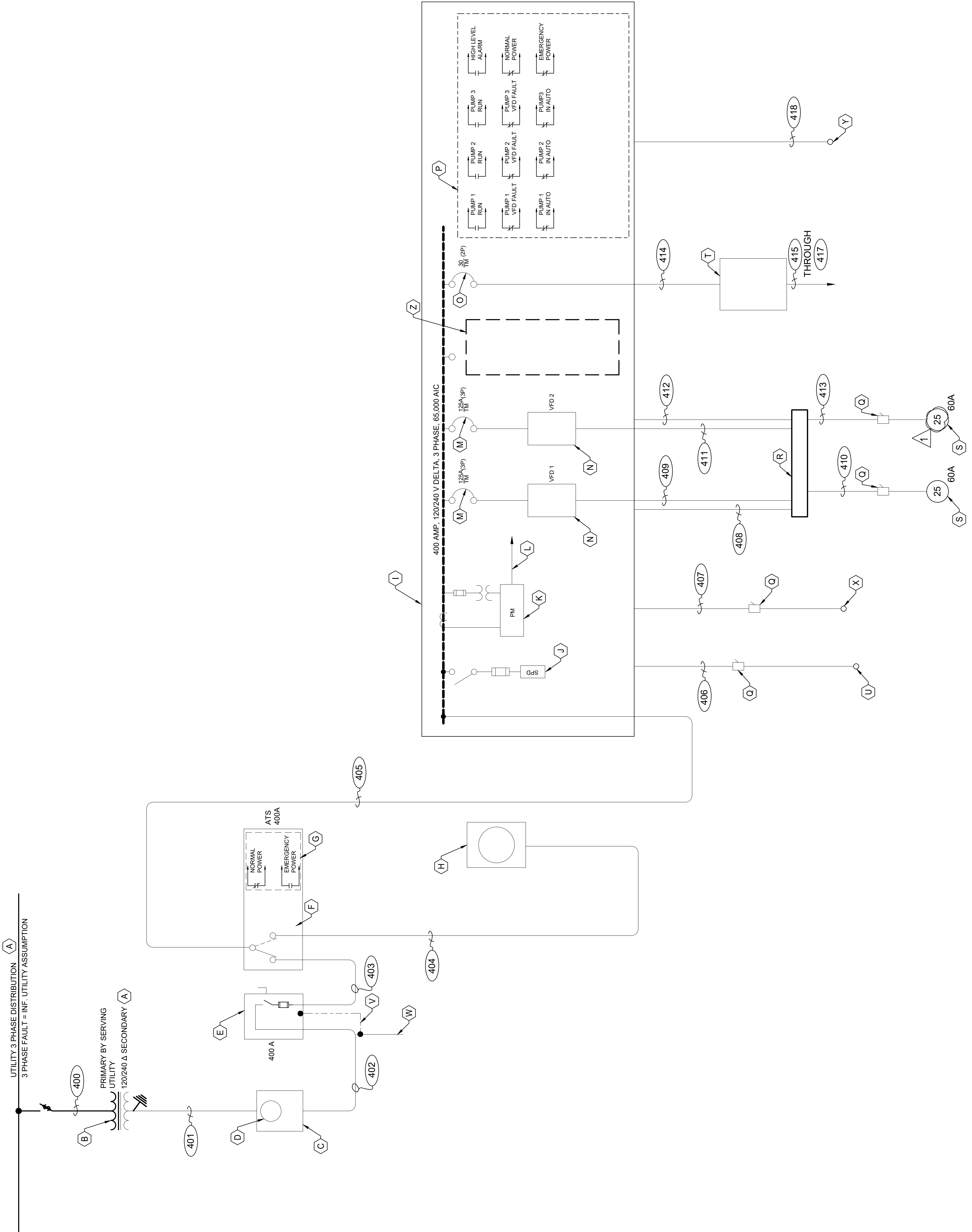
SHEET NO.
40E-02

SHEET GENERAL NOTES

- REFER TO RISER DIAGRAMS, PUMP CONTROL PANEL DIAGRAMS, FOR ADDITIONAL REQUIREMENTS AND SPECIFICATIONS.
- REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS & CONDUIT.
- VERIFY PRIMARY VOLTAGE AND AVAILABLE FAULT CURRENT WITH SERVING UTILITY PRIOR TO EQUIPMENT PROCUREMENT.
- RUN ALL BELOW - GRADE CONDUIT IN DUCT BANKS PER DETAIL E-103.
- PROVIDE DUCT BANK SUPPORTS AND JOINTS PER DETAIL E-108.
- TRANSITION FROM BELOW GRADE TO ABOVE GRADE CONDUIT PER DETAIL E-230. PROVIDE EXPLOSION PROOF SEALS WHERE SHOWN AND/OR OTHERWISE REQUIRED PER NATIONAL ELECTRICAL CODE.
- TIE IN DUCT BANKS TO EXISTING / REQ'D NEW STRUCTURES PER DETAIL E-109.
- VERIFY BREAKER AND CABLE SIZES FOR ALL FURNISHED EQUIPMENT AND INCLUDE ALL COSTS IN THE PRICE OF THE WORK.
- SEE CABLE AND CONDUIT SCHEDULES FOR ADDITIONAL REQUIREMENTS.
- SEE PANEL SCHEDULES FOR ADDITIONAL REQUIREMENTS.

SHEET KEY NOTES

- VERIFY TRANSFORMER SIZE AND AVAILABLE FAULT CURRENT WITH SERVING UTILITY PRIOR TO PROCURING ELECTRICAL EQUIPMENT
- PAD MOUNTED UTILITY TRANSFORMER BY SERVING UTILITY. TRANSFORMER PAD BY CONTRACTOR
- REQ'D METER ENCLOSURE PER SERVING UTILITY REQUIREMENT
- METER BY SERVING UTILITY
- REQ'D MAIN DISCONNECT, 400 AMP W/ 300 AMP FUSE (SERVICE EQUIPMENT)
- REQ'D AUTOMATIC TRANSFER SWITCH
- REQ'D DRY CONTACTS FOR FUTURE MONITORING
- REQ'D GENERATOR SET
- REQ'D PUMP CONTROL PANEL, NEMA 4X ENCLOSURE
- REQ'D SURGE PROTECTIVE DEVICE
- REQ'D PHASE MONITOR
- TO CONTROLS SECTION
- REQ'D THERMAL MAGNETIC BREAKER. VERIFY REQ'D SIZE WITH PUMP SUPPLIER PRIOR TO BID AND INCLUDE ALL COSTS IN THE PRICE OF THE WORK
- REQ'D PROGRAMMABLE VARIABLE FREQUENCY DRIVE
- REQ'D THERMAL MAGNETIC BREAKER
- REQ'D DRY CONTACTS FOR FUTURE MONITORING
- REQ'D SEAL OFF FITTING
- REQ'D NEMA 4X TERMINAL BOX, MIN 24" X 24" X 12"
- REQ'D SUBMERSIBLE PUMP MOTOR. VERIFY FLA WITH SUPPLIER
- REQ'D PANELBOARD "P-40"
- REQ'D BACKUP FLOAT SWITCH
- REQ'D GROUND CONDUCTOR PER N.E.C.
- REQ'D GROUND ELECTRODE SYSTEM
- REQ'D PRESSURE TRANSDUCER
- REQ'D FLOW METER SENSOR
- REQ'D SPACE FOR FUTURE VFD AND BREAKER

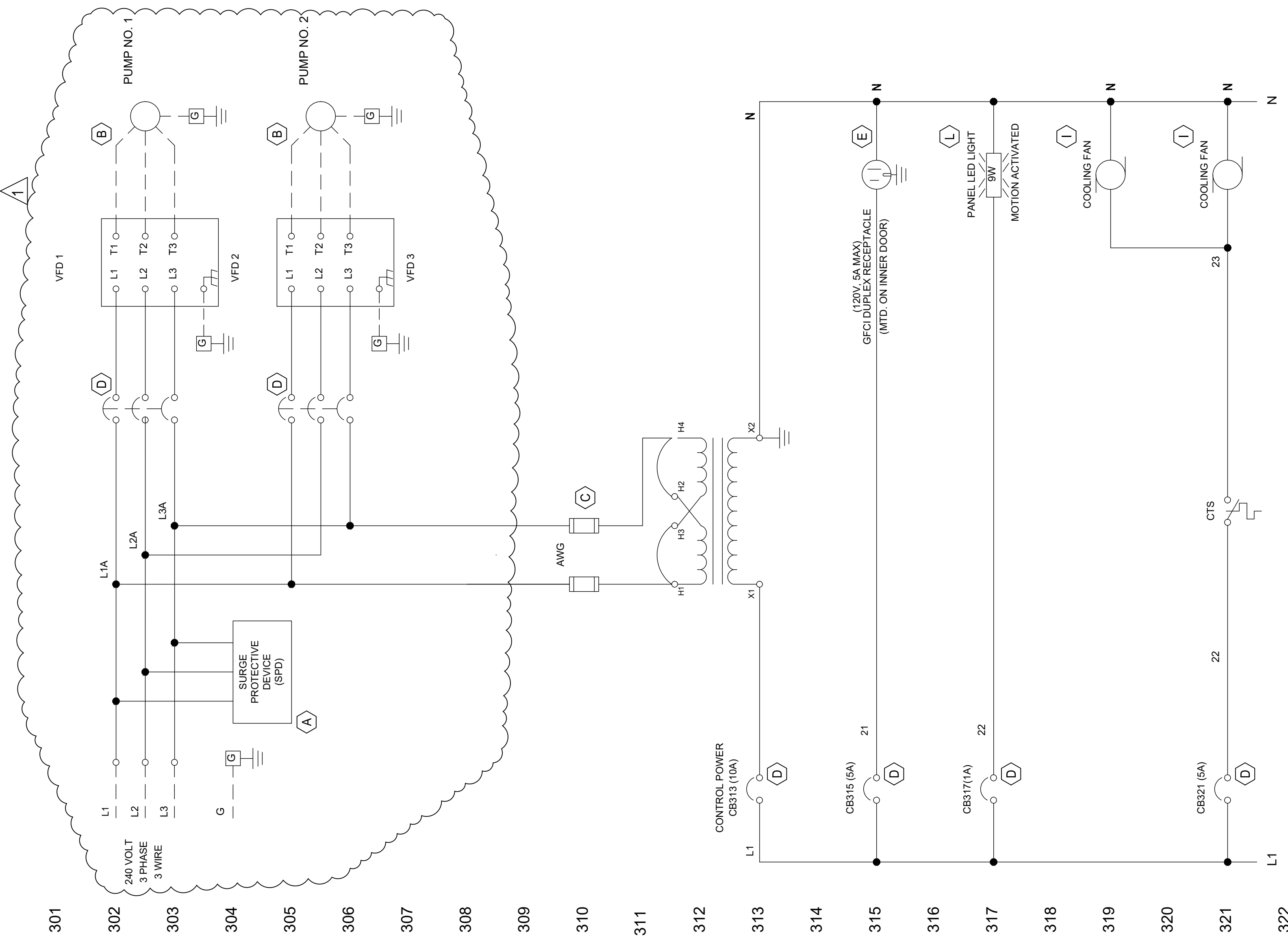
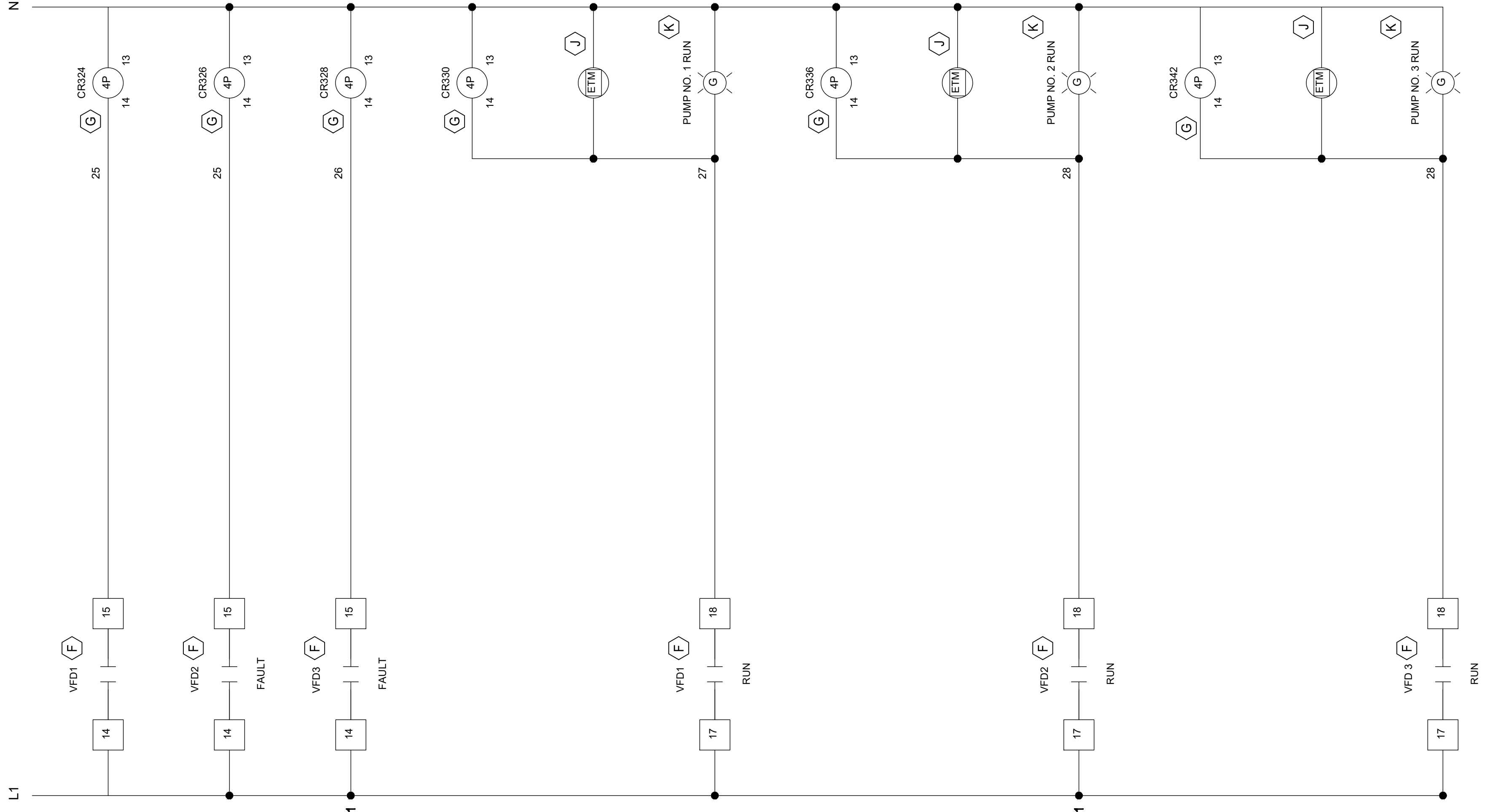


SHEET GENERAL NOTES

1. REFER TO ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR ADDITIONAL REQUIREMENTS.

SHEET KEY NOTES

- A. REQ'D SPD PER SECTION 40 91 00
- B. FURNISH EACH PUMP WITH SHIELDED VFD CABLE TO TERMINATION IN PANEL
- C. REQ'D CONTROL POWER FUSING, SIZE BY PANEL SUPPLIER
- D. REQ'D THERMAL MAGNETIC BREAKER
- E. REQ'D CONTROL POWER CONVENIENCE OUTLET
- F. REQ'D VFD CONTACT
- G. REQ'D CONTROL RELAY
- H. REQ'D TEMPERATURE SWITCH
- I. REQ'D COOLING FAN, SIZED BY CONTROL PANEL MANUFACTURER, SIZED SUCH THAT APPROPRIATE COOLING IS PROVIDED WITH ONE FAN OUT OF SERVICE
- J. REQ'D ELAPSED TIME METER, DISPLAY MOUNTED ON BACK PAN
- K. REQ'D PILOT LIGHT, MOUNTED ON BACK PAN
- L. REQ'D PANEL LIGHT, TO ILLUMINATE UPON DOOR OPENING

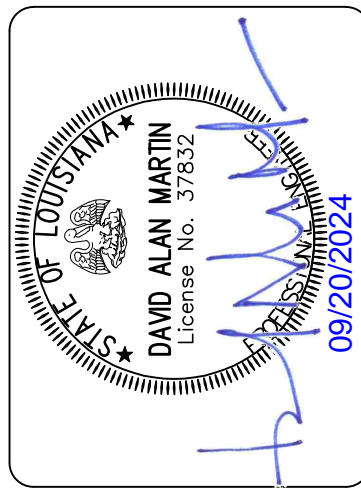


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APPENDUM 1
09/20/24

DESIGNED BY: M. LOKER	PROJECT No.: DU 168,170.
DRAWN BY: J. HITT	CHECKED BY: J. CATLANOTTO
ISSUE DATE: 08/20/2024	APPROVED BY: D. MARTIN
SHEET SIZE: ANSI D 34x22	AS NOTED



BREWSTER ROAD SEWER
CONSOLIDATION
1
TCHFF PARC-CONTROL DIAGRAM

SHEET NO.
40E-04