

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**



**CONTRACT NO. 5251
SOLICITATION NO. 2023-SWB-20**

NDR GRANT-ADDITIONAL INSTRUMENTATION PROJECT

**PROPOSALS DUE ON
Qevqdtg 30, 2023, AT 11:00 O’CLOCK A.M., LOCAL TIME**

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END OF SECTION

**SEWERAGE & WATER BOARD OF NEW ORLEANS
ADVERTISEMENT FOR BIDS**

**NDR Grant-Additional Instrumentation Project
Solicitation No. 2023-SWB-20 (Contract 5251)
New Orleans, LA**

October 4, 2023

The Sewerage and Water Board of New Orleans is requesting bids for the above-referenced contract until **October 30, 2023, at 11:00 a.m.** (Local Time). Any Bids received after the specified time will be rejected.

Bids will then be publicly opened and read at 11:30 a.m. on **October 30, 2023, at the Purchasing Conference Room 131, 625 St. Joseph Street, New Orleans, Louisiana.**

The Project contemplated consists of the detailed design of wireless instrumentation systems, their submittal to and approval by OWNER, and installation of instruments and sensors to supplement and enhance the real time monitoring and reporting system. Monitoring of critical equipment as well as canal levels shall be integrated into the existing PLC/HMI/SCADA system maintained by the SWBNO to increase visibility across the Drainage Pump Station system.

A **Non-mandatory** pre-bid conference will be held on **Tuesday, October 17, 2023, at 11:00 a.m.** (Local Time) at the Carrollton Water Plant Engineering Building, 8800 S. Claiborne Ave., 2nd Floor Auditorium, New Orleans, LA. Refer to Instructions to Bidders for additional information.

All inquiries shall be directed to Paul Mitchell, Purchasing Agent, at lmitchell4@swbno.org. The deadline for inquiries is **5:00 p.m.** local time on **October 20, 2023.**

Bid Documents and proposal forms are available for download at the following websites:

SWBNO: https://www2.swbno.org/business_bidspecifications.asp

LAPAC: <https://wwwcfprd.doa.louisiana.gov/OSP/LaPAC/dspBid.cfm?search=department&term=181>

LATE BIDS WILL NOT BE ACCEPTED

INSTRUCTION FOR BIDDERS

1. DEFINED TERMS

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

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

2. COPIES OF BIDDING DOCUMENTS

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

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

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

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

3. QUALIFICATIONS OF BIDDERS

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

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

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

4.1. Subsurface and Physical Conditions:

4.1.1. The Supplementary Conditions identify:

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

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

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

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

4.3. Hazardous Environmental Condition:

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

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

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

Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

5. SPECIAL PRODUCT REQUIREMENTS

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

6. PREBID CONFERENCE

A **Non-mandatory** pre-bid conference will be held on October 17, 2023, at 11:00 a.m. (Local Time) at the Carrollton Water Plant Engineering Building, 8800 S. Claiborne Ave., 2nd Floor Auditorium, New Orleans. Refer to Instructions to Bidders for additional information. The meeting will also be available via teleconference at the following:

Microsoft Teams meeting
Join on your computer, mobile app, or room device

[Click here to join the meeting](#)

Meeting ID: 282 018 963 96

Passcode: 95jhuE

[Download Teams](#) | [Join on the web](#)

Or call in (audio only)

[+1 504-224-8698,729410728#](#) United States, New Orleans

Phone Conference ID: 729 410 728#

6.1. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are required to attend and participate in the conference. An award will be issued to Bidders that have a representative at the pre-bid conference. Procurement will transmit to prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

7. SITE AND OTHER AREAS

7.1. As specified in the technical specifications and as directed by Engineer.

7.2. N/A

8. INTERPRETATIONS AND ADDENDA

8.1. All questions about the meaning or intent of the Bidding Documents are to be submitted to the Sewerage & Water Board Purchasing Department. Deadline to submit questions/clarifications will be October 20, 2023, by 5:00 p.m. to Paul Mitchell, Purchasing Analyst, at lmitchell4@swbno.org. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by the office issuing documents as having received the Bidding Documents. Questions received after the deadline may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

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

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

9. BID SECURITY

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

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

9.3. Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned

within 7 days after Bid opening upon request.

10. CONTRACT TIMES

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

11. LIQUIDATED DAMAGES

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

12. SUBSTITUTE AND “OR-EQUAL” ITEMS

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

13. WAGE RATES

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

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

14. PREPARATION OF BID

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

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

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

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

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

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

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

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

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

14.10. The Bid shall contain evidence of Bidder’s authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach

such covenant to the Bid. Bidder's state contractor license number and class, if applicable, shall also be shown on the Bid Form.

15. BASIS OF BID; COMPARISON OF BIDS

15.1. Lump Sum:

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

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

15.2. Unit Price:

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

15.2.2. The total of all prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.

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

15.3. Alternates:

15.3.1. Alternates requiring pricing in the Bid Form are described in Section 01 11 00, Summary of Work, and in the Bid Form.

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

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

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

16. SUBMISSION OF BID

16.1. The Bid Form, Section 00 41 13 Louisiana Uniform Public Work Bid Form is to be completed and submitted with the Bid Security. The two (2) lowest bidders will have three (3) days following the bid opening to submit the following:

16.1.1. Additional Requirements, Bidder Declaration, Guarantees, and Emergency Procedures.

16.1.2. Affidavit

16.1.3. Voluntary Extensions of the Award of Contract

16.1.4. Affidavit of Non-collusion

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

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

17. OPENING OF BIDS

Bids will be opened on **October 30 2023, at 11:30 a.m. at Sewerage and Water Board of New Orleans, 625 St. Joseph Street, Purchasing Conference Room 131, New Orleans, Louisiana** and unless obviously nonresponsive, read aloud publicly. The amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids. The bid opening will also be available via teleconference:

Microsoft Teams meeting

Join on your computer, mobile app or room device

[Click here to join the meeting](#)

Meeting ID: 215 466 710 191

Passcode: NJWCvm

[Download Teams](#) | [Join on the web](#)

Or call in (audio only)

[+1 504-224-8698,599284529#](#) United States, New Orleans

Phone Conference ID: 620 783 261#

[Find a local number](#) | [Reset PIN](#)

18. BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

19. EVALUATION OF BIDS AND AWARD OF CONTRACT

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

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

19.3. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

19.4. In accordance with R.S. 38:2212(H), the Sewerage and Water Board recommended awards based on bid results will be released via email notification to all respondents either no sooner than fourteen days following the bid opening or after the recommendation of award by the SWBNO or the design professional, whichever occurs first. Bidders may also telephone the Purchasing Department of the Sewerage and Water Board to determine the bid results. Objection by a bidder to any recommended award must be made in writing to the Purchasing Agent or Assistant Purchasing within 72 hours (excluding Saturdays, Sundays, and Holidays) after that recommended bid award notification.

20. NOTARIAL FEE SCHEDULE

Notarial work for all Sewerage and Water Board of New Orleans construction contracts, requiring to be notarized: (Other notarial fees may apply)

<u>Contract Value</u>	<u>Fee</u>
Under \$1,000.00	\$186.00
\$1,000.00 to \$49,999.99	\$347.00
\$50,000.00 to \$499,999.99	\$881.00
\$500,000.00 to \$999,999.99	\$1,888.00
\$1,000,000.00 or over	\$3,778.00

21. CONTRACT SECURITY AND INSURANCE

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

22. SIGNING OF AGREEMENT

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

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

23. SALES AND USE TAXES

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

of any obligation to pay these taxes.

23.2 ACT 318 OF 1958

23.2.1 Under the terms of Act 318 of 1958, of the Regular Session of the Legislature of the State of Louisiana, all things being equal, preference must be given to either (1) firms doing business in the State of Louisiana or (2) to products produced (or) grown (or) manufactured in the state.

23.2.2 Before any bill for supplies used shall be paid to any non-resident firm, a statement in writing shall be submitted by the seller to the effect that his firm has paid all taxes duly assessed by the State of Louisiana and its political subdivisions, including franchise taxes, to the state and its political subdivisions.

24. RETAINAGE

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

LOUISIANA UNIFORM PUBLIC WORK BID FORM

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

BID FOR: Contract 5251- NDR Grant-Additional
Instrumentation Project

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: Stanley Consultants, Inc. and dated: April 21, 2022

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

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

Dollars (\$)

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

Alternate No. 1 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

Dollars (\$)

Alternate No. 2 (Owner to provide description of alternate and state whether add or deduct) for the lump sum of:

Dollars (\$)

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

NAME OF BIDDER:

ADDRESS OF BIDDER:

LOUISIANA CONTRACTOR'S LICENSE NUMBER:

NAME OF AUTHORIZED SIGNATORY OF BIDDER:

TITLE OF AUTHORIZED SIGNATORY OF BIDDER:

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER **:

DATE:

THE FOLLOWING ITEMS ARE TO BE INCLUDED WITH THE SUBMISSION OF THIS LOUISIANA UNIFORM PUBLIC WORK BID FORM:

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

** A CORPORATE RESOLUTION OR WRITTEN EVIDENCE of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5).

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

LOUISIANA UNIFORM PUBLIC WORK BID FORM

UNIT PRICE FORM

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

BID FOR: _____

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

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Procurement of Instrumentation: Horizontal Pumps				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
1	43	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Procurement of Instrumentation: Vertical Pumps				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
2	52	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Procurement of Instrumentation: Constant Duty Pumps				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
3	21	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Procurement of Instrumentation: Vacuum Pumps				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
4	37	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Installation of Instrumentation: Horizontal Pumps				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
5	43	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Installation of Instrumentation: Vertical Pumps				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
6	52	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Installation of Instrumentation: Constant Duty Pumps				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
7	21	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Installation of Instrumentation: Vacuum Pumps				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
8	37	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Procurement and Installation of Radio Transmitter Field Panels, Receivers & Uninterruptible Power Supplies				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
9	24	Lump Sum		

DESCRIPTION: <input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# _____ Procurement of New PLC equipment				
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
10	5	Lump Sum		

DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ___ Installation of New PLC Equipment			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
11	5	Lump Sum		
DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ___ Demolition of Legacy Measurement Equipment (bubbler system), Procurement and Installation of New Channel Level Sensors;			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
12	24	Lump Sum		
DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ___ PLC Programming per Station			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
13	24	Lump Sum		
DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ___ Power Cable and Conduit Procurement and Installation			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
14	15,450	Linear Foot		
DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ___ Generator Sensor Procurement, Coordination & Installation			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
15	31	Lump Sum		
DESCRIPTION:	<input checked="" type="checkbox"/> Base Bid or <input type="checkbox"/> Alt.# ___ Diesel Tank Level Sensors Procurement and Installation			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION (<i>Quantity times Unit Price</i>)
16	28	Lump Sum		

Wording for "DESCRIPTION" is provided by the Owner.

All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner

1-2 ADDITIONAL REQUIREMENTS

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

1-3 BIDDER DECLARATION

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

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

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

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

1-5 GUARANTEES

_____ guarantee that the whole of the work under this contract will be substantially completed within **548** calendar days after the date of the "Commencement of Contract Times."

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

1-6 EMERGENCY PROCEDURES

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

NAME _____ TITLE _____

TELEPHONE NO.:
NORMAL CALLS _____

EMERGENCY _____

**STATE OF LOUISIANA
PARISH OF ORLEANS**

AFFIDAVIT

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

- 1) He/she is the _____ (title) of _____ (company);
- 2) He/she has not been convicted of, or has entered a plea of guilty or nolo contendere to any of the crimes, or equivalent federal crimes, listed in Louisiana Revised Statute 38:2227, specifically: public bribery, corrupt influencing, extortion, money laundering, theft, identity theft, theft of a business record, false accounting, issuing worthless checks, bank fraud, forgery, contractors misapplication of payments, malfeasance in office.
- 3) The contracting entity, person or corporation whose principal(s), member(s), and /or Officer(s) have, within the preceding 5 years, not been convicted or plead guilty to, a felony under state or federal statutes, for embezzlement, theft of public funds, bribery, falsification or destruction of public records; (City Code Section 2-8)
- 4) The following is a list of individual partners, incorporators, directors, managers, officers, organizers, or members who have a minimum ten percent interest ownership interest in the bidding entity:
_____(name) _____(name)
_____(name) _____(name)
_____(name) _____(name)
- 5) No other persons hold an ownership interest in the bidding entity via a counter letter.
- 6) None of the above named individual partners, incorporators, directors, managers, officers, organizers, or members, who has a minimum ten percent interest ownership in the bidding entity, been convicted of, or has entered a plea of guilty or nolo contendere to any of the crimes, or equivalent federal crimes, listed in Louisiana Revised Statute 38:2227, specifically: public bribery, corrupt influencing, extortion, money laundering, theft, identity theft, theft of a business record, false accounting, issuing worthless checks, bank fraud, forgery, contractors misapplication of payments, malfeasance in office.
- 7) He/she is not delinquent on any taxes owed the City of New Orleans or fees/charges to the Sewerage and Water Board. (City Code Section 2-8)

The following sections apply only to Public Works Contracts:

- 8) In accord with LA Revised Statute 38:2212.10 the entity represented herein is registered and participates in the "Status verification system" of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, 8 U.S.C. 1324(a), known as the "E-Verify" program to verify that all employees in the State of Louisiana are legal citizens of the United States or are legal aliens.
- 9) The entity represented herein shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.
- 10) The entity represented herein shall require all subcontractors to submit to the contractor a sworn affidavit verifying compliance with the Status verification system.

WITNESSES:

AFFIANT

SWORN TO AND SUBSCRIBED BEFORE ME ON THIS

_____ **DAY OF** _____, 20_____.

NOTARY PUBLIC

Notary Id. No. or Bar Roll No.

PLEASE PRINT NAME OF NOTARY

VOLUNTARY EXTENSIONS OF THE AWARD

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

AGREED:

NAME OF BIDDER (TYPE OR PRINT)

SIGNATURE OF BIDDER

COMPANY NAME

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

BID BOND

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

BIDDER (Name and Address):

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

OWNER (Name and Address):

BID

Bid Due Date:

Project (Brief Description Including Location):

BOND

Bond Number:

Date (Not later than Bid due date):

Penal sum _____ (Words) _____ (Figures)

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

BIDDER

SURETY

_____(Seal)
Bidder's Name and Corporate Seal

_____(Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title

Attest: _____
Signature and Title

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

NEW ORLEANS MASTER 469936

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Surety's liability.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2. All Bids are rejected by Owner, or
 - 3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

END OF SECTION

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

In accordance with the adoption of Resolution R231-97, the Sewerage and Water Board of New Orleans has established a race and gender-neutral Disadvantaged Business Enterprise (DBE) Plan. The prime contractor shall be required to make a demonstrated good faith effort to award (13)% of the amount of the contract to certified disadvantaged business enterprises as **subcontractors or suppliers performing commercial useful functions which are consistent with the work required on this contract**. The percent participation having been determined for this specific contract by recommendation of the **Construction Review Committee (CRC)**, which is a joint effort of representatives from the City of New Orleans, Sewerage and Water Board, and representatives of local contractor organizations. This percentage requirement shall be considered an informality which is subject to modifications and may be waived or adjusted by the Sewerage and Water Board of New Orleans if the prime contractor, after having demonstrated a good faith effort, is unable to comply with the requirement.

DEMONSTRATED GOOD FAITH EFFORTS

Before receiving an award of the contract, the contractor must meet the DBE goals or prove that he/she has made a demonstrated good faith efforts. To determine whether a particular contract bidder has made demonstrated good faith efforts to reach the DBE participation goal, the Board and its staff will consider the following:

- a. whether the contractor attended all pre-bid meetings that may have been scheduled by the Board to inform DBE firms of subcontracting opportunities and/or requested the Board Directory of Certified DBE firms;
- b. whether the contractor advertised in general circulation and trade association publications, concerning the DBE subcontracting opportunities, and allowed the subcontractors reasonable time to respond;
- c. whether the contractor provided written notice to a reasonable number of individually named DBE firms and allowed sufficient time for the DBE firms to participate effectively;

- d. whether the contractor followed up initial solicitations of interest by contacting DBEs to determine with certainty whether the DBEs were interested in bidding;
- e. whether the contractor selected specific portions of the work to be performed by DBEs in order to increase the likelihood of meeting the DBE goals (including breaking down contracts into smaller units to facilitate DBE participation);
- f. whether the contractor provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;
- g. whether the contractor negotiated in “good faith” with interested DBEs and did not reject DBEs as unqualified without sound reasons based on a thorough investigation of their capabilities;
- h. if the contractor did reject a DBE as unqualified, the contractor must state his or her reason for doing so in writing;
- i. whether the contractor has used the services of available community organizations and small and/or disadvantaged business groups; local, state and federal small or disadvantage business assistance offices; and other organizations that provide assistance in the recruitment and placement of DBE firms;
- j. whether the contractor has made sufficient efforts to negotiate with DBEs for specific sub-bids, including at a minimum:
 - (1) names, addresses, telephone numbers of DBEs that the contractor contacted,
 - (2) a description of information provided to those DBE firms, and
 - (3) a statement of why additional agreements with DBEs were not reached to include but not limited to proof the DBEs’ price exceeded that of non-DBEs.

1. **Policy:**

It is the policy of the Board that DBE firms, as defined in the Board's Disadvantaged Business Enterprise Plan, shall have the maximum allowable opportunity to compete for the award of the participation in the performance of the Board's publicly bid contracts. Consequently, the CRC and the Board have set the DBE participation goal applicable to this construction contract.

2. **DBE Obligation:**

The Board and its contractors agree to ensure that DBE's, as defined in the Board's Disadvantaged Business Enterprises Plan, shall have the maximum allowable opportunity to compete for the award of the participation in the performance of contracts and subcontracts provided under this agreement. In this regard, contractors shall take all necessary and reasonable steps in accordance with this DBE Plan to ensure that DBE's have the maximum allowable opportunity to compete for such contracts. The Board and its contractors shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of the Board's publicly bid contracts.

3. **Utilization of DBE Vendor Listings:**

All bidders are required to utilize the most recent Sewerage and Water Board State-Local Disadvantaged Business Enterprise Program Approved Vendor Listings for **Construction, Goods & Services/Professional Services**, in their selection of DBE entities to meet DBE participation goals. **Bidders are required to utilize DBE's as subcontractors or suppliers only in the areas for which they are certified. A description of the areas of work that DBE's can provide is contained in these vendor listings.** In addition, an alphabetical list of vendors/contractors is provided indicating the name of the company, address, name of owner, telephone number, fax number, the date the company became certified, and a description of the work that these entities are certified to perform. **Companies that are already certified as a DBE cannot fulfill the DBE requirements by listing themselves as the subcontractor to meet the DBE goal. The prime contractor shall select another DBE from the Sewerage and Water Board's Approved Vendor Listing.**

4. **Contacting DBE's and Obtaining a Firm Price**

All prime contractors are required to contact DBE's and obtain a firm price before listing the DBE's on the Participation Summary Sheet. As confirmation of established contact, bidder will include with their Participation

Summary Sheet submission a signed correspondence from the SLDBE subcontractor on their own letterhead that reaffirms negotiated terms such as scope of work and monetary compensation.

5. **Failure to Comply with DBE Bid Specifications:**

All bidders for this Board contract are hereby notified that failure to comply with the above DBE specifications may constitute the bid as being non-responsive, and sufficient cause for rejection.

6. **Failure to Carry Out DBE Policy:**

All bidders, potential contractors, or subcontractors for this Board contract are hereby notified that failure to comply with the DBE policy and DBE obligations, set forth above, shall constitute a breach of contract which may result in termination of the contract or such other remedy as deemed appropriate by the Board, to include excluding bidder from bidding on future Board contracts.

7. **Setting Minimum Participation Goals:**

The stated minimum percentage DBE participation goal recommended by CRC and approved by the Board applies to the work of this contract. The two lowest numerical bidders must complete and submit a DBE Participation Summary Sheet no later than three (3) days after the bid opening (excluding Saturdays, Sundays and holidays). The DBE Participation Summary Sheet should be completed properly, showing that at least the percentage goal of the total contract bid price will be subcontracted or otherwise awarded through procurement action to DBE's. Should the bidder fail to comply with this request, the bid shall be considered unresponsive, unless:

- a. An affidavit is furnished by the bidder with its bid showing that the DBE goals cannot be met for the following reasons:
 - (1) No DBE firms made offers. Here, it must be shown, documented and demonstrated that good faith efforts (as defined in Part III, D, 2. of the Board's DBE plan) were made by the bidder to obtain the participation of DBE firms and that they did not respond, or
 - (2) The DBE offers made and accepted for subcontract

and/or material supplies do not total the stated goal for participation, but total a lesser percentage, and

- (3) The bidder was unable to obtain DBE further participation, despite his or her demonstrated good faith efforts (as defined in Part III, D, 2 of the Board's DBE Plan) to obtain additional participation by DBE firms.

- b. Each of the assertions made by the bidder must be supported by documentary evidence.

8. Other Clauses Unaffected:

Nothing contained herein shall invalidate, change, annul, release, restrict, or affect the liability on the bonds or insurance given by the contractor, or the time required for completion of the contract.

9. Determination of Efforts to Meet Goals:

Initial determination of bidder efforts to meet the DBE participation goal shall be based on the DBE participation representations submitted by the two lowest numerical bidders no later than three (3) days after the bid opening (excluding Saturdays, Sundays and holidays). Bidders shall submit all the forms required herein no later than three (3) days after the bid opening (excluding Saturdays, Sundays and holidays), and the DBE Office will examine the contents thereof. The Board's DBE Officer may, if deemed advisable, request further information, explanation or justification from any bidder.

10. Contract Monitoring:

- a. The Board's DBE Office will monitor contractor during the operation of the contract to insure that the contractor meets all of its DBE obligations as specified in the contract bid. The Board's DBE office shall establish rules and regulations, to be approved by the Board, for the ongoing monitoring of contractor compliance.
 - b. Disadvantaged Business Enterprise Program Office personnel or their designated representative shall be allowed to conduct periodic monitoring of contractors' compliance with the agreed to Disadvantaged Business Enterprise Program participation

requirements. Contractors shall be required to complete and return to the Disadvantaged Business Enterprise Program Office in the time required all requests for information and data relative to the contractors' activities in meeting the required Disadvantaged Business Enterprise participation goal. Additionally, Disadvantaged Business Enterprise Office personnel or their designated representative shall have access to contractor and subcontractor(s) records pertaining to, but not specifically limited to labor, costs and materials supplied and used on the Board contract, as well as inspection and photocopying of any and all contracts, agreements and correspondence relative to the Disadvantaged Business Enterprise contract participation requirements. Such inspection will be performed during normal business hours, and will be conducted in such a fashion so as to minimize interference with production of the contract. Visits may be made to job sites, as well as to administrative offices of the contractor and subcontractor(s) participants. Such inspection and on-site visits may be scheduled with or without prior notice to the contractor or Disadvantaged Business Enterprise subcontractor participant. Contractors' failure to comply with these monitoring requirements may result in termination of the contract or such other remedy as deemed appropriate by Board.

11. Maintaining Records:

Subsequent to the completion of a contract, contractors are required to maintain for three (3) years such records as are necessary to determine compliance with their DBE obligations. During construction, or performance of the DBE obligations, contractors shall submit reports as requested to enable the DBE Office to monitor this compliance.

12. Umbrella Bonding:

On contracts where subcontracting exists and where practicable (i.e., when a substantial risk or financial hardship would not be incurred by the prime contractor), the contractor may use an umbrella bond to encompass the DBE firm.

13. Board Action to Seek Compliance:

The contractor consents to such appropriate actions taken to ensure that prime contractors and subcontractors comply with the DBE provisions, to include but not limited to:

- a. desk audits to review all material, and information concerning the contractor's compliance;
- b. on-site reviews that may include interviews, visits to project locations, and inspection of documents and/or information not available at the desk audit that pertains to the contractor's compliance;
- c. any additional investigation that may be called for by a lack of proper record keeping, failure of the prime contractor to cooperate; failure of DBEs to cooperate; visible evidence unsatisfactory performance; other evidence as may warrant further investigation.

14. Non-Compliance Finding:

The Board staff will make compliance determinations regarding its prime contractors. Documentation of noncompliance will include the specific areas in which the contractors failed to comply. In these instances, appropriate legal action consistent with the DBE and other contract provisions will be taken.

15. Contractor's Duties

a. Record Keeping

Successful bidders shall establish and maintain records and submit regular reports to the DBE office as required, which will identify and assess progress in achieving DBE subcontract goals and other DBE participation efforts.

b. Failure To Comply With EDBP Participation Requirements

Failure to comply with any of the EDBP requirements of this contract shall constitute a violation of the terms and conditions of this contract and a cause for the termination of the contract at the option of the Board.

Such violations shall include, but not limited to:

Failing to meet the percentage participation requirements as set out in the contract documents.

Failing to use certified EDBP contractors/vendors in performing the scope of work as identified in the contract documents (EDBP participation summary sheet).

Failing to comply with the “monitoring of EDBP requirements” included herein as part of the contract, such as contractors:

Failure to submit quarterly report and any other necessary reports timely and adequately as required by the EDBP Office.

Failure to grant access to contractor/subcontractor records by EDBP Office personnel, and

Failure to allow on-site investigations and visits, etc.

Failing to report the removal or termination of a certified EDBP vendor /subcontractor.

Failing to secure authorization for replacement of certified EDBP subcontractors from the Director of the Economically Disadvantaged Business Program.

In Lieu of termination the Board, through the EDBP Office, may impose the following penalties:

Withhold from the contractor in violation up to 10% of all future payments due to the contractor, until such time as the violations have been corrected.

Withhold from the contractor in violation, all future payments until such time as the violations have been corrected.

c. Subcontract Clause

All bidders and potential contractors must assure the Board that they will include the above clauses in all agreements, which offer further subcontracting opportunities.

d. Contract Award

Bidders are hereby advised that meeting DBE subcontract goals or making a demonstrated good faith efforts to meet such goals are conditions of being awarded and maintaining construction, procurement, or professional services contracts by the Board.

e. Restrictions on DBE Subcontracting

No **DBE** subcontractor or vendor selected to perform work as a **DBE** on a Sewerage and Water Board contract will be allowed to subcontract any portion of its work to a Non-Board certified **DBE**, unless the work to be performed is necessary for the execution of the contract and there are no Board certified **DBE**'s available to perform such work.

This process will require that each **DBE** participant performing work on a Sewerage and Water Board funded contract submit a request to subcontract out any portion of work deemed necessary for execution of the contract to the Board's **EDBP** office. On a form provided by the **EDBP** office, the **DBE** contractor or vendor will indicate the dollar amount of work to be subcontracted, the specific scope or nature of the work, the percentage of the total amount of work to be performed by the **DBE** subcontractor and vendor, and the entity to whom the work will be subcontracted.

Both prime and **DBE** subcontractors are advised that the failure to comply with these requirements may result in the loss of **DBE** certification and non-compliance by the prime contractor in meeting **DBE** contractual obligations.

f. Changes In DBE Participation

The Prime Contractor will not be allowed to make changes in DBE participation without submittal of a written request explaining reason, a revised Participation Summary Sheet and approval by the Director of the Economically Disadvantaged Business Program. Failure to comply with these requirements may result in non-compliance by the Prime Contractor in meeting DBE contractual obligations.

16. POLICY TO ENHANCE THE USE OF DBE VENDORS

All vendors/contractors are encouraged to identify and use S&WB certified **DBE** vendors to the fullest extent possible in major as well as minor purchases of heavy equipment, hardware supplies, etc.

The Sewerage and Water Board has a long-standing commitment to fairness and equal opportunity in hiring and contracting. As such, the workforce of contractors/vendors is encouraged to be representative of a diverse population. Achievement of the full benefits of diversity will only come when an attitude of inclusion is adopted.

The Sewerage and Water Board believes that developing such a policy would be a positive step to increase the dollar value of contracts awarded to **DBE** vendors and subcontractors.

17. ACCESS TO APPROVED VENDOR LISTS

The current listings of Vendors approved by the Sewerage and Water Board are available for use by the bidders on the Sewerage and Water Board external Website, WWW.SWBNO.ORG.

DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

1. POLICY TO ENHANCE THE USE OF DBE VENDORS

All vendors/contractors are encouraged to identify and use S&WB'S certified DBE Vendors to the fullest extent possible in major as well as minor purchases of heavy equipment, hardware supplies, etc.

Additionally, the originating Department will include within the specifications the most currently available approved DBE vendor listings.

The Sewerage and Water Board believes that developing such a policy would be a positive step to increase the dollar value of contracts awarded to DBE vendors and subcontractors.

2. ACCESS TO APPROVED VENDOR LISTS

The current listings of Vendors approved by the Sewerage and Water Board are available for use by the bidders on the Sewerage and Water Board external Website, WWW.SWBNO.ORG.

ECONOMICALLY DISADVANTAGED BUSINESS PARTICIPATION SUMMARY SHEET

Minimum Percentage Goal Participation for this Contract is 13%

Contract Name and # _____

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

THIS FORM MUST BE COMPLETED AND SUBMITTED BY THE TWO LOWEST NUMERICAL BIDDERS, ALONG WITH SIGNED CORRESPONDENCE FROM SLDBE(S) ON THEIR OWN LETTERHEAD REAFFIRMING NEGOTIATED TERMS, NO LATER THAN 3 DAYS AFTER THE BID OPENING (EXCLUSIVE OF SATURDAYS, SUNDAYS AND HOLIDAYS). FAILURE TO DO SO WILL RENDER THE BID NON-RESPONSIVE.
 BY SUBMITTAL OF THIS FORM, PRIME CONTRACTOR ACKNOWLEDGES THAT DBE(S) HAVE BEEN CONTACTED AND A FIRM PRICE HAS BEEN OBTAINED.

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

Prime Representative Name: _____
Print Name

Prime Company's Name: _____

Prime Address: _____

Prime Signature: _____
Signature

Date: _____

E-mail: _____

Telephone Number: _____

AGREEMENT

THIS AGREEMENT is by and between the Sewerage and Water Board of New Orleans

(Owner) and _____
_____. (Contractor).

Owner and Contractor, in consideration of the mutual covenants set forth herein, agree as follows:

1. WORK

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

[The Work of Project is defined by the Contract Documents and consists of the detailed design of wireless instrumentation systems, their submittal to and approval by OWNER, and installation of instruments and sensors to supplement and enhance the real time monitoring and reporting system. Monitoring of critical equipment as well as canal levels shall be integrated into the existing PLC/HMI/SCADA system maintained by the SWBNO in order to increase visibility across the Drainage Pump Station system. Work includes:

1. Selection and installation of various types of instrumentation at multiple pump stations including, but not limited to:
 - a. Power meters for critical pump motors.
 - b. Channel level sensors on both intake and discharge canals, including both new installations and upgrading of existing sensors.
 - c. Diesel fuel tank level sensors.
 - d. Pressure sensors monitoring the critical vacuum pump systems at each drainage station.
 - e. Vibration, temperature and other various types of measurement for performance and machine-health monitoring of critical pumping equipment at the Drainage Pump Stations.

2. Installation of PLC equipment required to integrate and communicate the new instrument signals to both local operations, but also to a public facing dashboard via the S&WBNO SCADA |

2. ENGINEER

2.1. The Project has been designed by Stanley Consultants, Inc. (Designer), who is to act as the Engineer-of-Record under the oversight and administration of the Owner's Representative.

3. CONTRACT TIMES

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

3.2. **[A: Days to Achieve Substantial Completion and Final Payment:**

3.2.1. The Work shall be substantially completed within 548 calendar days from the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 30 calendar days after the date when the Contract Times commence to run.] |

3.3. Liquidated Damages:

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

3.4. Night, Weekend, or Holiday Work

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

4. CONTRACT PRICE

4.1. Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to the prices stated in Contractor's Bid attached hereto as an exhibit.

5. PAYMENT PROCEDURES

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

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

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

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

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

5.2.3. In accordance with Louisiana Statute 38:2248.A, retainage will be released within 45 days of Final Acceptance by the SWBNO Board of Directors.

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

shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

5.3. Final Payment:

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

6. CONTRACTOR'S REPRESENTATIONS

6.1. Contractor makes the following representations:

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

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

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

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

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

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

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

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

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

7. CONTRACT DOCUMENTS

7.1. Contents:

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

7.1.1.1. This Agreement.

7.1.1.2. Performance bond .

7.1.1.3. General Conditions

7.1.1.4. Supplementary Conditions

7.1.1.5. Specifications as listed in the table of contents

7.1.1.6. Appendices

7.1.1.7. Addenda

7.1.2. Exhibits to this Agreement (enumerated as follows):

7.1.2.1. Contractor's Bid.

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

7.1.3.1. Notice to Proceed.

7.1.3.2. Work Change Directives.

7.1.3.3. Change Order(s).

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

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

8. MISCELLANEOUS

8.1. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

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

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

8.4. Assignment of Contract:

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

8.5. Contractor's Certifications:

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

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

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

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

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

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

This Agreement will be effective on _____, 20__ (which is the Effective Date of the Agreement).

OWNER: _____

CONTRACTOR: _____

By: _____

By: _____

Title: _____

Title: _____

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

License No. _____

(Where applicable)

Agent for service or process: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

END OF SECTION

PERFORMANCE BOND FORM

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

CONTRACTOR
(Name and Address):

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

OWNER (Name and Address):

CONTRACT

Date:
Amount:
Description (Name and Location):

BOND

Bond Number:
Date (Not earlier than Contract Date):
Amount:
Modifications to this Bond Form:

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

CONTRACTOR AS PRINCIPAL

SURETY

Company:
Signature: _____ (Seal)
Name and Title

Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____
Signature and Title

CONTRACTOR AS PRINCIPAL

SURETY

Company:
Signature: _____ (Seal)

(Seal)

Name and Title

Surety's Name and Corporate Seal

By: _____
Signature and Title

(Attach Power of Attorney)

Attest: _____
Signature and Title

NEW ORLEANS MASTER 469936

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract;
2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

- 4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
- 4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

- 6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1. Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone Surety Agency or Broker Owner's Representative (engineer or other party)

END OF SECTION

GENERAL CONDITIONS

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GENERAL CONDITIONS

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

30. *PCBs*—Polychlorinated biphenyls.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided

under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

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

1.02 Terminology

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

B. *Intent of Certain Terms or Adjectives:*

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

C. *Day:*

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

D. *Defective:*

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

- a. does not conform to the Contract Documents; or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
- c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

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

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

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

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

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

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

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

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

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

2.02 *Copies of Documents*

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

2.03 *Commencement of Contract Times; Notice to Proceed*

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

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

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

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

2. a preliminary Schedule of Submittals; and

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

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

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

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

2.07 *Initial Acceptance of Schedules*

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

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the

Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

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

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

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

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

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

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

3.02 *Reference Standards*

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

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

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

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

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

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

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

B. *Resolving Discrepancies:*

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

- a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not

specifically incorporated by reference in the Contract Documents); or

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

3.04 *Amending and Supplementing Contract Documents*

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

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

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier shall not:

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

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

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

3.06 *Electronic Data*

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

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

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

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

4.01 *Availability of Lands*

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

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as

necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

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

4.02 *Subsurface and Physical Conditions*

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

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

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

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

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

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

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

4.03 *Differing Subsurface or Physical Conditions*

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

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

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

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

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

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

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

C. *Possible Price and Times Adjustments:*

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

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

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

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

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

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

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

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

4.04 *Underground Facilities*

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

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

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

a. reviewing and checking all such information and data;

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

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

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

B. *Not Shown or Indicated:*

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

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

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and

shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

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

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

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

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

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

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

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

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

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

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

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to

be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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

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

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

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

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

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

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

5.02 *Licensed Sureties and Insurers*

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

5.03 *Certificates of Insurance*

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

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

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

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

E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's

liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

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

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

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

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

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

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

b. by any other person for any other reason;

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

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

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

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

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

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

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

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

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

6. include completed operations coverage:

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

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

5.05 *Owner's Liability Insurance*

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

5.06 *Property Insurance*

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

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

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

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

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

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

6. include testing and startup; and

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

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

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

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

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

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

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and

Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

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

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

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

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

5.08 *Receipt and Application of Insurance Proceeds*

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

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

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

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

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

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to

Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

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

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

6.02 *Labor; Working Hours*

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

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

6.03 *Services, Materials, and Equipment*

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

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

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

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

6.04 *Progress Schedule*

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

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

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

6.05 *Substitutes and "Or-Equals"*

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

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by

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

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

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

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

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

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

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

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

2. *Substitute Items:*

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

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

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

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

1) shall certify that the proposed substitute item will:

- a) perform adequately the functions and achieve the results called for by the general design,
- b) be similar in substance to that specified, and
- c) be suited to the same use as that specified;

2) will state:

- a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
- b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

- a) all variations of the proposed substitute item from that specified, and
- b) available engineering, sales, maintenance, repair, and replacement services; and

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

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

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

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

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

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

6.06 *Concerning Subcontractors, Suppliers, and Others*

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

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

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

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

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

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

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

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

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

6.07 *Patent Fees and Royalties*

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

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

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

6.08 *Permits*

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

6.09 *Laws and Regulations*

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

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

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

6.10 *Taxes*

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

6.11 *Use of Site and Other Areas*

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

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

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

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

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

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

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

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

6.12 *Record Documents*

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

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with

applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

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

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

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

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

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

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

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

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

6.14 *Safety Representative*

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

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

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

6.17 *Shop Drawings and Samples*

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

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities,

dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

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

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

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and

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

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

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

D. Engineer's Review:

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

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

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

E. Resubmittal Procedures:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected

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

6.18 *Continuing the Work*

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

6.19 *Contractor's General Warranty and Guarantee*

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

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

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

2. normal wear and tear under normal usage.

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

1. observations by Engineer;

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

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

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

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

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

7. any correction of defective Work by Owner.

6.20 Indemnification

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

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

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

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

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

6.21 Delegation of Professional Design Services

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

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

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

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

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

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

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

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

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

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

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

7.02 *Coordination*

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

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

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

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

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

7.03 *Legal Relationships*

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

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

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

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

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

8.03 *Furnish Data*

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

8.04 *Pay When Due*

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

8.05 *Lands and Easements; Reports and Tests*

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

8.06 *Insurance*

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

8.07 *Change Orders*

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

8.08 *Inspections, Tests, and Approvals*

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

8.09 *Limitations on Owner's Responsibilities*

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

8.10 *Undisclosed Hazardous Environmental Condition*

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

8.11 *Evidence of Financial Arrangements*

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

8.12 *Compliance with Safety Program*

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

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

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

9.02 *Visits to Site*

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

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

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

9.03 *Project Representative*

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

9.04 *Authorized Variations in Work*

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

9.05 *Rejecting Defective Work*

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

9.06 *Shop Drawings, Change Orders and Payments*

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

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

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

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

9.07 *Determinations for Unit Price Work*

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

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

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

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

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

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

9.09 *Limitations on Engineer's Authority and Responsibilities*

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

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

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

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

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

9.10 *Compliance with Safety Program*

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

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

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

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

10.02 *Unauthorized Changes in the Work*

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

10.03 *Execution of Change Orders*

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

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

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

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

10.04 Notification to Surety

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

10.05 Claims

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

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

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

1. deny the Claim in whole or in part;
2. approve the Claim; or

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

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

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

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

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

11.01 Cost of the Work

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

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

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

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

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

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

5. Supplemental costs including the following:

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

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and

temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

11.02 Allowances

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

B. *Cash Allowances:*

1. Contractor agrees that:

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

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

C. *Contingency Allowance:*

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

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

11.03 Unit Price Work

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

estimated quantity of each item as indicated in the Agreement.

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

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

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

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

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

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

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

12.01 Change of Contract Price

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

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

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

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

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

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

1. a mutually acceptable fixed fee; or

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

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

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

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

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

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

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

12.02 *Change of Contract Times*

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

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

12.03 *Delays*

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

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

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

Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

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

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

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

13.01 *Notice of Defects*

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

13.02 *Access to Work*

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

13.03 *Tests and Inspections*

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

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

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

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

3. as otherwise specifically provided in the Contract Documents.

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

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise

impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such

correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all

materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract

Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently

discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. there are other items entitling Owner to a set-off against the amount recommended; or

d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to

Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected)

reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify

Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

- a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
- b. consent of the surety, if any, to final payment;
- c. a list of all Claims against Owner that Contractor believes are unsettled; and
- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien

rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of

Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's repeated disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become

final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
2. agrees with the other party to submit the Claim to another dispute resolution process; or
3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 Headings

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof. The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix “SC” added thereto.

SC-1.01. Add the following language at the end of Paragraph 1.01.A.19:

Engineer is the General Superintendent for the Sewerage and Water Board of New Orleans or delegate and has the authority provided in this Contract to approve or disapprove all changes to the Contract documents.

SC-1.01. Add the following language at the end of Paragraph 1.01.A.44:

Substantial Completion is further defined as (i) that degree of completion of the Project’s operating facilities or systems sufficient to provide Owner the full time, uninterrupted, and continuous beneficial operation of the Work; and (ii) required functional, performance and acceptance, or startup testing has been successfully demonstrated for components, devices, equipment, and instrumentation and control to the satisfaction of Engineer in accordance with the requirements of the Specifications.

SC-1.01. Add the following new paragraph immediately after Paragraph 1.01.A.51:

1.01.A.52. *Specialist*—The term Specialist refers to a person, partnership, firm, or corporation of established reputation (or if newly organized, whose personnel have previously established a reputation in the same field), which is regularly engaged in, and which maintains a regular force of workers skilled in either (as applicable) manufacturing or fabricating items required by the Contract Documents, or otherwise performing Work required by the Contract Documents. Where the Specifications require the installation by a Specialist, that term shall also be deemed to mean either the manufacturer of the item, a person, partnership, firm, or corporation licensed by the manufacturer, or a person, partnership, firm, or corporation who will perform the Work under the manufacturer’s direct supervision.

1.01.A.53. *Construction Coordinator*—The term Construction Coordinator, where and when used, refers to an authorized representative of Owner or Engineer who may be assigned to the Site or any part thereof to monitor and oversee construction activities by Contractor. Synonymous with Resident Project Representative (RPR) and Owner’s Representative.

1.01.A.54 *Owner's Representative*—The term Owner's Representative, where and when used, refers to an authorized representative of Owner who may be assigned to the Site or any part thereof to monitor and oversee construction activities by Contractor. Synonymous with Resident Project Representative (RPR) and Construction Coordinator.

SC-2.01. Delete the wording “and Owner” and “each” in lines 2 and 7 in Paragraph 2.01.B

SC-2.02. Amend first sentence in Paragraph 2.02.A to read as follows:

2.02.A. Upon award of Contract, Owner will furnish Contractor with complete conformed project documents (Drawings and Project Manual) in electronic format.

SC-2.03. Delete the third sentence of Paragraph 2.03.A in its entirety.

SC-3.01. Add the following new paragraph immediately after Paragraph 3.01.C:

3.01.D. Sections of Division 01, General Requirements, govern the execution of the Work of all sections of the Specifications.

SC-4.02. Add the following new paragraph(s) immediately after Paragraph 4.02.B:

4.02.C. The following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:

4.02.C.1. []

4.02.D. The following drawings of physical conditions relating to existing surface and subsurface structures at the Site (except Underground Facilities) are known to Owner:

4.02.D.1. Record drawings of the Main Water Purification Plant.

4.02.E. Copies of reports and drawings itemized in SC-4.02.C and SC-4.02.D that are not included with Bidding Documents may be examined at Owner's offices during regular business hours. These reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Contractor may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference. Contractor is not entitled to rely upon any other information and data known to or identified by Owner.

SC-4.06. Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following in their place:

4.06.A. No reports or drawings related to Hazardous Environmental Conditions are known to Owner.

SC-5.01. Delete in Paragraph 5.01.A first sentence the wording “and payment”

SC-5.02. Add the following new paragraph immediately after Paragraph 5.02.A:

SC-5.02.B. As an alternative to the requirements in paragraph A above, bonds may also be provided by a Louisiana Domiciled Insurance company with at least an A.M. Best's Financial Strength Rating of A minus (A-) rating, or the bond shall be written by an insurance company that is either domiciled in Louisiana or owned by Louisiana residents and is licensed to write surety bonds. In addition, any surety bond written for a public works project shall be written by a surety or insurance company that is currently licensed to do business in the State of Louisiana. Surety and insurance companies from which the bonds and insurance for this Project are purchased under the provisions of paragraph 5.02.A shall have an A.M. Best's Financial Strength Rating of A minus (A-) or better with a Financial Size Category of no less than VII, in addition to other requirements specified herein.

SC-5.04. Add the following language after Paragraph 5.04.B.1:

Policies will endorse the following parties or entities as additional insured:

5.04.B.1.a. Sewerage and Water Board of New Orleans, 625 St. Joseph Street, New Orleans, Louisiana 70165

5.04.B.1.b. The City of New Orleans, 1300 Perdido Street, New Orleans, Louisiana 70112

SC-5.04. Add the following new paragraph immediately following Paragraph 5.04.B:

5.04.C. Insurance: General Requirements

The Contractor will maintain, at his own cost and expense, and in good standing, such insurance as will protect the Sewerage and Water Board of New Orleans (the Board), the City of New Orleans (the City,) their officers, officials, employees, boards, commissions and volunteers, as well as the Contractor himself and any subcontractors from and against any and all claims for damages to public and private property and personal injury, including death, to employees or to the public, which may arise from any operations under this Contract or any of its subcontracts. The coverage will contain no special limitations on the scope of protection afforded to the Board and the City. Both the Board and the City will appear as "Additional Insured" on all Commercial General Liability and Business Automobile Liability. Any failure to comply with the reporting provisions of a policy will not affect coverage provided to the Board and the City, their officers, officials, employees, boards and commissions and volunteers. The Contractor's insurance will apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.

In general, insurance is to be placed with insurers with an A.M. Best's rating of A-:V, although this requirement may be reviewed and modified by the Risk Manager of the Sewerage and Water Board of New Orleans in the best interest of the Board. The Risk Manager may also consider performing such review upon written request from the Contractor. The Contractor shall furnish the Sewerage and Water of New Orleans with certificates of insurance affecting coverage required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates of insurance are to

be received and approved by the Risk Manager of the Sewerage and Water Board of New Orleans, 625 St. Joseph St., Rm. 119, New Orleans, LA 70165, before work commences. The Sewerage and Water Board of New Orleans reserves the right to require complete, certified copies of all insurance policies at any time, as proof that the insurance placed meets the requirements of this Contract.

If the insurance is written subject to a deductible clause, Contractor assumes responsibility for the amount of the deductible. In addition, the Contractor shall be required to furnish to the Risk Manager of the Sewerage and Water Board of New Orleans all copies of investigative reports with regard to any and all claims with the Contractor and his insurance carriers, relative to the contract, with the exception of claims filed with his Workers' Compensation Insurance. Such reports shall include dates, location and description of loss as well as amounts of settlements or judgments in order that annual aggregate limits maybe monitored by the Sewerage and Water Board of New Orleans for the Contactor's compliance with these Specifications.

The furnishing of insurance as provided above shall not relieve the Contractor of his responsibility for losses not covered by insurance. All policies shall be with insurance companies authorized to do business in Louisiana and shall remain in full force and effect until the final completion of the work and acceptance thereof by the authority of the Board.

5.04.C.1 Subrogation

The Contractor, Subcontractor(s), and their insurers shall agree to waive all the rights of subrogation against the Board, the City, and their officers, officials, employees, boards and commissions, and volunteers for losses arising from work performed by the Contractor for the Board and the City.

5.04.C.2. Insurance Cancellations and Stop-Work

Each insurance policy required by this contract shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, or reduced in coverage or in limits except after thirty (30) days prior written notice has been given to the Risk Manager, 625 St. Joseph St., Rm. 119, New Orleans, LA 70165, of the Sewerage & Water Board of New Orleans, via certified mail.

The Contractor and/or his insurer shall notify the Risk Manager of the Sewerage and Water Board of New Orleans at least thirty (30) days in advance of any insurance coverage to be canceled or of any insurance coverage that will expire. The Contractor shall simultaneously furnish the Board evidence of new coverage to be effective the same day and hour of the expired or canceled coverage.

In the event the Contractor and/or his insurer fails to submit this evidence of new coverage five (5) days prior to the cancellation date or expiration date of any policy or policies, the Sewerage and Water Board will have the right to obtain the required coverage to become effective on the date of

cancellation or expiration of said policies. The cost of such new policies shall be at the expense of the Contractor and any expenditure incurred by the Board for this coverage will be deducted from any balance due to the Contractor.

Should the Board be unable to secure new coverage to take the place of the expired or cancelled policy or policies, a “stop work” order will issued and all work on the contract shall cease on the same date and hour as the coverage ceases. Should the Contractor fail or refuse to secure coverage within five (5) days after the date of the “stop work” order, the Contractor shall be declared to be in default, and the contract between the parties shall be considered cancelled and of no force or effect between the parties reserving all the rights of the Board against the Contractor and his surety.

5.04.C.3. Insurance Policies, Endorsements, and Limits Required

The following are the types of insurance policies and the minimum limits of insurance coverage which shall be maintained by the Contractor during the entire term of the Contract:

5.04.C.3.a. WORKERS’ COMPENSATION AND EMPLOYERS LIABILITY INSURANCE

WORKERS’ COMPENSATION AND EMPLOYERS LIABILITY INSURANCE, as will protect Contractor from claims under Louisiana Workers’ Compensation Laws. The Workers’ Compensation section of the policy shall afford Statutory Limits and be in accordance with all Louisiana Workers’ Compensation Statutes. The Employers Liability limit shall not be less than \$3,000,000 each accident for bodily injury by accident and \$3,000,000 each employee/policy limit for bodily injury by disease. Whenever any Federal Longshoreman’s and Harbor Workers’ Act, and shall also include protection for injuries and/or death to Master and Members of the crews of vessels with statutory limits in accordance with the Jones Act.

5.04.C.3.b. COMMERCIAL GENERAL LIABILITY INSURANCE

COMMERCIAL GENERAL LIABILITY INSURANCE, with a limit of not less than \$2,000,000 each occurrence and not less than \$4,000,000 general annual aggregate, including Explosion, Collapse, and Underground Property Damage Hazards. The Products-Completed Operations aggregate limit shall not be less than \$2,000,000 each occurrence. The general aggregate limit shall apply separately to this project.

5.04.C.3.c. BUSINESS AUTOMOBILE LIABILITY INSURANCE

BUSINESS AUTOMOBILE LIABILITY INSURANCE, which shall cover liability arising out of accidents involving any auto (including Owned, Hired, and Non-Owned autos). The limit of liability shall not be less than \$1,000,000 each accident for all injuries, property damage, and/or death resulting from any one occurrence.

5.04.C.3.d. OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY INSURANCE

OWNER'S AND CONTRACTOR'S PROTECTIVE LIABILITY INSURANCE, as will protect the Contractor, the Sewerage and Water Board of New Orleans, and the City of New Orleans from and against any and all claims and lawsuits involving vicarious liability. The limits of liability shall be the same as specified in Paragraph (b) above, and shall include Explosion, Collapse and Underground Hazards.

5.04.C.3.e. PROFESSIONAL LIABILITY INSURANCE

PROFESSIONAL LIABILITY INSURANCE, as may be applicable to the particular profession or service to be provided, with a limit of not less than \$2,000,000 each Claim, with at least a \$4,000,000 annual aggregate, **without any restrictive "negligent act, negligent error, or negligent omission"** clause, and sufficient to protect the Contractor, the Board, and the City, for a five (5) year period from completion of this contract, against any and all claims which may arise from the Contractor's negligent performance of work described herein.

5.04.C.3.f. PROPERTY INSURANCE

PROPERTY INSURANCE, required on all work except sewer and water drainage pipelines, reinforced concrete canals, work completely underground, and similar work (however Contractor is not relieved of responsibility therefore) as follows:

5.04.C.3.f(1).

ALL RISKS BUILDERS RISK INSURANCE (covering Fire, Extended Coverage, Vandalism and Malicious Mischief) will be carried on a completed value or reporting form, for not less than 100 percent of the value of the work, including foundations.

Coverage will include all machinery and equipment to be installed, whether furnished by the Sewerage & Water Board or by Contractor, for not less than 100 percent of the installed value of the machinery and equipment. This insurance shall be written in the same Insurance Company carrying the Builder's Risk Insurance, shall include testing and startup, shall for partial utilization of the Work by Owner, and shall terminate only when installation has been accepted by the Sewerage and Water Board.

The All Risks Builder's Risk Policy shall include the names of the Sewerage & Water Board of New Orleans, and City of New Orleans, and will cover the interests of all sub-contractors without specifically naming them.

5.04.C.3.g. WORKERS' COMPENSATION AND UNEMPLOYMENT COVERAGE, ADDITIONAL CONDITIONS

5.04.C.3.g(1)

WORKERS' COMPENSATION: The Contractor expressly agrees and acknowledges that it is an "independent contractor" as defined in LSA-R.S.23:1021(6), and that its employees shall not be considered employees of the Board for workers' compensation benefits or coverage.

5.04.C.3.g(2)

EXCLUSIVE OF UNEMPLOYMENT COMPENSATION COVERAGE: Contractor herein expressly agrees and acknowledges that it is an "independent contractor" as defined in LSA-R.S.23:1472(E0), that neither the contractor nor any one employed by the Contractor shall be considered an employee of the Board for the purpose of employment of compensation coverage.

SC-5.06. Delete Paragraph 5.06.A in its entirety.

SC-5.06. Delete Paragraph 5.06.B in its entirety.

SC-5.06. Delete Paragraph 5.06 E in its entirety.

SC-5.07. Delete third sentence of Paragraph 5.07.A in its entirety and insert the following in its place:

Contractor and Contractor's insurers waive all rights against Owner and their respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such

policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused.

SC-5.07. Delete the last sentence of Paragraph 5.07.A in its entirety and insert the following in its place:

None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Contractor as trustee or otherwise payable under any policy so issued.

SC-5.07. Delete Paragraph 5.07.B in its entirety.

SC-5.07. Delete Paragraph 5.07.C in its entirety.

SC-5.08. Delete Paragraph 5.08.A in its entirety.

SC-5.08. Delete Paragraph 5.08.B in its entirety.

SC-6.02. Add the following new paragraph immediately after Paragraph 6.02.B:

6.02.C. Contractor shall reimburse Owner for Engineer's additional extraordinary costs for onsite personnel overtime work resulting from Contractor's overtime operations. Reimbursement shall be on the cost basis defined in Paragraph 14.02.D.4 of these Supplementary Conditions.

6.03. Add the following new paragraph immediately after Paragraph 6.03.C:

6.03.D. Domestic Manufacture:

6.03.D.1. All equipment to be furnished and components of all items specified herein, except bearings, shall be of domestic produce, manufacture and assembly, i.e., manufactured and assembled within the limits of the United States. Parts must be available from suppliers that manufacture components in the USA. The Board reserves the right to waive this requirement if, in the opinion of the Engineer, it appears to be in the best interests of the Board.

6.03.D.2. Sewerage and Water Board staff will determine the ability of the lowest bidder to design and build the equipment and machinery specified hereon. Along with other factors to be considered by Sewerage and Water Board staff will be the manufacturer's facilities, listings of similar equipment and installations, equipment reliability and longevity. Should the lowest bidder be found "non-responsive", then an informal hearing will be held to provide the lowest bidder the opportunity to refute the reasons for disqualification.

SC-6.05. Add the following language at the end of Paragraph 6.05.E:

Reimbursement rates for Engineer or their officers, directors, members, partners, employees, agents, and other consultants and subcontractors for evaluation of proposed substitutes shall be on the basis established in Paragraph 14.02.D.4 of these Supplementary Conditions.

SC-6.06. Add the following new paragraph immediately after Paragraph 6.06.G:

6.06.H. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor or Supplier.

SC-6.08. Add the following language:

6.08 Permits:

A. Before commencing work, the Contractor shall obtain, at his own expense, any required permits from the City of New Orleans. The Contractor shall also secure, at his own expense, any necessary inspection certificates required after the work is completed.

B. Evidence of compliance shall be furnished to the Board prior to starting work, in the case of permits, or within 10 calendar days after completion of that work requiring inspection certificates.

SC-6.11. Add the following language to the end of Paragraph 6.11.A.1:

Contractor shall not enter upon nor use property not under Owner control until appropriate easements have been executed and a copy is on file at the Site.

SC-6.13. Add the following new paragraphs immediately after 6.13.C:

6.13.C.1. The Owner's Safety Orientation Notice is applicable to the Work and is appended to these Supplementary Conditions.

6.13.C.2. The Owner's Drug-Free Workplace Policy is applicable to the Work and is appended to these Supplementary Conditions.

6.13.C.3. Owner's Safety Clearance Procedure

Definitions:

Operator: The Board employee who is onsite and in responsible charge of the operation of the plant, station, or other facility.

Out of Service: The electrical/mechanical disconnection of equipment which is to remain inoperable.

Power Dispatcher: The shift employee on duty at Central Control at the time safety clearance occurs.

Signee: The person who actually tags-out equipment for safety clearance.

Supervisor/Foreman: The Board employee who is the supervisor/foreman in responsible charge of the repair/maintenance of one or more work locations which requires safety clearance. This person may not necessarily be "onsite" at any particular location.

Tag-out: The physical tagging of equipment by an operator for the purpose of disabling equipment.

Lock-out: The physical locking of equipment by an operator for the purpose of disabling equipment.

General Provisions

1) All equipment repair/maintenance work which is scheduled and requires safety clearance should be presented to Central Control at the beginning of each work day by the supervisor/foreman/electrical engineer in charge of the repair/maintenance. Twenty four (24) hour advance notice of scheduled work for major outages is desirable; however, it is understood that due to the nature of the services provided by the Board this preferred notice may not be possible for every safety clearance.

2) In cases where two or more crafts are working on, or require safety clearance on the same equipment, the supervisor/foreman/electrical engineer for each craft must follow the appropriate safety clearance procedure and the equipment must be tagged out for each craft's signee. No equipment can be tested and/or restored to service until all tags have been removed in accordance with the tag removal procedure.

3) When an operator requests service for equipment at an unmanned facility, i.e. an unmanned sewer station or unmanned underpass station, from either Electrical Maintenance or Mechanical Maintenance, the appropriate maintenance department shall request the responsible operator to tag-out the equipment. When the appropriate maintenance department, in the course of servicing this equipment, requires restoration of power, the appropriate maintenance department shall contact the responsible operator directly (if operator is present) or by radio or telephone (if operator is absent) and request that the responsible operator grant his permission. If the power is to be restored for only a short duration, the appropriate maintenance department shall thereafter contact the operator for permission to either remove power or restore power, as often as needed. The operator shall log each request. If the request to restore power is for a short duration only, and the operator does not received contact from the appropriate maintenance personnel to remove power again, the operator shall make every attempt to contact the appropriate maintenance personnel in order to ensure that no accident has occurred.

4) If equipment must remain "Out of Service" upon completion of the onsite work, the signee must request their tag be replaced with an "Out of Service" tag in the name of their department: e.g. "Out of Service - Electrical Maintenance", in addition it must be physically locked-out by that department. However the "Out of Service" tag does not relinquish the responsibility of following the safety clearance procedure each day that piece of equipment is worked on.

5) Any equipment restored to service after being tagged "Out of Service" must be tested through operational test procedures. The signee must remain, when possible, on-site until testing is complete.

6) Any individual involved in these procedures may halt the procedure at any time if it is felt the safety of the personnel and/or equipment warrants said stoppage, or if conditions within the system change that may require postponement of the work.

7) In the event the responsible person, signee, leaves the job site without releasing the cleared equipment and is unreachable to release their tag-out the following procedure must be enacted before the signees name, tag-out, can be removed from the cleared equipment.

a) Cause must be established by the senior power dispatcher giving reason to remove the tag-out.

b) Senior power dispatcher must receive orders from the Chief of Operations or higher, in his absence, to remove said tag-out.

c) Concurrence given by a senior representative of the following:

- Department or company to which the signee works for.
- Senior representative of the plant, station, facility in which the tag-out occurs.
- If jobsite is in the field then, inspection by Electrical Engineering assuring work has halted for the day.

d) Once all areas have been satisfied then the senior power dispatcher may have the signees tag-out removed.

NOTE: The above and following procedures may be deviated from above at the discretion of the power dispatcher in cases of emergency.

SC-6.11. Add the following language to the end of Paragraph 6.11.D:

6.11.D. *Water and Other Utilities.* It is the responsibility of the Contractor to make all necessary arrangements for the provision of water, electricity, drainage, sanitary sewage disposal, gas, compressed air, and any other utility service required to prosecute the work of this contract. Water used by the Contractor at the job site will be furnished by the Board at no cost to the Contract, if conditions permit. Costs of all other services shall be borne by the Contractor.

6.11.E. *Hydrant Connections.* Connections to fire hydrants shall only be made with meters obtained from the Sewerage and Water Board Customer Service

Department, 504-585-2097, which shall record water usage for record purposes and which shall be returned to the Board as a condition of acceptance of the Contract. Application for the meter requires a \$1,500.00 deposit that is refundable upon return of the meter in undamaged and operable condition. The hydrant meter application and instructions are available on the Sewerage and Water Board website: https://www.swbno.org/custserv_information_docs.asp.

SC-6.17. Add the following new paragraphs immediately after Paragraph 6.17.E.1:

6.17.E.2. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than the number of submittals specified in Paragraph 14.02.D.4 of these Supplementary Conditions. Engineer will record time for reviewing subsequent submittals of Shop Drawings, Samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time in accordance with Paragraph 14.02.D.4 of these Supplementary Conditions.

6.17.E.3. In the event Contractor requests a substitution for a previously approved item, Contractor shall reimburse Owner for Engineer's charges for such time, unless the need for such substitution is beyond the control of Contractor.

SC-7.02. Delete Paragraphs 7.02.A and 7.02.B in their entirety and insert the following in their place:

7.02.A. Owner intends to contract with others for the performance of other work on the Project at the Site. The authority and responsibility of the Construction Coordinator for the various prime contractors, utility owners, and Owner (if present at the Site) shall be as follows:

7.02.A.1 Owner's Representative: Shall have authority and responsibility for coordination of the various contractors at the Site. Owner's Representative shall be named by the Owner if necessary.

7.02.A.2. Specific matters to be covered by such authority and responsibility: Prioritization of work activity should conflicts occur in work areas between contractors or between contractor and Owner's operations; approval of requests to curtail, interrupt, or otherwise disrupt Owner operation to allow Contractor work to be scheduled and/or occur; cancellation of scheduled Contractor activity in the event Owner requirements supersede prior plans; other issues that require approval or prioritization relative to interference with Owner operations or conflicts with other.

7.02.A.3. Extent of such authority and responsibility: Owner's Representative decision and direction to Contractor shall be final. Planning and discussions to coordinate options relative to operational disruptions requested by Contractor will be scheduled by Owner's Representative. Owner's Representative will review and respond to requests by the Contractor for outage, interconnection, operational disruption, contract activity prioritization, or the like, within 10 business days.

7.02.A.4. Limitations of such authority and responsibility: Owner's Representative may not modify the Contract or its terms and conditions.

7.02.B. Unless expressly assigned to the Construction Coordinator, all other authority and responsibility will remain vested with each prime contractor, utility owner, or Owner (if present at the Site).

SC-7.04. Add the following new paragraph immediately after Paragraph 7.03:

SC-7.04. *Claims Between Contractors*

7.04.A. Should Contractor cause damage to the work or property of any other contractor at the Site, or should any claim arising out of Contractor's performance of the Work at the Site be made by any other contractor against Contractor, Owner, Engineer, or the Construction Coordinator, if applicable, Contractor shall (without involving Owner, Engineer, or Construction Coordinator) either i) remedy the damage; ii) agree to compensate the other contractor for remedy of the damages; or iii) remedy the damages and attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law.

7.04.B. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner, Engineer, the Construction Coordinator (if applicable) and the officers, directors, members, partners, employees, agents, and other consultants and subcontractors of each and any of them from and against all Claims, costs, losses and damages (including, but not limited to, fees and charges of engineers, architects, attorneys, and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any other contractor against Owner, Engineer, their officers, directors, members, partners, employees, agents, and other consultants and subcontractors, or the Construction Coordinator (if applicable) to the extent said Claim is based on or arises out of Contractor's performance of the Work. Should another contractor cause damage to the Work or property of Contractor or should the performance of work by any other contractor at the Site give rise to any other Claim, Contractor shall not institute any action, legal or equitable, against Owner, Engineer, or the Construction Coordinator (if applicable) or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from Owner, Engineer, or the Construction Coordinator (if applicable) on account of any such damage or Claim.

7.04.C. If Contractor is delayed at any time in performing or furnishing the Work by any act or neglect of another contractor, and Owner and Contractor are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, Contractor may make a Claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be Contractor's exclusive remedy with respect to Owner, Engineer, and Construction Coordinator (if applicable) for any delay, disruption, interference, or hindrance caused by any other contractor. This paragraph does not prevent recovery from Owner, Engineer,

or Construction Coordinator (if applicable) for activities that are their respective responsibilities.

SC-8.02. Delete Paragraph 8.02.A in its entirety and replace with the following:

8.02.A. In case of termination of the employment of Engineer, Owner shall appoint an Engineer whose status in the Contract Documents shall be that of the former Engineer.

SC-8.06. Delete Paragraph 8.06.A in its entirety.

SC-8.11. Delete Paragraph 8.11.A in its entirety.

SC-9.03. Add the following new paragraphs immediately after Paragraph 9.03.A:

9.03.B. Resident Project Representative (RPR) will be furnished by Owner. The responsibilities, authority, and limitations of the RPR are limited to those of Engineer in accordance with Paragraph 9.09 and as set forth elsewhere in the Contract Documents and are further limited and described below.

9.03.C. Responsibilities and Authority:

9.03.C.1. Schedules: Review and monitor Progress Schedule, Schedule of Submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

9.03.C.2. Conferences and Meetings: Conduct or attend meetings with Contractor, such as preconstruction conferences, progress meetings, Work conferences and other Project related meetings.

9.03.C.3. Liaison: (i) Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative, and assist in understanding the intent of the Contract Documents; (ii) assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's onsite operations; (iii) assist in obtaining from Owner additional details or information when required for proper execution of the Work.

9.03.C.4. Interpretation of Contract Documents: Inform Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

9.03.C.5. Submittals: Receive submittals that are furnished at the Site by Contractor, and notify Engineer of availability for examination. Advise Engineer and Contractor of the commencement of any Work or arrival of materials and equipment at Site, when recognized, requiring a Shop Drawing or Sample if the submittal has not been approved by Engineer.

9.03.C.6. Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and provide recommendations to Engineer; transmit to Contractor, in writing decisions as issued by Engineer.

9.03.C.7. Review of Work and Rejection of Defective Work: (i) Conduct onsite observations of the Work in progress to assist Engineer in determining if the Work is, in general, proceeding in accordance with the Contract Documents; (ii) inform Engineer and Contractor whenever RPR believes that any Work is defective; (iii) advise Engineer whenever RPR believes that any Work will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged or does not meet the requirements of any inspection test, or approval required to be made; and advise Engineer of that part of the Work in progress that RPR believes should be corrected or rejected or uncovered for observation, or requires special testing, inspection, or approval.

9.03.C.8. Inspections, Tests, and System Startups: (i) Verify tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that Contractor maintains adequate records thereof; (ii) observe, record, and report to Engineer appropriate details relative to the test procedures and system startups; and (iii) accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to Engineer.

9.03.C.9. Records: (i) Maintain records for use in preparing Project documentation; (ii) keep a diary or log book recording pertinent Site conditions, activities, decisions and events; (iii) record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of Contractors, Subcontractors, and major Suppliers of materials and equipment.

9.03.C.10. Payment Requests: Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

9.03.C.12. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify materials and equipment certificates and operation and maintenance manuals and other data required by Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents been delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

9.03.C.13. Completion: (i) Participate in a Substantial Completion inspection; assist in determination of Substantial Completion and the preparation of lists of items to be completed or corrected; (ii) Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final list of items to be completed and deficiencies to be remedied; and (iii) observe whether items on final list have been completed or corrected, and make recommendations to Engineer concerning acceptance.

9.03.D. Limitations of Authority: Resident Project Representative will not:

9.03.D.1. have authority to authorize a deviation from Contract Documents or substitution of materials or equipment, unless authorized by Engineer; or

9.03.D.2, exceed the limitations of Engineer's authority as set forth in Contract Documents; or

9.03.D.3. undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's authorized representative; or

9.03.D.4. advise on, issue directions relative to, or assume control over an aspect of the means, methods, techniques, sequences, or procedures of Contractor's work unless such advice or directions are specifically required by the Contract Documents; or

9.03.D.5 advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor; or

9.03.D.6. participate in specialized field or laboratory tests or inspections conducted offsite by others, except as specifically authorized by Engineer; or

9.03.D.7. accept Shop Drawings or Samples from anyone other than Contractor; or

9.03.D.8. authorize Owner to occupy the Project in whole or in part.

SC-9.09. Add the following new paragraph immediately after Paragraph 9.09.E:

9.09.F. Contractors, Subcontractors, Suppliers, and others on the Project, or their sureties, shall maintain no direct action against Engineer, its officers, employees, affiliated corporations, and subcontractors, for any Claim arising out of, in connection with, or resulting from the engineering services performed. Only the Owner will be the beneficiary of any undertaking by Engineer.

SC-10.05. Delete Paragraphs 10.05.C through 10.05.E in their entirety and insert the following in their place and renumber Paragraph 10.05.F to read 10.05.D:

10.05.C. Engineer's Action and Executive Negotiation:

10.05.C.1. Engineer's Action:

10.05.C.1.a. Engineer will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. Engineer's written decision on such Claim, dispute or other matter will be final and binding upon Owner and Contractor, unless within 10 days after issuance of Engineer's written decision, either party appeals the decision by giving the other party and Engineer written notice of request for executive negotiation.

10.05.C.1.b. In the event Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

10.05.C.2. Executive Negotiation:

10.05.C.2.a. Within 10 days of the delivery of notice of appeal to Engineer's written decision regarding Claim, dispute or other matter, senior representatives of at least Owner and Contractor, having authority to settle the dispute, and Engineer shall meet at a mutually acceptable time and place, and thereafter as often as they reasonably deem necessary, to exchange relevant information and to attempt to resolve the dispute.

10.05.C.2.b. In the event a mutually acceptable decision cannot be reached through executive negotiation within 20 days of the appealing party's notice, or mutually agreeable longer period, or if the party receiving such notice will not meet within 10 days, Owner or Contractor may make a written declaration, delivered to the other party and Engineer, that the executive negotiation is deemed unsuccessful and may initiate further dispute resolution measures in accordance with Article 16.

10.05.C.2.c. If no such dispute resolution procedures have been set forth in Article 16, a written notice of intention to further appeal Engineer's written decision shall be delivered by Owner or Contractor to the other and to Engineer within 30 days after the date upon which the executive negotiation has been declared unsuccessful, or within 60 days after Substantial Completion, whichever is later (unless otherwise agreed in writing by Owner and Contractor), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

SC-11.01. Delete Paragraph 11.01.A.5.c in its entirety and insert the following in its place:

11.01.A.5.c. Construction Equipment and Machinery:

11.01.A.5.c(1) Rentals of construction equipment and machinery, and the parts thereof in accordance with rental

agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. Such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

11.01.A.5.c(2) Costs for equipment and machinery owned by Contractor will be paid at a rate shown for such equipment in the Rental Rate Blue Book published by Equipment Watch. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. Equipment or machinery with a value of less than \$1,000 will be considered small tools.

SC-11.01. Add the following language to the end of Paragraph 11.01.A.5.h:

Express and courier services must be approved prior to use.

SC-11.01. Add the following language to the end of Paragraph 11.01.A.5.i:

Any and all notarial fees for the execution of the contract shall be paid by the Contractor. Contractor shall also be responsible for payment of all recordation costs and photocopying.

SC-11.01. Delete Paragraph 11.01.C in its entirety.

SC-11.02. Delete Paragraph 11.02 in its entirety.

SC-12.01. Add the following language to the end of Paragraph 12.01.C.2.c:

except, the maximum total allowable cost to Owner shall be the Cost of the Work plus a maximum collective aggregate fee for Contractor and tiered Subcontractors of 20 percent;

SC-12.01. Add the following new paragraph immediately after Paragraph 12.01.C:

12.01.D. *Right to Audit:* The Contractor will submit to any SWBNO audit, inspection, and review and, at the SWBNO's request, will make available all documents relating or pertaining to this Contract maintained by or under the control of the Contractor, its employees, agents, assigns, successors and subcontractors, during normal business hours at the Contractor's office or place of

business in Louisiana. If no such location is available, the Contractor will make the documents available at a time and location that is convenient for the SWBNO.

Administrative and financial records shall be made and kept by the contractor in accordance with generally accepted accounting principles and practices. Records shall include, but are not limited to, accounting records, daily reports, change order requests, correspondences and subcontract files (hard copies as well as computer readable data, if it can be made available). Records must be retained and made available upon request for a minimum of five (5) years following completion or formal acceptance of the contracted project.

The Contractor will abide by all provisions of City Code § 2-1120, including but not limited to City Code § 2-1120(12), which requires the Contractor to provide the Office of Inspector General with documents and information as requested. Failure to comply with such requests shall constitute a material breach of the Contract. The Contractor agrees that it is subject to the jurisdiction of the Orleans Parish Civil District Court for purposes of challenging a subpoena.

SC-13.03. Delete Paragraph 13.03.B in its entirety and insert the following in its place:

13.03.B. Contractor shall employ an independent testing laboratory or testing agency and shall be responsible for arranging and shall pay for specified tests, inspections, and approvals required for Owner's and Engineer's acceptance of the Work at the Site except:

13.03.B.1. costs incurred in connection with tests or inspections pursuant to Paragraph 13.04 shall be paid for as provided in said paragraph; and

13.03.B.2. as otherwise specifically provided in the Contract Documents.

SC-13.03. Add the following language at the end of Paragraph 13.03.D:

Tests required by Contract Documents to be performed by Contractor that require test certificates be submitted to Owner or Engineer for acceptance shall be made by an independent testing laboratory or agency licensed or certified in accordance with Laws and Regulations and applicable state and local statutes. In the event state license or certification is not required, testing laboratories or agencies shall meet the following applicable requirements:

13.03.D.1. Basic requirements of ASTM E329, "Standard Specification for Agencies Engaged in Construction Inspection, Special Inspection, or Testing Materials used in Construction" as applicable.

13.03.D.2. Calibrate testing equipment at reasonable intervals by devices of accuracy, traceable to the National Institute of Standards and Technology or accepted values of natural physical constants.

SC-14.02. Delete Paragraph 14.02.C.1 in its entirety and insert the following in its place:

14.02.C.1. Forty-Five days after presentation of the Application for Payment to Owner with Owner's Representative's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due and when due will be paid by Owner to Contractor.

SC-14.02. Add the following new paragraph(s) immediately after Paragraph 14.02.D.3:

14.02.D.4. Items entitling Owner to retain set-offs from the amount recommended, including but not limited to:

14.02.D.4.a. Owner compensation to Engineer at an estimated average rate of \$150 per each extra personnel hour for labor plus expenses, if applicable, because of the following Contractor-caused events:

14.02.D.4.a.(2). return visits to manufacturing facilities to witness factory testing or retesting;

14.02.D.4.a.(3). Submittal review in excess of two reviews by Engineer for substantially the same submittal, in accordance with Paragraphs 6.17.E.2 and 6.17.E.3 of these Supplementary Conditions;

14.02.D.4.a.(4). evaluation of proposed substitutes and making changes to Contract Documents occasioned thereby, in accordance with Paragraph 6.05.E of these Supplementary Conditions;

14.02.D.4.a.(5). Overtime worked by Contractor necessitating Engineer, and their officers, directors, members, partners, employees, agents, and other consultants and subcontractors of each, Resident Project Representative or Resident Project Representative's Site staff, if any, to work extraordinary overtime in accordance with Paragraph 6.02.C. of these Supplementary Conditions.

14.02.D.4.b. Liability for liquidated damages incurred by Contractor as set forth in the Agreement.

SC-14.06. Add the following new paragraph immediately after Paragraph 14.06.A:

14.06.B. In accordance with Louisiana Statute 38:2248, punch lists will include cost estimate for each item of work identified by Engineer based on mobilization, labor, materials, and equipment costs of correcting each punch list item. Completed punch list items will be paid upon expiration of 45-day lien period.

SC-14.07. Delete Paragraph 14.07.C.1 in its entirety and insert the following in its place:

14.07.C.1. Forty-five days after presentation to Owner of the final Application for Payment and accompanying documentation, the amount

recommended by Engineer less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and, will be paid by Owner to Contractor.

The percentage of the value of the work done, as stated in Paragraph 14.02.A.3 of the General Conditions, will be withheld by the Board for a period of not less than forty-five (45) consecutive calendar days after the contract has been accepted by the Board, and such acceptance has been recorded in the Office of the Recorder of Mortgages for the Parish of Orleans. At the end of the forty-five (45) day period, the percentage withheld by the Board, will be paid to the Contractor, less any sums that may be legally deducted under any provisions of this contract, upon the Contractor furnishing the Board with a certificate from the Recorder of Mortgages for the Parish of Orleans, certifying that the contract is clear of all liens and privileges.

SC-14.10. Add the following new paragraph immediately Paragraph 14.09.2:

SC-14.10 *Maintenance Period*. The maintenance period under this contract, except as otherwise specifically provided for herein, shall be for a period of forty-five (45) consecutive calendar days beginning from the day after the contract has been accepted by the Board, and such acceptance has been recorded in the Office of the Recorder of Mortgages for the Parish of Orleans. During the maintenance period the Contractor will repair, at his own expense, all defects in the work that may arise, to the satisfaction of the Engineer. The Contractor shall restore all surfaces for which he is responsible under the specifications, whether unimproved, partially improved, or paved surfaces (See Section B of the General Specifications), and maintain them in good condition to the satisfaction of the Engineer. If the Contractor should fail or refuse to repair, at his own expense, any defects in structures or surfaces developing before the expiration of the aforesaid forty-five (45) days or to adjust satisfactorily any claims for damages to public or private property, the Board shall have the right to continue to hold the retainer and to make the necessary repairs and to satisfy the claims for damages, by such means as the Board shall elect, and to reimburse itself for the cost of these repairs and satisfied claims, out of the said retainer. Any surplus of this retainer will then be paid the Contractor, under the conditions above stated, any deficiency shall be made good by the surety.

SC-15.03.A. Delete the first sentence of Paragraph 15.03.A in its entirety and insert the following in its place:

Upon 7 days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract or any portion of the Contract.

SC-15.04. Delete Paragraph 15.04 in its entirety.

SC-16.01. Delete Paragraph 16.01 in its entirety and insert the following in its place:

SC-16.01 *Meet to Confer and Negotiate*

16.01.A. Engineer's action under Paragraph 10.05.C shall become final and binding 30 days after receipt of written notice of Engineer's action or decision unless, within that time period, Owner or Contractor gives to the other party written notice of intent to submit the Claim to a process of bilateral negotiations as set forth below.

16.01.B. Within 30 days of the delivery of such notice, Owner and Contractor shall meet and confer regarding the Claim. A good-faith effort to negotiate resolution shall be made by both parties.

16.01.C. If the negotiations contemplated by Paragraph SC-16.01.B are unsuccessful, management representatives of Owner and Contractor at least one tier above the individuals who met under SC-16.01.B shall meet, confer, and negotiate within 30 days of the closure of the unsuccessful negotiations.

16.01.D. If the Claim is not resolved by negotiation, Engineer's action under Paragraph 10.05.C shall become final and binding 30 days after termination of the negotiations unless, within that time period, Owner or Contractor:

16.01.D.1. gives to the other party written notice of intent to submit the Claim to a court of competent jurisdiction; or

16.01.D.2. agrees with the other party to submit the Claim to another dispute resolution process.

16.01.E. Notwithstanding any applicable statute of limitations, a party giving notice under Paragraph SC-16.01.D.1 shall commence an action on the Claim within 1 year of giving such notice. Failure to do so shall result in the Claim being time-barred and Engineer's action or denial shall become final and binding.

SC-17.05. Delete Paragraph 17.05 and insert the following in its place:

17.05. *Controlling Law and Jurisdiction*

- A. This Contract is to be governed by the laws of the State of Louisiana
- B. Contractor hereby consents and yields to the jurisdiction of the Civil District Court for the Parish of Orleans and does hereby formally waive any pleas of jurisdiction on account of residence elsewhere.

END OF SECTION

ATTACHMENT TO GENERAL SPECIFICATIONS

STATEMENT OF POLICY

It is the policy of the Sewerage and Water Board of New Orleans that all work places associated with its operation, maintenance, improvements, and expansion be kept drug free. In order to insure this, the Sewerage and Water Board has approved the following drug testing policy to be implemented on this contract.

NOTICE

The contractor shall notify all personnel to be employed on this contract that they must submit to drug testing upon the occurrence of any accident, injury, or unsafe and hazardous incident which involves them. Agreement to submit to such drug testing shall be required for the employment of all personnel under this contract.

PENALTIES

Any employee who refuses to agree to testing under this policy or who refuses to be drug tested after the occurrence of any accident, injury or unsafe and hazardous incident which involves them, or who fails to report any such accident, injury or incident within twenty-four (24) hours of its occurrence, shall be deemed incompetent under Paragraph 47 of the General Specifications. Any employee found to have a positive test result after his conformational testing shall be deemed incompetent under Paragraph 47 of the General Specifications. Any employee deemed incompetent under these provisions shall be removed by the contractor from work under this contract and any other current Board contract.

TESTING PROCEDURE

The contractor shall while performing this contract, require any of its employees who are involved in an accident, injury or unsafe and hazardous incident while in the course and scope of their employment, whether vehicular or non-vehicular in nature, to be tested for blood alcohol or drug levels through a laboratory approved by the National Institute for Drug Abuse. Said employee shall provide a testing sample as soon as possible after such accident, injury or incident, but no longer than twenty-four (24) hours from the time of the occurrence. The contractor shall provide copies of the results of the initial testing on the samples involved to the Risk Manager of the Sewerage and Water Board of New Orleans as soon as such results are known. If the initial testing reveals a positive result, the contractor shall forward the remainder of the original testing sample to a second, conformational testing. The Sewerage and Water Board of New Orleans shall consider any result to be positive if it indicates any level which exceeds the levels set forth as follows:

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CUT-OFF LEVELS INDICATING POSITIVE TEST RESULTS

The following initial cut-off levels shall be used when screening specimens to determine whether negative or positive:

	<u>Initial Test Level (ng/ml)</u>
Marijuana metabolites	50
Cocaine metabolites	300
Opiate metabolites	300
Phencyclidine (PCP, etc.)	25
Amphetamines	1000
Alcohol	.05% by weight based on grams of alcohol per 100cc of blood
LSD	150
Barbiturates	300
Benzodiazepines	300

Quantitative GC/MS confirmation procedures at the following cut-off values shall be used for the following drugs:

	<u>Confirmatory Test Level (ng/ml)</u>
Marijuana metabolites*	10
Cocaine metabolites**	150
Opiates (Morphine, Codeine)	150
Phencyclidine (PCP, etc.)	25
Amphetamines (amphetamine, Methamphetamine)	300
LSD	150
Barbiturates	300
Benzodiazepines	300
* Delta-9-Tetrahydrocannabinol - 9-Carboxylic Acid	
** Benzoyllecgonine	

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The contractor shall choose the laboratory to be used for drug testing, and shall identify such laboratory to the Risk Manager of the Sewerage and Water Board prior to receiving approval to start work. All laboratories shall be approved by the National Institute for Drug Abuse.

The contractor shall notify the Board's Risk Manager immediately of the results of any conformational testing.

The Contractor's Senior Project Superintendent working in consultation and conjunction with the Board's Risk Manager and the Board's Engineer, shall determine whether an accident, injury or unsafe or hazardous incident occurred. The Safety Department of the Sewerage and Water Board reserves the right to investigate any such matter and make a complete report to the Executive Director of the Sewerage and Water Board whose decision shall be final.

The Sewerage and Water Board shall not be liable for any cause of action of any employee of the contractor brought against the contractor as a result of this policy. The Sewerage and Water Board shall not be liable for the contractor's failure to stipulate adherence to the terms and conditions of this drug testing policy as a condition of employment of any employee on this contract. The Board shall not release the contractor from his responsibilities under the policy unless failure to adhere to the conditions of this policy shall be a direct result of any action taken by the Board.

These requirements shall be acknowledged by signature of the contractor's authorized representative in the space provided in the "Form of Proposal".

Attachment 2 - Safety Orientation Notice

Welcome

We welcome you to the S&WB and request your assistance in maintaining our Safety Standards. For the safety of yourself and everyone working at the S&WB, you are asked to observe the following safety precautions. When this notice has been read thoroughly, a senior representative of your company is required to distribute this information to all employees who will be affected. You may call the Board's Risk Management Department at (504) 585-2382 if you have any questions.

Basic

1. Smoking will be allowed in designated areas only.
2. Horseplay, practical joking and fighting are positively prohibited.
3. The use or possession of illegal drugs or intoxicating beverages is strictly prohibited on all S&WB property.
4. Housekeeping is a must. We will keep our area safe and free from litter and expect you do to the same.
5. Handrails must always be used when going up and down ladders or stairs.
6. When working in confined spaces, the contractor must be in full compliance with Occupational Safety and Health Administration (OSHA) Standard # 29CFR 1910.146 at all times. Atmospheric conditions such as adequate ventilation, the presence of oxygen and the absence of explosive gases must be assured before working in voids, tanks, or other enclosed spaces.
7. Radios must be turned off.

Emergency

8. The S&WB Emergency Response Plan is a document, which provides specific notification instructions to be followed in case of hazardous material spills. The Board's Environmental Affairs Office phone number is 942-3855 during normal business hours 7:30 a.m. to 4:00 p.m.
9. The Board's 24-hour emergency lines are (504) 529-2837 and 865-0575 (Central Control Dispatcher, Carrollton Plant.)
10. Since Board contracts are performed under various circumstances at various locations, prior to beginning any work, the contractor should consult with the Board employee who is responsible for monitoring the contract in order to establish the most effective procedures for handling emergencies.

Transportation

Warning signals and lights shall be used as follows:

11. Rotating beacons shall be used if your vehicle is so equipped.
12. Tail lights / emergency flashers shall be used.
13. Orange reflector type safety cones shall be placed to give other motorists warning.
14. If vehicle is moving, backing, or parking, proper traffic control shall be exercised.

Protective Clothing and Equipment

15. All personnel who are exposed to eye hazards will wear safety glasses. Hard hats will be worn at all times while an employee is in the immediate vicinity of overhead hazards or while operating heavy equipment without a Rollover Protection Device.
16. Protective clothing and equipment such as rubber aprons and gloves, eye and face protection, approved respirators or dust masks will be worn when handling all harmful chemicals.

Reporting

17. Defective equipment, machinery, hazardous conditions, or unsafe work practices or conditions shall be reported immediately to your Supervisor / Foreman who will then contact proper S&WB personnel for corrections.
18. All injuries will be reported to the Risk Manager, (504) 585-2422, or to the Safety Unit, (504) 585-2522, regardless of how minor an injury may seem.
19. S&WB employees may hold safety meetings to discuss and promote safe working conditions and accident prevention. You may be asked to attend.

Work Smart

20. Stay alert at all times, know what is going on around you. Know the safe operating procedures concerned with your assigned duties. When your duties may influence the safety of Board employees, notify the employees and their supervisors first.
21. Vendor / Contractors shall at all times demonstrate strict compliance with all Federal, State and Local regulations regarding safety, including but not limited to, all relevant Department of Environmental Quality (DEQ), Department of Transportation (DOT), Environmental Protection Agency (EPA), and Occupational Safety and Health Act (OSHA) regulations.
22. The Vendor / Contractor will at the request of the Risk Manager and/ or Safety Manager remove any of his employees found to be creating or contributing to unsafe conditions.

23. The following items are not allowed on any S&WB Facility or jobsite:

- Firearms and Ammunition
- Alcohol and illegal drugs

ATTACHMENT 3

Sewerage and Water Board of New Orleans Electrical Safety Clearance Procedure

Definitions:

Operator: The Board employee who is on-site and in responsible charge of the operation of the plant, station, or other facility.

Out of Service: The electrical/mechanical disconnection of equipment which is to remain inoperable.

Power Dispatcher: The shift employee on duty at Central Control at the time safety clearance occurs.

Signee: The person who actually tags-out equipment for safety clearance.

Supervisor/Foreman: The Board employee who is the supervisor/foreman in responsible charge of the repair/maintenance of one or more work locations which requires safety clearance. This person may not necessarily be "on-site" at any particular location.

Tag-out: The physical tagging of equipment by an operator for the purpose of disabling equipment.

Lock-out: The physical locking of equipment by an operator for the purpose of disabling equipment.

General Provisions

- 1) All equipment repair/maintenance work which is scheduled and requires safety clearance should be presented to Central Control at the beginning of each work day by the supervisor/foreman/electrical engineer in charge of the repair/maintenance. Twenty four (24) hour advance notice of scheduled work for major outages is desirable; however, it is understood that due to the nature of the services provided by the Board this preferred notice may not be possible for every safety clearance.
- 2) In cases where two (2) or more crafts are working on, or require safety clearance on the same equipment, the supervisor/foreman/electrical engineer for each craft must follow the appropriate safety clearance procedure and the equipment must be tagged out for each craft's signee. No equipment can be tested and/or restored to service until all tags have been removed in accordance with the tag removal procedure.

- 3) When an operator requests service for equipment at an unmanned facility, i.e. an unmanned sewer station or unmanned underpass station, from either Electrical Maintenance or Mechanical Maintenance, the appropriate maintenance department shall request the responsible operator to tag-out the equipment. When the appropriate maintenance department, in the course of servicing this equipment, requires restoration of power, the appropriate maintenance department shall contact the responsible operator directly (if operator is present) or by radio or telephone (if operator is absent) and request that the responsible operator grant his permission. If the power is to be restored for only a short duration, the appropriate maintenance department shall thereafter contact the operator for permission to either remove power or restore power, as often as needed. The operator shall log each request. If the request to restore power is for a short duration only, and the operator does not received contact from the appropriate maintenance personnel to remove power again, the operator shall make every attempt to contact the appropriate maintenance personnel in order to ensure that no accident has occurred.
- 4) If equipment must remain "Out of Service" upon completion of the on-site work, the signee must request their tag be replaced with an "Out of Service" tag in the name of their department: e.g. "Out of Service - Electrical Maintenance", in addition it must be physically locked-out by that department. However the "Out of Service" tag does not relinquish the responsibility of following the safety clearance procedure each day that piece of equipment is worked on.
- 5) Any equipment restored to service after being tagged "Out of Service" must be tested through operational test procedures. The signee must remain, when possible, on-site until testing is complete.
- 6) Any individual involved in these procedures may halt the procedure at any time if it is felt the safety of the personnel and/or equipment warrants said stoppage, or if conditions within the system change that may require postponement of the work.
- 7) In the event the responsible person, signee, leaves the job site without releasing the cleared equipment and is unreachable to release their tag-out the following procedure must be enacted before the signees name, tag-out, can be removed from the cleared equipment.
 - 1) Cause must be established by the senior power dispatcher giving reason to remove the tag-out.

- 2) Senior power dispatcher must receive orders from the Chief of Operations or higher, in his absence, to remove said tag-out.
- 3) Concurrence given by a senior representative of the following:
 - a) Department or company to which the signee works for.
 - b) Senior representative of the plant, station, facility in which the tag-out occurs.
 - c) If job site is in the field then, inspection by Electrical Engineering assuring work has halted for the day.

Once all areas have been satisfied then the senior power dispatcher may have the signees tag-out removed.

NOTE: The above and following procedures may be deviated from above at the discretion of the power dispatcher in cases of emergency.

**Safety Clearance Procedure
25 Hertz System
"Non-Sewerage and Water Board Personnel"**

- 1) The Company or responsible person representing that company shall first contact Electrical Engineering in regards to their outage request. Electrical Engineering will dispatch personnel to the job site and identify all equipment within close proximity to the work which should be cleared for safety.

NOTE: After normal working hours clearance request will be routed through Central Control who will notify the proper personnel in Electrical Engineering. It will be the responsibility of Electrical Engineering to identify said feeders.

- 2) Electrical Engineering will then contact the power dispatcher informing them of; the company, the person supervising the work, the work to be performed, and supplies the power dispatcher with a clearance list.
- 3) Electrical Engineering will then direct the company's signee to personally appear at any Board facility involved in the clearance prior to the request. Upon arrival at a Board facility the signee will contact the power dispatcher making their clearance request.
- 4) The power dispatcher reviews their one line schematics for any additional equipment they feel is required for safety.
- 5) If the request involved equipment within a station or facility the power dispatcher then notifies the operator of the work to be performed and supplies the operator with a list of the clearance request.
- 6) The operator makes a visual inspection of the work site and adds to the clearance list any additional equipment which they note as being involved in or in close proximity to the work site. A finalized clearance list is then agreed upon by all parties involved.
- 7) The power dispatcher, with assistance from other operating personnel as required and through normal operating procedures, will disconnect from all power sources all equipment on the finalized list.
- 8) After the completion of step seven (7), with the company's signee at a Board facility, the company's signee will be notified of the disconnection of the equipment by the power dispatcher. The company's signee will request the operator at each location to place a tag-out with the company name/signee's name on each piece of equipment on the clearance list.

- 9) After receiving a tag-out report from the operators, the power dispatcher will then verify the tag-out reports against their finalized clearance list. If satisfactory, the power dispatcher will verify with the company's signee what was tagged-out. The company's signee will then be allowed to begin work.
- 10) At this point prior to the beginning of any actual work it is the responsibility of the person or persons performing the work to check the equipment with a voltage tester. If all voltage testing is satisfactory, "no voltage", work may begin.

NOTE: Due to the nature of some work it may be necessary that voltage be present.

- 11) Upon completion of the on-site work, the company's signee must report to a Board facility, involved in the clearance. At this point the company's signee will request the operator at each location to remove their tag-out with the company name/signee name off each piece of equipment. The operator and power dispatcher may restore the equipment to its connected position and test same following standard operating procedures.
- 12) If the equipment is to remain out of service, the company's signee must request their tag be removed and an appropriate "Out of Service" tag in the name of their company be placed on the equipment. The equipment will also be physically locked-out by the operator at each location, which would prevent the reconnection and testing process.
- 13) When "Out of Service" equipment is to be returned back into service, only an employee of the company which originally placed the "Out of Service" tag may request it be removed, returning said equipment into service.

**Safety Clearance Procedure
60 Hertz System
"Non Sewerage and Water Board Personnel"**

- 1) The company or responsible person representing that company shall first contact Electrical Engineering in regards to their outage request. Electrical Engineering will dispatch personnel to the job site and identify all equipment within close proximity to the work which should be cleared for safety.
- 2) Electrical Engineering will then contact the power dispatcher, if the work to be performed is outside of a station. The operator, if the work to be performed is inside the station. They will inform them of; the company, the person supervising the work, the work to be performed, and supplies the power dispatcher or operator with a clearance list.
- 3) The Electrical Engineering will then direct the company's signee to personally appear at any Board facility involved in the clearance prior to the request. Upon arrival at a Board facility the signee will conduct their business with the operator or power dispatcher based on the procedures listed below.
- 4) The power dispatcher reviews their one line schematics or the operator make a visual inspection of the work site and adds to the clearance list any additional equipment which they note as being involved in or in close proximity to the work site. A finalized clearance list is then agreed upon by all parties involved.
- 5) **If handled through the power dispatcher:**
The power dispatcher, with assistance from other operating personnel as required and through normal operating procedures, will disconnect from all power sources all equipment on the finalized clearance list.

If handled through the operator:

The operator will contact the power dispatcher informing them of the work to be performed along with a clearance list request. The power dispatcher reviews their one line schematics for any additional equipment they feel is required for safety. A finalized clearance list is then agreed upon by all parties involved. The operator will then through normal operating procedures disconnect from all power sources all equipment on the finalized clearance list.

6) After the completion of step five (5), with the company's signee at a Board facility, the company's signee will be notified of the disconnection of equipment by the operator or power dispatcher. The company's signee will then request the operator at each location to place a tag-out with the company's name/signee name on each piece of equipment on the clearance list.

7) If handled through the operator:

The operator will then contact the power dispatcher providing them with a tag-out report for logging purposes.

8) At this point prior to the beginning of any actual work it is the responsibility of the person or persons performing the work to check the equipment with a voltage tester. If all voltage testing is satisfactory, "no voltage", work may begin.

NOTE: Due to the nature of some work it may be necessary that voltage be present.

9) Upon completion of the on-site work, the company's signee must report to a Board facility involved in the clearance. At this point the company's signee will request the operator at each location to remove their tag-out with the company's name/signee name off each piece of equipment. The operator and/or power dispatcher may restore the equipment to its connected position and test same following standard operating procedures.

10) If the equipment is to remain out of service the company's signee must request their tag be removed and an appropriate "Out of Service" tag in the name of their company be placed on the equipment. The equipment will also be physically locked-out by the operator at each location, which would prevent the reconnecting and testing process.

11) When "Out of Service" equipment is to be returned back into service, only an employee of the company which originally placed the "Out of Service" tag may request it be removed, returning said equipment into service.

ATTACHMENT 4 - SEWERAGE and WATER BOARD of NEW ORLEANS

Storm Water Pollution Prevention Plan (SWPPP) And Storm Water Best Management Practices (BMP) Requirements

GENERAL

1. The contractor shall prepare and maintain a Storm Water Pollution Prevention Plan (SWPPP), which describes in specific details the Contractor's program to prevent contamination of the storm water collection system for this project. A suggested SWPPP Templates and Sample Inspection Report, as well as other valuable information can be found at EPA's website <http://cfpub.epa.gov/npdes/stormwater/swppp.cfm>.
2. Contractor shall implement, maintain, inspect and remove all erosion and sediment controls identified in the SWPPP. The program shall address both common construction activities and extraordinary events.
3. Contractor shall include Water Pollution Control Drawings (WPCD) in the SWPPP to illustrate the locations, applications and deployment of Best Management Practices (BMPs) identified in the SWPPP. The WPCDs shall be included as an attachment to the SWPPP.
4. Best Management Practices (BMPs): A Best Management Practice is a technique, process, activity, or structure used to reduce the pollutant content of a storm water or non-storm water discharge. BMPs may include simple, non-structural methods such as good housekeeping, staff training, and preventive maintenance. Additionally, BMPs may include structural modifications such as the installation of berms, canopies or treatment control
5. The Contractor shall comply with laws, rules, and regulations of the State of Louisiana and agencies of the United States Government prohibiting the pollution of lakes, wetlands, streams, or river waters from the dumping of contaminants, refuse, rubbish or debris.
6. The contractor shall submit six (6) copies of the SWPPP, a minimum of 10 working days prior to beginning construction, to the Engineer. **Construction shall not begin until the SWPPP is approved.** Contractor shall update the SWPPP as necessary during the work to prevent contamination of the storm water collection system.
7. Before start of work, Contractor shall train all employees and subcontractors on the approved SWPPP and related WPCD and provide the Sewerage and Water Board with written documentation of said training.
8. Suggested BMPs can be obtained from Ella Barbe, LA DEQ Small Business Assistance Program, 201 Evans Rd. Bldg. 4, Suite 420 Harahan LA. Phone 504-736-7739, e-mail: ella.barbe@la.gov

CONSTRUCTION

The contractor shall keep a copy of the SWPPP on the job site. The contractor shall provide continuously at the jobsite all the tools, equipment, and materials necessary to implement the SWPPP at all times from project initiation through completion, including any punchlist or warranty work on the project. At a minimum the following requirements shall be met as applicable, to the maximum extent practicable, at construction sites:

1. **Storm Drain System Protection:** At the first order of work, the Contractor shall protect the existing storm drain system from entrance of construction debris and pollutants. Such protection shall include implementing the BMPs as outlined in the SWPPP. Protection shall prohibit the discharge of untreated runoff from temporary or permanent street maintenance/landscape maintenance material and waste storage areas from entering the storm drain system. Sediment that is generated on the project site shall be retained using structural drainage controls. In addition, the protection system shall have a minimum of three features: 1) a particulate filter of geosynthetic material securely fastened in place such that it cannot be bypassed without significant physical damage; 2) a prefilter for the particulate filter; and 3) on-hand materials to close off the inlet or opening in the case of a significant pollution spill. Contractor shall monitor and maintain all storm drain inlet protection devices during rain events to prevent flooding.
2. **Material Management & Storage:** No construction-related materials, wastes, spills or residues shall be discharged from the project site to streets, drainage facilities or adjacent properties by wind or runoff. All materials and/or equipment storage areas where liquid construction materials are placed shall be protected by a physical barrier capable of containing the entire volume of stored liquid materials. During active construction activities, portions of the barrier may be removed for access. However, the barrier materials must be readily accessible for replacement by onsite construction personnel. The barrier must be in place at all times during the absence of Contractor personnel at the storage site. Building materials shall be placed on pallets and covered in event of rain. Do not store materials in the street or gutter area.
3. **Equipment & Vehicle Maintenance:** Non-storm water runoff from equipment and vehicle washing and any other activity shall be contained at the project site and shall not be allowed to discharge from the project site to streets, drainage facilities or adjacent properties by wind or runoff. The Contractor shall inspect vehicles and equipment on each day of use. Leaks shall be repaired off-site if possible. If necessary to repair on site, the runoff must be contained or the problem vehicle or equipment shall be removed from the project site until repaired. If necessary, drip pans shall be placed under the vehicles or equipment while not in use to catch and/or contain drips and leaks.
4. **BMP Inspection:** The contractor shall inspect all pollution control BMPs regularly. The Contractor shall also repair/replace any damaged or clogged element on a daily basis. During periods of precipitation where any runoff occurs, the system shall be checked twice a day, seven days a week, whether or not any work has been performed. The daily checks shall be between 6 a.m. and 9 a.m., and 4 p.m. to 8 p.m. The contractor shall keep a monitoring inspection log of each inspection.
5. **Spill Prevention & Cleanup Plan:** Contractor shall have a spill prevention plan and spill cleanup materials readily available and addressed in the SWPPP. Spills shall be cleaned

up immediately using dry methods if possible. Spill cleanup material shall be properly disposed off site. Contractor shall keep a record of any spills in the inspection log. In addition, at the end of the project, the Contractor must certify that all contaminated materials have been properly disposed in accordance with the SWPPP.

6. **Asphalt & Concrete Activities:** Asphalt and concrete activities shall be scheduled for dry weather. Contractor shall prohibit saw cutting during a storm event of 0.25 inches or greater. Store bags of cement away from gutters and storm drains, sealed and covered, protected from rainfall runoff and wind. Place tarp under cement mixer before operating to catch spills. Never dispose of cement washout or concrete dust onto driveways, streets, gutters or storm drains.
7. **Sidewalk Washing:** The following methods should be utilized to prevent discharge of sidewalk cleaning wastewater into the storm drain system:
 - a. Sweep and pick up all areas to be cleaned before using water.
 - b. Manually scrape gum from sidewalks and other surfaces.
 - c. Must use high pressure and low volume of water with no additives and at an average usage of 0.006 gallons per square foot of surface area to be rinsed.
 - d. Use a wet/dry vacuum to collect wash water for disposal. Large volumes of wash water may require the use of a small sump pump to remove wash water from the job site.
 - e. One or more of the following methods are recommended to prevent pollutants from entering the storm drain system:
 - Sandbags can be used to create a barrier around storm drains. *
 - Rubber mats or plugs can be used to seal drain openings. *
 - Temporary berms or containment pads help keep water on site. *
 - Use berms of sandbags to direct wash water to landscaping. *
 - Use large squeegees to accumulate sheet flow for collection.* Remember to remove plugs, berms, and sandbags or you may be liable for possible flooding.
 - f. Wash water that may contain hazardous waste such as oil-saturated absorbents, water with lead or other heavy metals from oxidized paint, and solvent cleaners requires special treatment and must be disposed of through a hazardous waste facility.
8. **Employee BMP Training:** Contractor shall train employees and subcontractors on BMP implementation, general good housekeeping, and proper spill containment and cleanup. Before start of work, Contractor shall provide the Board with written documentation of training and keep all documentation in the SWPCP.
9. **Inspection:** Contractor shall inspect and repair or replace, as needed, all job site BMPs a minimum of:
 - Biweekly
 - Before, during and after a major rain event.Contractor shall document the inspections in the SWPPP.
10. **Dewatering:** Avoid dewatering discharges where possible by using the water for dust control, infiltration, etc..

**ATTACHMENT 5
WAGE RATES**

The contractor shall abide by the Davis-Bacon Act Wage Decision. The Wage Decisions applicable to SWB Construction may be Heavy Industrial (LA20210008 - 9/23/2021) and Building (LA20210041 - 9/2/21).

Please use the applicable wage rates at <http://www.wdol.gov/dba.aspx>

Section 3 Contract Clause

The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that the employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low - and very low-income persons in the project area.

The parties to this contract agree to comply with HUD's regulations in 24 CFR part 75, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 75 regulations.

The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference; job titles subject to hire; availability of apprenticeship and training positions; the qualifications for each; the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 75 and agrees to take appropriate action, as provided in an applicable provision of the subcontract in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 75. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 75.

The contractor will certify that any vacant employment positions, including training positions, that are filled: 1) after the contractor is selected but before the contract is executed; and 2) with persons other than those to whom the regulations of 24 CFR part 75 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 75.

Noncompliance with HUD's regulations in 24 CFR part 75 may result in sanctions, termination of this contract for default and debarment or suspension from future HUD assisted contracts.

SECTION 3 HOUSING AND URBAN DEVELOPMENT REQUIREMENTS

The contractor shall abide by the Housing and Urban Development (HUD) requirements in accordance with 24 CFR § 75. For this contract, bidders are required to submit a Section 3 Plan (Attachment 6) as part of their post-bid documents submission. This document contains information about Section 3 requirements, and serves as the bidder's or respondent's commitment and plan to meet the Section 3 benchmarks. After the lowest responsive bidder or successful respondent has been identified, all identified subcontractors must also complete and submit a Section 3 plan. Bidders or respondents that fail to submit a Section 3 Plan may be deemed non-responsive and ineligible for contract award.

This contract shall also require the successful bidder and identified subcontractors to submit periodic and project end reports using the Section 3 Compliance Report form (Attachment 7) as well as supporting documentation of any qualitative efforts and achievements. Unless otherwise provided, reporting must be carried out quarterly to SWBNO in a manner consistent with the reporting requirements for the applicable HUD program [24 CFR 75.25(c)].

This subsection outlines the requirements and procedures to be followed to ensure the objectives of Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u)—colloquially “Section 3”—are met. The purpose of Section 3 is to ensure that economic opportunities, most importantly employment, generated by certain HUD financial assistance shall be directed to Low- and Very Low-Income Persons—particularly those who are recipients of government assistance for housing or residents of the community in which the Federal assistance is spent.

Section 3 is not an entitlement program; therefore, employment and contracts are not guaranteed. Low- and Very-Low-Income Persons and Section 3 Business Concerns must be able to demonstrate that they have the ability or capacity to perform the specific job or successfully complete the contract that they are seeking.

This subsection addresses the requirements outlined in 24 CFR Part 75 (the “New Rule”), and grantees or subrecipients seeking any further guidance, clarification, or context regarding any topics covered in this subsection should refer to that specific regulation. Any contracts or agreements executed, or projects for which assistance or funds were committed, prior to the New Rule Effective Date of November 30, 2020 are still required to adhere to all requirements outlined in 24 CFR Part 135 (the “Old Rule”).

1. **Applicability of Section 3**

A “**Section 3 Project**” is any project that involves housing rehabilitation, housing construction, and other public construction projects assisted under HUD programs that provide housing and community development financial assistance when the total amount of assistance to the project exceeds a threshold of **\$200,000**. (The threshold is \$100,000 where the assistance is from the Lead Hazard Control and Healthy Homes Programs.) The “project” is the site or sites together with any building(s) and improvements located on the site(s) that are under common ownership, management, and financing; and applicability is determined at the **project level**.

Additional considerations for public housing financial assistance regarding Section 3 applicability are provided in 24 CFR 75.3. Section 3 requirements do not apply to (1) Materials Supply Contracts [24 CFR 75.3(b)]; or (2) Indian and Tribal Preferences [24 CFR 75.3(c)].

2. Overall Requirements

To the greatest extent feasible, and consistent with existing Federal, state, and local laws and regulations, recipients must ensure that, within the metropolitan area (or nonmetropolitan county/parish) in which the project is located: (1) *employment and training opportunities* arising in connection with Section 3 Projects are provided to Section 3 Workers; and (2) *contracts for work* awarded in connection with Section 3 Projects are provided to business concerns that provide economic opportunities to Section 3 Workers.

To help grantees comply with the Section 3 requirements and achieve Section 3 goals, a sample **Section 3 Plan** is included. This plan is intended to be a tool to guide grantees through all of the Section 3 requirements outlined in this section. While 24 CFR Part 75 does not specifically require grantees to have Section 3 plans or policies in place, HUD views having them as a best practice that will aid recipients in complying with Section 3 requirements and achieving Section 3 goals. To this end, grantees are encouraged to utilize the sample plan as a template; and adapt it to fit the resources within their individual communities and to meet the respective needs of their specific programs and activities. Once their respective plan has been fully developed, it is recommended that grantees formally adopt the resulting Section 3 plan and maintain a signed copy within the project files.

2.1 Requirements for Employment and Training

Where feasible, priority for *opportunities and training* should be given in the following order to:

1. Section 3 Workers residing within the Service Area or Neighborhood of the Project; and Employed by a Section 3 Business Concern; and
2. Participants in YouthBuild programs.

2.2 Requirements for Contracting

Where feasible, priority for *contracting opportunities* should be given in the following order to:

1. Section 3 Business Concerns that provide economic opportunities to Section 3 Workers residing within the Service Area or Neighborhood of the Project; and
2. YouthBuild programs.

3. Labor Hours and Worker Categorizations

One of the principal features that was rolled out as part of the Section 3 New Rule was that tracking and reporting would be now focused upon labor hours rather than new hires. This change was designed to prioritize local employment and promote employee retention. As a result, recipients are expected to track and report upon the total number of **labor hours worked** by: (1) Section 3 Workers; (2) Targeted Section 3 Workers; and (3) All workers overall.

A “**Section 3 Worker**” is an individual that currently fits (or when hired in the past five years fits) at least *one* of the following criteria: (1) Low- or Very Low-Income as established by HUD’s income limits; (2) Employed by a Section 3 Business Concern; or (3) a YouthBuild participant. A “**Targeted Section 3 Worker**” is a Section 3 Worker, who meets any of the three aforementioned criteria and *in addition* also meets one of the two following criteria:

1. Employed by a Section 3 Business Concern
2. Currently fits—or when hired fits—at least one of the following categories:
 - a. Living within the Service Area or the Neighborhood of the Project; or
 - b. A YouthBuild participant

To this end, the above definitions provide for the following Venn Diagram:



4. Section 3 Measurement Ratios and Benchmarks

Recipients and subrecipients must attempt to reach the Section 3 benchmarks and targets as established by 24 CFR Part 75.23(b)(3) and Federal Register Notice 2020-19183:

Twenty-five (25) percent or more of the total number of labor hours worked by all workers on a Section 3 Project are Section 3 Workers:

$$\frac{\text{Section 3 Worker Labor Hours}}{\text{Total Labor Hours}} \geq 25\%$$

Five (5) percent or more of the total number of labor hours worked by all workers on a Section 3 Project are Targeted Section 3 Workers, as defined at §75.21(a):

$$\frac{\text{Target Section 3 Worker Labor Hours}}{\text{Total Labor Hours}} \geq 5\%$$

In the absence of evidence to the contrary, subrecipients of covered funding will be considered in compliance with Section 3 Safe Harbor [24 CFR 75.23] if the established benchmarks regarding the above ratios are met. Subrecipients that fail to meet the minimum numerical goals outlined above must also report upon the specific qualitative efforts that they have employed in pursuit of the numerical goals, which are outlined in subsection 5.2 below.

5. Section 3 Reporting

5.1 Reporting of Labor Hours

Per 24 CFR 75.25(a), for Section 3 Projects, contractors and recipients are required to submit periodic and project end reports using the Section 3 Compliance Report form (Attachment 7) as well as supporting documentation of any qualitative efforts and achievements. Such compliance reporting may include:

- i. The total number of labor hours worked;
- ii. The total number of labor hours worked by Section 3 Workers; and
- iii. The total number of labor hours worked by Targeted Section 3 Workers
- iv. Section 3 worker and Targeted Section 3 worker certification forms
- v. Payroll or time-and attendance based records
- vi. Documentation of qualitative efforts

Eligibility of Labor Hours Reported — Section 3 Workers' and Targeted Section 3 Workers' labor hours may be counted for five years from when their status as a Section 3 Worker or Targeted Section 3 Worker is established, pursuant to subsection 6 below. [24 CFR 75.25(a)(2)]

Inclusion of Hours Reported — The labor hours reported must include the total number of labor hours worked on a Section 3 Project, including labor hours worked by any subrecipients, contractors, and subcontractors that the recipient is required, or elects pursuant to any considerations for Professional Services (see below). [24 CFR

75.25(a)(3)]

Basis of Hours Reported — Recipients may report their own labor hours or that of a subrecipient, contractor, or subcontractor based on the employer's good faith assessment of the labor hours of a full-time or part-time employee informed by the employer's existing salary or time and attendance based payroll systems, unless the project or activity is otherwise subject to requirements specifying time and attendance reporting. [24 CFR 75.25(a)(5)]

Frequency of Reporting — Unless otherwise provided, reporting must be carried out quarterly to SWBNO in a manner consistent with reporting requirements for the applicable HUD program. [24 CFR 75.25(c)]

Professional Services — Professional Services contracts for non-construction services that require an advanced degree or professional licensing are not required to be reported as a part of total Section 3 labor hours.

However, grantees, subrecipients, contractors, and subcontractors may report labor hours from Section 3 Workers and Targeted Section 3 Workers (the numerators in the outcome ratios in subsection 4) from Professional Services without including Professional Services in the Total Labor Hours worked (the denominator in both of the outcome ratios in subsection 7.4). The effect of this reporting structure is to give the recipient a bonus if they are able to report Section 3 hires in the Professional Services context.

It should also be noted that if a contract covers both Professional Services and other work and the subrecipient/contractor/subcontractor chooses not to report labor hours from Professional Services, the labor hours under the contract that are not from Professional Services must still be reported. [24 CFR 75.25(a)(4)]

5.2 Additional Reporting Requirements / Qualitative Efforts

If the grantee or subrecipient's reporting indicates that the Section 3 Benchmarks outlined in section 4 above are not met, the subrecipient must report on the qualitative nature of its activities and those that its contractors and subcontractors pursued. Examples of such qualitative efforts include, but are not limited to, the following:

- Applicant Outreach – Engaging in outreach efforts to generate job applicants who are Targeted Section 3 Workers.
- Training and Apprenticeship – Providing training or apprenticeship opportunities.
- Employment Assistance – Providing Technical Assistance (TA) to help Section 3 Workers compete for jobs—e.g., resume assistance, coaching— or providing or connecting Section 3 Workers with assistance in seeking

employment, including: drafting resumes, preparing for interviews, and finding job opportunities connecting residents to job placement services.

- Job Fairs – Holding one or more job fairs, or sponsoring a job informational meeting in the Service Area / Neighborhood of the Project.
- Work Readiness & Retention – Providing or referring Section 3 Workers to services supporting work readiness and retention—such as work readiness activities, interview clothing, test fees, transportation, and child care.
- Educational Assistance – Providing assistance to apply for or attend community college, a four-year educational institution, or vocational/technical training.
- Financial Literacy – Assisting Section 3 Workers to obtain financial literacy training and/or coaching.
- Business Concern Outreach – Engaging in outreach efforts to identify and secure bids from Section 3 Business Concerns.
- Competition Assistance – Providing Technical Assistance to help Section 3 Business Concerns understand and bid on contracts.
- Contract Sizing – Sizing, splitting, or dividing contracts into smaller jobs to facilitate participation by Section 3 Business Concerns, particularly where economies of scale or efficiency of delivery are not factors. [2 CFR 200.321(b)(3)]
- Bidder Viability Support – Providing bonding assistance, guaranties, or other efforts to support viable bids from Section 3 Business Concerns.
- Business Registries – Promoting use of business registries designed to create opportunities for disadvantaged and small businesses.
- One-Stop Outreach – Providing outreach, engagement, or referrals with the state One-Stop System as defined in Section 121(e)(2) of the Workforce Innovation and Opportunity Act of 2013.

The above listing is not intended to be all inclusive. Grantees and subrecipients are encouraged to develop and tailor their specific qualitative efforts with the end goal of Section 3 benchmark achievement in mind, as outlined in subsection 7.4 above. Clear, affirmative steps to achieve the established numerical goals must be taken, and documentation to adequately corroborate all efforts and attempts must be retained. **To this end, grantees and subrecipients that are unable to meet the minimum numerical goals outlined in subsection 7.4 above must demonstrate why it was not possible to do so, and retain supporting documentation to sufficiently substantiate this determination.** Such justifications should describe

the efforts that were taken, any barriers, roadblocks, or impediments encountered, and any other relevant information that will enable OCD to make the most accurate, informed compliance determination.

6. Recordkeeping to Support Section 3 Worker Categorizations and Certifications

6.1 Recordkeeping for Workers

Recipients must maintain documentation—or ensure that a subrecipient, contractor, or subcontractor that employs the worker maintains documentation—to ensure that workers meet the definition of a Section 3 Worker or a Targeted Section 3 Worker, at the time of hire or the first reporting period, as follows:

- **Section 3 Worker** – For a worker to qualify as a Section 3 Worker, one of the following must be maintained:
 - i. Self-Certification of Income – A worker's self-certification that their income is below the income limit from the prior calendar year;
 - ii. Self-Certification of Program Participation – A worker's self-certification of participation in a means-tested program such as public housing or Section 8-assisted housing;
 - iii. Program Management Certification of Program Participation – Certification from a Public Housing Agency, or the owner or property manager of project-based Section 8-assisted housing, or the administrator of tenant-based Section 8-assisted housing that the worker is a participant in one of their programs;
 - iv. Employer Certification of Income – An employer's certification that the worker's income from that employer is below the income limit when based on an employer's calculation of what the worker's wage rate would translate to if annualized on a full-time basis; or
 - v. Employer Certification of Section 3 Business Concern Employment – An employer's certification that the worker is employed by a Section 3 Business Concern.
- **Targeted Section 3 Worker** – For a worker to qualify as a Targeted Section 3 Worker, one of the following must be maintained:
 - i. Employer Confirmation of Worker Residence – An employer's confirmation that a worker's residence is within one mile of the work site or, if fewer than 5,000 people live within one mile of a work site, within a circle centered on the work site that is sufficient to encompass a population of 5,000 people according to the most recent U.S. Census;

- ii. Employer Certification of Section 3 Business Concern Employment – An employer's certification that the worker is employed by a Section 3 Business Concern.
- iii. Self-Certification of YouthBuild Participation – A worker's self-certification that the worker is a YouthBuild participant.

Recipients and subrecipients may report on Section 3 Workers and Targeted Section 3 Workers for five years from when their certification as a Section 3 Worker or Targeted Section 3 Worker is established.

Grantees, subrecipients, contractors, and subcontractors have the express right to request any necessary evidence that would help substantiate an individual's claim to Section 3 status or certification. Examples of evidence to satisfy the above documentation requirements include but are not limited to: evidence of receipt of Federal housing assistance; evidence of receipt of other Federal subsidies or participation in Federal assistance programs; Federal tax returns; proof of residence in a neighborhood, zip code, census tract, or other area that has officially been identified by HUD. To help grantees certify Section 3 Workers and Targeted Section 3 workers and provide the appropriate documentation to support the workers' Section 3 status claims.

6.2 Recordkeeping for Business Concerns

A Section 3 Business Concern is defined as a business concern that meets at least one of the following criteria, documented within the last six-month period:

- i. It is at least 51% owned and controlled by Low- or Very-Low-Income Persons;
- ii. Over 75% of the labor hours performed for the business over the prior three-month period are performed by Section 3 Workers; or
- iii. It is a business at least 51% owned and controlled by current public housing residents or residents who currently live in Section 8-Assisted housing.

Grantees, subrecipients, contractors, and subcontractors have the express right to request any necessary evidence that would help substantiate a business concern's claim to Section 3 status or certification. Examples of evidence to satisfy the above documentation requirements may include: Federal tax returns for workers, owners, or businesses; payroll data; employee statements of self-certification; articles of business organization, ownership, or incorporation; partnership or operating agreements; evidence that owners or employees received housing or other Federal subsidies.

To help grantees certify and track Section 3 Business Concerns seeking a preference in contracting. Additionally, businesses that believe they meet the Section 3 Business Concern requirements can self-register in the HUD Business Registry at

the following website:

<http://www.hud.gov/Sec3Biz>

Section 3 standards are both race and gender neutral. A WBE and/or MBE must provide evidence that it meets at least one criterion of a Section 3 Business Concern as outlined above in order to receive preference under Section 3. More information regarding WBE or MBE programs can be found through HUD's Office of Small and Disadvantaged Business Utilization (OSDBU) at the following website: https://www.hud.gov/program_offices/sdb

The documentation outlined in this subsection must be maintained for the time period required for records retention in accordance with applicable program regulations and 24 CFR 200. For further guidance regarding Section 3 Recordkeeping—including additional considerations specific to Public Housing Agencies—see 24 CFR 75.31.

7. Contracting Requirements

7.1 Contract Provisions

Per 24 CFR 75.27, grantees and subrecipients must include language applying Section 3 requirements in any subrecipient agreement or contract for a Section 3 Project. Additionally, recipients of Section 3 funding must also require subrecipients, contractors, and subcontractors to meet the overall requirements as outlined in subsection 2 above—regardless of whether Section 3 language is included in recipient or subrecipient agreements, program regulatory agreements, or contracts.

7.2 Contracting and Subcontracting Strategies

The following examples are provided to help grantees and subrecipients ensure that the contracting objectives of Section 3 are met, and that the established Section 3 Benchmarks are ultimately achieved. These methods and strategies can be undertaken to assist in reaching Section 3 Workers and Section 3 Business Concerns for contracting opportunities; and when utilized effectively, can supplement some of the qualitative efforts outlined in subsection 5.2 above. This list should not be considered all inclusive. For additional information regarding contracting, see Section 6 – Procurement Methods and Contractual Requirements.

1. Small Purchase Procurement — The use of small purchase procedures (contract may not exceed the Simplified Acquisition Threshold) such as soliciting quotations from a minimum of 3 qualified sources. At the time of solicitation, inform the parties of the Section 3 Covered Contract to be awarded with sufficient specificity; the time within which quotations must be submitted; and the information that must be submitted. A valid attempt to obtain at least 3 quotes from qualified sources must be made and documented.

2. Section 3 Compliance History — In determining the responsibility of potential contractors, consider their past records of Section 3 compliance and their current plans for the pending contract.
3. Contractors Associations and Community Organizations — Utilize minority contractors associations and community organizations to assist in identifying Section 3 businesses who may be potential bidders.
4. Housing Development Publicity — Advertise contracting opportunities by posting notices concerning the work to be contracted in common areas of housing developments.
5. Formalized Notices — Providing written notice to all known Section 3 Business Concerns of the contracting opportunities.
6. Maintain Contact — Follow up with Section 3 Business Concerns that have expressed interest in the contracting opportunities by personal contact to provide additional information.
7. Pre-Bid Meetings — Coordinating pre-bid meetings at which Section 3 Business Concerns could be informed of the upcoming contracting opportunities.
8. Section 3 Workshops — Provide workshops on contracting procedures and specific contract opportunities in a timely manner so that Section 3 Business Concerns can take advantage of upcoming contracting opportunities.
9. Assisting with Barriers to Entry — Advising Section 3 Business Concerns as to where they may seek assistance to overcome limitations such as inability to obtain bonding, lines of credit, financing, or insurance.
10. Bidding Facilitation — Arranging solicitations, times for the presentation of bids, quantities, specifications, and delivery schedules in ways to facilitate the participation of Section 3 Business Concerns.
11. Contract Sizing — As noted in subsection 5.2 above, where appropriate, break out contract work items into economically feasible units to facilitate participation of Section 3 Business Concerns.
12. YouthBuild Programs — Contacting agencies administering HUD YouthBuild programs and notifying these agencies of the contracting opportunities.
13. Advertisement / Publication — Advertising the contracting opportunities through trade association papers and local media such as television, newspapers, radio, and websites.

14. Business Concern Listing — Developing and maintaining a list of eligible Section 3 Business Concerns.
15. Advance Goal Setting — Establishing concrete numerical goals (dollar amounts, and number of awards) for contracts to Section 3 Business Concerns.

8. Additional Section 3 Resources

All grantees and subrecipients are highly encouraged to ensure that contractors, residents, and businesses in their community are aware of the available tools and resources that will assist with employment and training opportunities—principally the HUD Section 3 Opportunity Portal and the HUD Section 3 Business Registry.

8.1 HUD Section 3 Opportunity Portal

The HUD Section 3 Opportunity Portal helps match Section 3 Workers to employment and training opportunities, and Business Concerns to contracting opportunities. The portal can be accessed online at the following address: <https://hudapps.hud.gov/OpportunityPortal/>

8.2 HUD Section 3 Business Registry

The HUD Section 3 Business Registry is a listing of firms that have self-certified that they meet one of the regulatory definitions of a Section 3 business and are included in a searchable online database that can be used by agencies that receive HUD funds, developers, contractors, and others to facilitate the award of certain HUD-funded contracts. The database can also be used by Section 3 residents to identify businesses that may have HUD-funded employment opportunities. The HUD Section 3 Business Registry can be accessed online at the following web address: <http://www.hud.gov/Sec3Biz>

Attachment 6 Section 3 Project Plan

Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u and 24 CFR Part 75) requires that employment and economic opportunities generated by certain HUD financial assistance shall be directed to low- and very low-income persons, particularly those who receive government assistance for housing and those residing in the community in which the federal assistance is spent.

This project will be funded using HUD Housing and Community Development Financial Assistance and is therefore subject to Section 3. The selected bidder, respondent or funding applicant will be responsible for ensuring compliance with all applicable Section 3 requirements.

Instructions: For sealed bids, the two lowest bidders must complete and submit this form with your post-bid document submission. RFP/RFQ respondents must submit this form as part of your proposal or qualifications submission. All subrecipients, contractors and subcontractors on Section 3 projects must submit this form. The entity receiving a contract from SWBNO must submit all required documentation, including subcontractors' Section 3 Plans, prior to contract award.

Project: _____ **Solicitation #:** _____

Business Name:	Address:
Authorized Representative:	Title:
Phone #:	Email:
Trade/Services Provided:	

Section 3 Requirements

Employment and Training

To the greatest extent feasible, employment and training opportunities arising in connection with Section 3 projects shall be provided to Section 3 workers within the New Orleans metropolitan area. Where feasible, priority for employment and training will be given to:

1. Section 3 workers residing within the service area or neighborhood of the project, and
2. Participants in YouthBuild programs.

Contracting

To the greatest extent feasible, contracts for work awarded in connection with Section 3 projects shall be provided to business concerns that provide economic opportunities to Section 3 workers residing within the New Orleans metropolitan area. Where feasible, priority for contracting opportunities will be given to:

1. Section 3 business concerns that provide economic opportunities to Section 3 workers residing within the service area or the neighborhood of the project, and
2. YouthBuild programs.

Compliance Benchmarks

To demonstrate compliance with Section 3, contractors are required to follow the prioritization of effort outlined above and meet or exceed the following benchmarks:

1. **25 percent** or more of the total number of labor hours worked by all workers on the project shall be performed by **Section 3 workers**, and
2. **5 percent** or more of the total number of labor hours worked by all workers on the project shall be performed by **Targeted Section 3 workers**.

Definitions

- **Section 3 worker:** Any worker who currently fits or when hired within the past five years fit at least one of the following categories, as documented:
 - (1) The worker's income for the previous or annualized calendar year is below the income limit established by HUD (*see Income Limits table below*).
 - (2) The worker is employed by a Section 3 business concern.
 - (3) The worker is a YouthBuild participant.
- **Targeted Section 3 worker:** A Section 3 worker who is:
 - (1) A worker employed by a Section 3 business concern; or
 - (2) A worker who currently fits or when hired within the past five years fit at least one of the following categories, as documented:
 - (i) Living within the service area or the neighborhood of the project; or
 - (ii) A YouthBuild participant.
- **Service area or the neighborhood of the project:** An area within one mile of the Section 3 project or, if fewer than 5,000 people live within one mile of a Section 3 project, within a circle centered on the Section 3 project that is sufficient to encompass a population of 5,000 people according to the most recent U.S. Census.

HUD Income Limits

The table below shows the income limits set by HUD that determine eligibility for certain programs, including Section 3. HUD develops income limits based on Area Median Income (AMI) estimates and Fair Market Rent (FMR) area definitions. For more information, please see the HUD Income Limits Documentation System online at www.huduser.gov/portal/datasets/il.html.

New Orleans-Metairie, LA HUD Metro FMR Area

Fiscal Year	2022	2021	2020	2019	2018	2017
Low-income (80% AMI)	\$43,900	\$39,300	\$39,450	\$37,750	\$36,750	\$35,500

The New Orleans-Metairie, LA HUD Metro FMR Area contains the following parishes: Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles, St. John the Baptist, and St. Tammany.

1. Does your business qualify as a Section 3 business concern? **YES** **NO**

If you answered YES, complete the Section 3 Business Certification form on p. 6 and submit with this Plan. If you answered NO, you do not need to complete the Section 3 Business Certification.

A **Section 3 business concern** is a business that satisfies **at least one** of the following criteria, as documented within the last six-month period:

- a. The business is at least 51% owned and controlled by low- or very low-income persons;
- b. The business is at least 51% owned and controlled by residents who currently live in public housing or Section 8-assisted housing; or
- c. Over 75% of the labor hours performed for the business over the prior three-month period were performed by Section 3 workers – *i.e.*, workers who currently are, or when hired within the past five years were: i) low-income persons or ii) YouthBuild participants.

2. How many workers are needed to complete the project?

Please list the job classifications and number of workers your company will need to complete the contract work. Attach additional sheets if necessary.

Job classification (Office/Clerical, Manager, Engineer, Technician, Supervisor/Foreman, Electrician, Plumber, Laborer, Trainee, Security, etc.)	Total estimated number of workers needed	Number of workers in current workforce	Estimated number of additional workers needed

3. Will you be using subcontractors on this project? YES NO

If you answered YES, please list below. Attach additional sheets if necessary.

Business name	Scope of work (trade or service description)	Is this a Section 3 business? Yes / No	Estimated contract value
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$
			\$

4. Do you commit to engage in good faith efforts to meet or exceed the Section 3 Benchmarks?

YES NO

Such qualitative efforts may include, but are not limited to:

- Applicant Outreach –
- Engage in outreach efforts to generate job applicants who are Targeted Section 3 workers, including posting job openings at the job site, HUD Opportunity Portal, social media pages, and other platforms.
 - Clearly indicate Section 3 eligibility on all job postings, notifications, and advertisements with the following statement: *“This is a Section 3 eligible job opportunity. We encourage applications from individuals that are low-income, live in public housing, and/or receive a Section 8 voucher.”*
 - Include the Section 3 Worker Self-Certification form in all job postings.
- One-Stop / YouthBuild Outreach – Engage in outreach or referrals with local YouthBuild programs, Louisiana Workforce Commission, JOB 1, or other community organizations to assist with training and recruiting Section 3 and Targeted Section 3 workers.
- Training and Apprenticeship – Provide training or apprenticeship opportunities.
- Job Fairs – Hold one or more job fairs, or sponsor a job informational meeting in the project area.
- Business Concern Outreach –
 - Engage in outreach efforts to identify and secure bids from Section 3 businesses by advertising notices of contracting opportunities and related information on the HUD Opportunity Portal and local community papers.
 - Provide written notice to all known Section 3 business concerns, with sufficient time for interested businesses to respond to bid invitations.
 - Send notice of contracting opportunities to local community development organizations, business development organizations, or minority contracting associations.
 - State clearly in all notices that the contracting opportunity is Section 3 eligible, and include a copy of the Section 3 Business Concern Certification form.
- Competition Assistance – Provide technical assistance to help Section 3 business concerns understand and bid on contracts.
- Contract Sizing – Size, split, or divide contracts into smaller jobs to facilitate participation by Section 3 business concerns, particularly where economies of scale or efficiency of delivery are not factors. [2 CFR 200.321(b)(3)]
- Bidder Viability Support – Provide bonding assistance, guaranties, or other efforts to support viable bids from Section 3 business concerns.
- Business Registries – Promote use of the HUD Opportunity Portal or other business registries designed to create opportunities for disadvantaged and small businesses.
 - Visit <https://hudapps.hud.gov/OpportunityPortal/> to post jobs and contracting opportunities.

Additional activities and efforts aimed at increasing economic opportunities for Section 3 workers and businesses may include, but are not limited to:

- Employment Assistance – Provide technical assistance to help Section 3 workers compete for jobs, or connect them with assistance in seeking employment, including resume assistance, interview preparation, coaching, or job placement services.
- Work Readiness and Retention – Provide or refer Section 3 workers to services supporting work readiness and retention, such as interview clothing, licensing or testing fees, transportation, or childcare.
- Financial Literacy – Help Section 3 workers obtain financial literacy training or coaching.

- Education Assistance – Provide assistance to Section 3 workers to apply for or attend community college, four-year educational institution, or vocational/technical training.

5. Do you commit to prioritize your efforts in hiring, training, and contracting as required by the Section 3 regulations and outlined on page 1 of this Plan?

YES **NO**

Certification

The business entity identified above commits to comply with Section 3 of the Housing and Urban Development Act of 1968 (24 CFR Part 75). If awarded a contract subject to Section 3, the business agrees to adhere to all such requirements, including meeting the benchmarks set forth by the regulations, maintaining records of Section 3 activity, providing evidence of qualitative efforts, and submitting compliance reports to the City of New Orleans periodically or upon request. The business will submit any additional documentation as necessary, including updates or revisions to this Section 3 Plan, documentation of labor hours, and certification forms for Section 3 workers and business concerns.

Authorized Representative Signature

Date

Attachment 7 - Section 3 Compliance Report

Instructions: All subrecipients, contractors, and subcontractors on Section 3 projects must complete and submit this Section 3 Compliance Report. The report summarizes efforts and progress toward achieving the Section 3 benchmarks. If more space is needed, you may attach additional pages, a spreadsheet supplying the required information, or a letter to further state your efforts, achievements, or obstacles encountered. Attach all supporting documentation including Section 3 Worker Certification forms, payroll information, and evidence of qualitative efforts to comply with Section 3 as applicable.

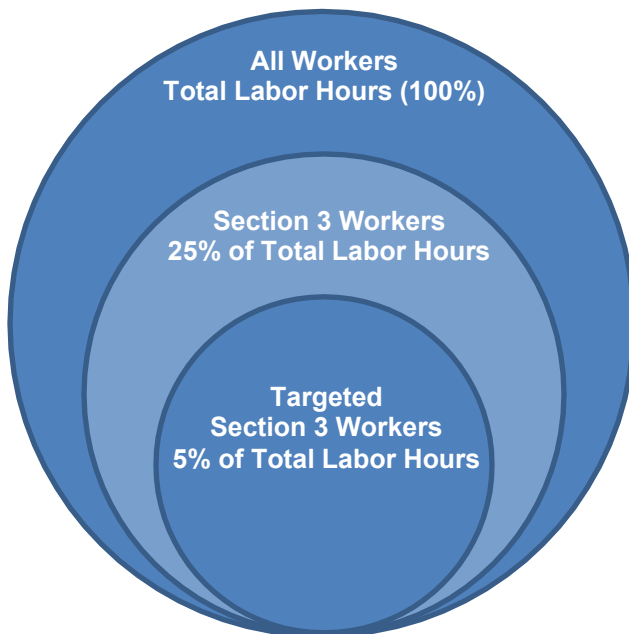
Business Name:	Project:
Authorized Representative:	Title:
Phone #:	Email:
Reporting Period:	

General Guidance

Compliance Benchmarks

To demonstrate compliance with Section 3, contractors are required to follow the prioritization of effort outlined in 24 CFR 75.19 and meet or exceed the following benchmarks:

1. **25 percent** or more of the total number of labor hours worked by all workers on the project shall be performed by **Section 3 workers**, and
2. **5 percent** or more of the total number of labor hours worked by all workers on the project shall be performed by **Targeted Section 3 workers**.



$$\frac{\text{Section 3 Labor Hours}}{\text{Total Labor Hours}} = 25\%$$

AND

$$\frac{\text{Targeted Section 3 Labor Hours}}{\text{Total Labor Hours}} = 5\%$$

Definitions

- **Section 3 worker:** Any worker who currently fits or when hired within the past five years fit at least one of the following categories, as documented:
 - (1) The worker's income for the previous or annualized calendar year is below the income limit established by HUD (*see Income Limits table below*).
 - (2) The worker is employed by a Section 3 business concern.
 - (3) The worker is a YouthBuild participant.
- **Targeted Section 3 worker:** A Section 3 worker who is:
 - (1) A worker employed by a Section 3 business concern; or
 - (2) A worker who currently fits or when hired within the past five years fit at least one of the following categories, as documented:
 - Living within the service area or the neighborhood of the project; or
 - A YouthBuild participant.
- **Section 3 business concern:** A business meeting at least one of the following criteria, documented within the last six-month period:
 - (1) It is at least 51 percent owned and controlled by low- or very low-income persons;
 - (2) Over 75 percent of the labor hours performed for the business over the prior three-month period were performed by Section 3 workers who are currently, or were at the time of hire within the last five years: i) low-income persons or ii) YouthBuild participants; or
 - (3) The business is at least 51 percent owned and controlled by current public housing residents or residents who currently live in Section 8-assisted housing.
- **Service area or the neighborhood of the project:** An area within one mile of the Section 3 project or, if fewer than 5,000 people live within one mile of a Section 3 project, within a circle centered on the Section 3 project that is sufficient to encompass a population of 5,000 people according to the most recent U.S. Census.

HUD Income Limits

HUD develops income limits based on Area Median Income (AMI) estimates and Fair Market Rent (FMR) area definitions. For more information, please see the HUD Income Limits Documentation System online at www.huduser.gov/portal/datasets/il.html.

The income limits for the **New Orleans-Metairie, LA HUD Metro FMR Area** apply to the following parishes: Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles, St. John the Baptist, St. Tammany.

Fiscal Year	2022	2021	2020	2019	2018	2017
Low-income (80% AMI)	\$43,900	\$39,300	\$39,450	\$37,750	\$36,750	\$35,500

Part I: Labor Hours

Report the number of labor hours worked on this project during the reporting period by *ALL workers*, *Section 3 workers*, and *Targeted Section 3 workers*.

Note—subrecipients/contractors may count an employee as Section 3 or Targeted Section 3 for five years from when their certification as a Section 3 worker or Targeted Section 3 worker is established.

1. Section 3 hours

A. Total number of labor hours worked by ALL workers	B. Number of labor hours worked by Section 3 workers	% Section 3 hours (Divide column B by column A)
		%

2. Targeted Section 3 hours

A. Total number of labor hours worked by ALL workers	B. Number of labor hours worked by Targeted Section 3 workers	% Targeted Section 3 hours (Divide column B by column A)
		%

3. Documentation

You must provide documentation supporting labor hours data. Check below as appropriate:

- Labor hours have been certified in LCPtracker.
- Other salary-based or time-and-attendance payroll records are attached to this report.

Part II: Section 3 Workers

Identify all Section 3 workers who have worked on this project to date. Attach a Section 3 Certification for each person who is being reported for the first time.

Employee name	Classification / Job title	Number of labor hours worked on the project this period	Is this a Targeted Section 3 worker? Yes / No

Part III: Section 3 Business Concerns

Identify all Section 3 businesses that have performed work on this project to date.

Business name	Trade or services provided	Contract amount

Part IV: Qualitative Efforts

Check the boxes below to indicate the efforts you have made to satisfy your Section 3 obligations, or the nature of activities you pursued in the absence of meeting the labor hour benchmarks.

- Posted notice of job openings calling for Section 3 applicants at the job site, on the HUD Opportunity Portal, social media pages, and other platforms.
- Consulted with local YouthBuild programs, Louisiana Workforce Commission, JOB 1, or other community organizations to assist with training and recruiting Section 3 workers and Targeted Section 3 workers.
- Provided training or apprenticeship opportunities.
- Held one or more job fairs.
- Advertised contracting opportunities on the HUD Opportunity Portal.
- Sent written notice of Section 3 contracting opportunities to local business development organizations, minority contracting associations, or other similar organizations.
- Searched the HUD Opportunity Portal or other business registries for Section 3, disadvantaged and small businesses to identify potential Section 3 subcontractors.
- Provided technical assistance to help Section 3 businesses understand and bid on contracts.
- Divided contracts into smaller jobs to facilitate participation by Section 3 businesses.
- Provided bonding assistance, guaranties, or other efforts to support viable bids from Section 3 business concerns.
- Provided technical assistance to help Section 3 workers compete for jobs, or connected them with assistance in seeking employment, including resume assistance, interview preparation, coaching, or job placement services.
- Provided or referred Section 3 workers to services supporting work readiness and retention, such as interview clothing, licensing or testing fees, transportation, childcare.
- Helped Section 3 workers to obtain financial literacy training and/or coaching.
- Provided assistance to Section 3 workers to apply for or attend community college, four-year educational institution, or vocational/technical training.
- Other, please describe:

Additional Notes or Comments

Authorized Representative Signature

Date

SECTION 01 10 00 – SUMMARY OF WORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other DIVISION 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Project information.
 - 2. Work covered by Contract Documents.
 - 3. Work under separate contracts.
 - 4. Access to site.
 - 5. Work restrictions.
 - 6. Specification and drawing conventions.
 - 7. Miscellaneous provisions.

1.03 PROJECT INFORMATION

- A. Project Identification: Sewerage and Water Board of New Orleans, Drainage System NDR Instrumentation Project.
- B. Project and Property Owner: Sewerage and Water Board of New Orleans.
- C. Engineering Consultant: Stanley Consultants, Inc.
8000 South Chester, Suite 500
Centennial, CO 80112
- D. Engineer's Consultants: The Engineer has retained the following design professionals who have assisted in preparation of the design documents:
 - 1. Infinity Engineering Consultants, LLC - 4001 Division Street, Metairie, LA 70002.

1.04 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and consists of the detailed design of wireless instrumentation systems, their submittal to and approval by OWNER, and installation of instruments and sensors to supplement and enhance the real time monitoring and reporting system. Monitoring of critical equipment as well as canal levels shall be integrated into the existing PLC/HMI/SCADA system maintained by the SWBNO in order to increase visibility across the Drainage Pump Station system. Work includes:
 - 1. Selection and installation of various types of instrumentation at multiple pump stations including, but not limited to:
 - a. Power meters for critical pump motors.
 - b. Channel level sensors on both intake and discharge canals, including both new installations and upgrading of existing sensors.
 - c. Diesel fuel tank level sensors.
 - d. Pressure sensors monitoring the critical vacuum pump systems at each drainage station.
 - e. Vibration, temperature and other various types of measurement for performance and machine-health monitoring of critical pumping equipment at the Drainage Pump Stations.
 - 2. Installation of PLC equipment required to integrate and communicate the new instrument signals to local operations.

- B. Type of Contract:
 - 1. Project will be constructed under a single prime contract.

1.05 WORK BY OWNER

- A. General: Cooperate fully with Owner so work may be carried out smoothly, without interfering with or delaying work under this Contract or work by Owner. Coordinate the Work of this Contract with work performed by Owner.

1.06 ACCESS TO SITE

- A. General: Contractor shall have use of Project site for construction operations during construction period. Contractor's use of Project site is limited by Owner's right to operation of the site or to retain other contractors on portions of Project.
 - 1. Limits: Limit site disturbance as allowed and directed by Owner.
 - a. See Demolition and Drawing for additional site disturbance limitations.

1.07 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Work hours will be discussed with awarded contractor. These are working drainage stations. No work shall impeded the operation of the plant without prior notification and approval by Owner.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
 - 1. Notify Owner not less than 72 hours in advance of proposed utility interruptions.
 - 2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
 - 1. Notify Owner not less than two days in advance of proposed disruptive operations.
 - 2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Controlled Substances: Use of tobacco products and other controlled substances on Project site is not permitted.
- F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- G. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
 - 1. Maintain list of approved screened personnel with Owner's representative.

1.08 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.
 - 1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.

- B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

- C. DIVISION 01 General Requirements: Requirements of Sections in DIVISION 01 apply to the Work of all Sections in the Specifications.

- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings.
 - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

- E. Documentation Included in this procurement package
 - 1. The SWBNO and the Engineer have gathered information on the existing systems. Available original construction drawings including the PLC Enclosure wiring diagrams Have been marked to provide a guide to the current state of the facilities. The Contractor must verify the information before beginning the final detailed design for the submittals, procurement and integration of the additional instrumentation requirements of this project.
 - 2. The SWBNO has provided a list of preferred process measuring devices that shall be utilized for this project. To the maximum extent possible, these preferred devices must be used. No substitutions will be accepted by SWBNO without prior authorization by SWBNO.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION 01 10 00

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SECTION 01 20 00 – PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Schedule of values.
- B. Applications for payment.
- C. Change procedures.
- D. Defect assessment.
- E. Unit prices.

1.02 SCHEDULE OF VALUES

- A. Submit a printed schedule on EJCDC C-620 – Contractor's Application for Payment or other format as approved by OWNER. Contractor's standard form or electronic media printout will be considered.
- B. Submit Schedule of Values in duplicate within 20 days after date of Owner-Contractor Agreement.
- C. Format: Utilize Table of Contents of this Project Manual. Identify each line item with number and title of major specification Section. Identify site mobilization, bonds and insurance.
- D. Schedule of Values shall show breakdown of quantities, labor, materials, equipment, and other costs used in preparation of the Bid for each item in Section 01 22 00, Unit Prices.
- E. Costs shall be prepared for each Section of the Specifications. They shall be in sufficient detail to indicate separate amounts for each Section of the Specifications. Amounts shall be included for each type of Work specified, in a manner approved by the Engineer.
- F. Each item shall include a directly proportional amount of Contractor's overhead and profit.
- G. When requested by Engineer, support values with data that will substantiate their correctness.
- H. Revise schedule to list approved Change Orders, with each Application for Payment.
- I. The sum of the individual values shown on the Schedule of Values shall equal the total Contract Price.
- J. Schedule of Values shall show the purchase and delivery costs for materials and equipment that Contractor anticipates they shall request payment for prior to their installation.
- K. The Schedule of Values shall be prepared to a level of detail equal to or greater than required by the Supplementary Conditions.

1.03 APPLICATIONS FOR PAYMENT

- A. Submit 3 copies of each application on EJCDC C-620 – Contractor's Application for Payment or other format as approved by OWNER. Contractor's electronic media driven form will be considered.
- B. Content and format: Use Schedule of Values for listing items in Application for Payment.

- C. Submit an updated construction Progress Schedule in accordance Section 01 32 01 with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in Agreement.
- E. Submit with transmittal letter.
- F. Substantiating data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include following with application:
 - 1. Current construction photographs specified in Section 01 33 00.
 - 2. Partial release of liens from major subcontractors and vendors.
 - 3. Record documents as specified in Section 01 33 00, for review by Owner which will be returned to Contractor.
 - 4. Affidavits attesting to off-site stored products.
 - 5. Construction progress schedules: revised and current as specified in Section 01 32 01.

1.04 CHANGE PROCEDURES

- A. Submittals: Submit name of individual authorized to receive change documents and be responsible for informing others in Contractor's employ or Subcontractors of changes to Work.
- B. Engineer will advise of minor changes in Work not involving an adjustment to Contract Price or Contract Time by issuing supplemental instructions.
- C. Engineer may issue Instruction to Contractor (ITC) which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing change with a stipulation of any overtime work required and the period of time during which requested price will be considered valid. Contractor will prepare and submit an estimate within 15 days.
- D. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on Work. Include a statement describing reason for change, and effect on Contract Price and Contract Time with full documentation Document any requested substitutions in accordance with Section 01 25 13.
- E. Unit price Change Order: For contract unit prices and quantities, Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under a EJCDC C940 - Work Directive Change or other format as approved by OWNER. Changes in Contract Price or Contract Time will be computed as specified for Time and Material Change Order.
- F. Work Directive Change: Engineer may issue a directive, on EJCDC C940 - Work Directive Change or other format as approved by OWNER, instructing Contractor to proceed with a change in Work, for subsequent inclusion in a Change Order. Document will describe changes in Work, and designate method of determining any change in Contract Price or Contract Time. Promptly execute change.
- G. Time and Material Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in Conditions of Contract. Engineer will determine change allowable in Contract Price and Contract Time as provided in Contract Documents.
- H. Maintain detailed records of work done on Time and Material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in Work.
- I. Document each quotation for a change in cost or time with sufficient data to allow evaluation of quotation.
- J. Change Order Forms: EJCDC C-941 Change Order or other format as approved by OWNER.

- K. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of Contract.
- L. Correlation of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust Contract Price.
 - 2. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by change, and resubmit.
 - 3. Promptly enter changes in Project Record Documents.

1.05 DEFECT ASSESSMENT

- A. Replace Work, or portions of Work, not conforming to specified requirements.
- B. If, in opinion of Engineer it is not practical to remove and replace Work, Engineer will direct an appropriate remedy or adjust payment.
- C. Defective Work may remain, but unit price will be adjusted to a new price at discretion of Owner and Engineer.
- D. Defective Work will be partially repaired to instructions of Engineer, and unit price will be adjusted to a new price at discretion of Owner and Engineer.
- E. Individual specification sections may modify these options or may identify a specific formula or percentage price reduction.
- F. Authority of Owner and Engineer to assess defect and identify payment adjustment, is final.
- G. Nonpayment for rejected products: Payment will not be made for rejected products for any of following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of required Work.
 - 5. Products remaining on hand after completion of Work.
 - 6. Loading, hauling, and disposing of rejected products.

1.06 UNIT PRICE

- A. Authority: Unit Prices quantities and Lump Sum items are delineated in Section 01 22 00 and individual specification sections.
- B. Payment shall be based on approved schedule of values, measurement methods delineated in individual specification sections complement criteria of this section. In event of conflict, requirements Section 01 22 00 govern.
- C. Engineer will verify percent complete of each item in the schedule of values.
- D. Unit Quantities: Quantities and measurements indicated in Bid form are for contract purposes only. Quantities and measurements supplied or placed in Work shall determine payment.
 - 1. If actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at unit prices contracted.
 - 2. If actual Work requires a 15 percent or greater change in quantity than those quantities indicated, Owner or Contractor may claim for a Contract Price adjustment.

- E. Payment includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application or installation of an item of Work; overhead and profit.
- F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit price for Work which is incorporated in or made necessary by Work.
- G. Measurement of quantities:
 - 1. Weigh scales: Inspected, tested and certified by applicable state. Weights and Measures department within past year.
 - 2. Platform scales: Of sufficient size and capacity to accommodate conveying vehicle.
 - 3. Metering devices: Inspected, tested and certified by applicable state department within past year.
 - 4. Measurement by weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
 - 5. Measurement by volume: Measured by cubic dimension using mean length, width and height or thickness.
 - 6. Measurement by area: Measured by square dimension using mean length and width or radius.
 - 7. Linear measurement: Measured by linear dimension, at item centerline or mean chord.
 - 8. Stipulated price measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of Work.
- H. Unit price schedule:
 - 1. Work Items: All Work Items are Lump Sum (LS) in accordance with Contract Documents. Lump Sum Items includes all costs of materials, equipment, labor, overhead, and profit for construction of NDR Grant – Additional Instrumentation Project.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01 22 00 – UNIT PRICES

PART 1 GENERAL

1.01 UNIT PRICE REQUIREMENTS

- A. Items of Work described herein are specifically listed in Agreement for separate measurement and payment.
- B. No other items of Work required by Contract Documents shall be measured or paid for as a separate item but shall be included as part of listed unit price item to which Work pertains. Failure to list all such related Work in following descriptions of unit price items shall not invalidate this stipulation.
- C. Contractor shall measure unit price quantities for payment and submit to Engineer.

1.02 DESCRIPTION OF UNIT PRICE ITEMS

- A. Ref No.1 Procurement of Instrumentation: Horizontal Pumps; lump sum (LS): Price includes procurement costs for instrumentation supporting a total of 43 Pumps. Each pump will have the following instrumentation: 6 Temperature Transmitters, 5 Vibration Transmitters, 1 Pressure Transmitter, 1 Level Switch and 1 Speed Transmitter.
- B. Ref No. 2 Procurement of Instrumentation: Vertical Pumps; lump sum (LS): Price includes procurement costs for instrumentation supporting a total of 52 Pumps. Each pump will have the following instrumentation: 2 Temperature Transmitters, 2 Vibration Transmitters.
- C. Ref No. 3 Procurement of Instrumentation: Constant Duty Pumps; lump sum (LS): Price includes procurement costs for instrumentation supporting a total of 21 Pumps. Each pump will have the following instrumentation: 2 Temperature Transmitters, 2 Vibration Transmitters, and 2 Level Switches.
- D. Ref No. 4 Procurement of Instrumentation: Vacuum Pumps; lump sum (LS): Price includes procurement costs for instrumentation supporting a total of 37 Pumps. Each pump will have the following instrumentation: 1 Temperature Transmitter, 1 Vibration Transmitters and 1 Pressure Transmitter.
- E. Ref No. 5 Installation of Instrumentation: Horizontal Pumps; lump sum (LS): Price includes installation costs for instrumentation, conduit and cable supporting a total of 43 Pumps. Each pump will have the following instrumentation: 6 Temperature Transmitters, 5 Vibration Transmitters, 1 Pressure Transmitter, 1 Level Switch and 1 Speed Transmitter.
- F. Ref No. 6 Installation of Instrumentation: Vertical Pumps; lump sum (LS): Price includes installation costs for instrumentation, conduit and cable supporting a total of 52 Pumps. Each pump will have the following instrumentation: 2 Temperature Transmitters, 2 Vibration Transmitters.
- G. Ref No. 7 Installation of Instrumentation: Constant Duty Pumps; lump sum (LS): Price includes installation costs for instrumentation, conduit and cable supporting a total of 21 Pumps. Each pump will have the following instrumentation: 2 Temperature Transmitters, 2 Vibration Transmitters, and 2 Level Switches.
- H. Ref No. 8 Installation of Instrumentation: Vacuum Pumps; lump sum (LS): Price includes installation costs for instrumentation, conduit and cable supporting a total of 37 Pumps. Each pump will have the following instrumentation: 1 Temperature Transmitter, 1 Vibration Transmitters and 1 Pressure Transmitter.
- I. Ref No. 9 Procurement and Installation of Radio Transmitter Field Panels, Receivers & Uninterruptible Power Supplies; lump sum (LS): Price includes final design, procurement, device setup, panel build and installation. 24 pump stations, 24 receivers and transmitters varying from 2-20 to coordinate with receiver station in control room for each station.
- J. Ref No. 10 Procurement of new PLC equipment; lump sum (LS): Price includes procuring new PLCs and/or components to incorporate radio system data and instrumentation based on Facility PLC Modifications list in specification section 40 94 43.

- SÈ Ref No. 11 Installation of new PLC Equipment; lump sum (LS): Price includes installation and wiring of new PLCs and/or components to incorporate radio system data and instrumentation based on Facility PLC Modifications list in specification section 40 94 43.
- ŠÈ Ref No. 12 Demolition of legacy measurement equipment (bubbler system) ~~As a @ - @ @ ~~~, procurement and Installation of new channel level sensors; lump sum (LS): Price includes demo of bubbler system as indicated on individual pump station PLC documentation as well as procurement, installation and wiring of 59 new channel level detectors as indicated within individual pump station drawings.
- TÈ Ref No. 13 Programming of all PLCs at all Drainage Pumps stations; lump sum (LS): Price includes programming to pass the data from the receiver to the PLC via TCP Modbus communication link. No HMI development is expected with the data coordination of the PLCs for each drainage pump station.
- pÈ Ref No. 14 Power Cable and Conduit Procurement and Installation; lump sum (LS): Price includes procurement and installation for conduit and cabling needed to provide power to new field panels and any new PLC cabinets. Cabling to be quoted per Linear Foot (LF).
- UÈ Ref No. 15 Generator sensor procurement, coordination & installation; lump sum (LS): Price includes procurement, coordination and installation of sensors associated with the generators at the drainage pump stations. There are a total of 31 generators distributed throughout the pump stations that will have signals communicated to the PCL and derived from the generator control panel (Fuel Pressure, Oil Pressure, Oil Temperature, Vibration & Temperature) as well as power sensors installed and tied to the PLC for each station where generators reside. All of this I/O is detailed by pump station in the Input-Output list for each drainage pump station for clarity.
- ÚÈ Ref No. 16 Diesel Tank Level Sensors Procurement and Installation; lump sum (LS): Price includes procurement of instrumentation as well as installation at each pump station as detailed in the individual documents for each pump station. There will be a total of 28 tank level sensors to install and connect to the respective control room PLC.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other DIVISION 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.
 - 3. Project Management Software
 - 4. Requests for Information (RFIs).
 - 5. Project meetings.
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility are assigned to a specific contractor.
- C. Related Requirements:
 - 1. DIVISION 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
 - 2. DIVISION 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. DIVISION 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.03 DEFINITIONS

- A. RFI: Request from the CONTRACTOR seeking information required by or clarifications of the Contract Documents.

1.04 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
- B. Key Personnel Names: Within 10 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
 - 1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.05 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for the CONTRACTING OFFICER and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as OWNER's property.

1.06 PROJECT MANAGEMENT SOFTWARE

- A. General: The CONTRACTOR shall purchase, provide training, and technical support for their project personnel and provide the funding, required training, and technical support for a "stand alone" account for the OWNER that will cover the project period plus 12 months after contract close-out.
- B. Computer Software: Utilize "ProLog Connect" or approved alternate to manage the following items:
1. Budget, Cash Flow Projections, Schedule of Values (SOVs), PCOs, COs and Pay Applications.
 2. Schedules.
 3. Construction Drawings.
 4. As-built Red-line Drawings.
 5. ASKs, SSKs, etc.
 6. Construction Directives.
 7. RFIs.
 8. Submittals.
 9. Deliverables.
 10. Meeting Notes.
 11. E-mail and Correspondence.
 12. Transmittal Letters.
 13. Contact List.
 14. Punch Lists.
 15. Daily Reports.

16. Safety Meetings.
17. Safety Job Loss Reports.

1.07 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
 1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to the coordination drawings by multiple contractors in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate required installation sequences.
 - e. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to OWNER indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

1.08 REQUESTS FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, CONTRACTOR shall prepare and submit an RFI in the form specified.
 1. Submit RFI to OWNER and copy CONTRACTING.
 2. OWNER will return RFIs submitted to OWNER by other entities controlled by CONTRACTOR with no response.
 3. Coordinate and submit RFIs in a prompt manner so as to avoid delays in CONTRACTOR's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 1. Project name.
 2. Contract number.
 3. Date.
 4. Name of CONTRACTOR.
 5. RFI number, numbered sequentially.
 6. RFI subject.
 7. Specification Section number and title and related paragraphs, as appropriate.
 8. Drawing number and detail references, as appropriate.
 9. Field dimensions and conditions, as appropriate.
 10. CONTRACTOR's suggested resolution. If CONTRACTOR's suggested resolution impacts the Contract Time or the Contract Sum, CONTRACTOR shall state impact in the RFI.
 11. CONTRACTOR's signature.
 12. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. Hard-Copy RFI Forms:
 1. Form approved and provided by CONTRACTING.
 2. Identify each page of attachments with the RFI number and sequential page number.

- D. Software Generated RFI Forms:
 - 1. Form approved and provided by CONTRACTING OFFICER.
 - 2. Identify each page of attachments with the RFI number and sequential page number.
 - 3. Attachments shall be electronic files in Adobe Acrobat PDF format.

- E. CONTRACTING OFFICER's Action: CONTRACTING OFFICER will review each RFI, determine action required, and respond. Allow seven working days for OWNER's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
 - 1. The following CONTRACTOR-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of CONTRACTOR's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of OWNER's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 - 2. CONTRACTING OFFICER's action may include a request for additional information, in which case CONTRACTING OFFICER's time for response will date from time of receipt of additional information.
 - 3. CONTRACTING OFFICER's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for CONTRACTOR to submit Change Proposal.
 - a. If CONTRACTOR believes the RFI response warrants change in the Contract Time or the Contract Sum, notify CONTRACTING OFFICER in writing within seven days of receipt of the RFI response.

- F. RFI Log: CONTRACTOR shall prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. CONTRACTING OFFICER should be copied on all RFIs when submitted to OWNER and on OWNER's response. CONTRACTING OFFICER will not respond to RFIs unless the RFI directly pertains to contractual questions. Software log with not less than the following:
 - 1. Project name.
 - 2. Name and address of CONTRACTOR.
 - 3. Name and address of COR and CONTRACTING OFFICER.
 - 4. RFI number including RFIs that were returned without action or withdrawn.
 - 5. RFI description.
 - 6. Date the RFI was submitted.
 - 7. Date CONTRACTING OFFICER's response was received.
 - 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 - 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.09 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify CONTRACTING OFFICER and OWNER of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Notes: The OWNER will record significant discussions and agreements achieved. Distribute the meeting notes to everyone concerned, including CONTRACTING OFFICER, within three days of the meeting.
 - 4. The CONTRACTOR shall acknowledge concurrence with meeting notes by signing notes and forwarding copy to CONTRACTING OFFICER. Any exceptions to the meeting notes should be noted by the CONTRACTOR to the COR for action prior to concurrence.

- B. Preconstruction Conference: The OWNER will schedule and conduct a preconstruction conference before starting construction, at a time and location convenient to OWNER.
1. Conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of OWNER, CONTRACTING OFFICER and their consultants; CONTRACTOR and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Critical work sequencing and long-lead items.
 - c. Designation of key personnel and their duties.
 - d. Lines of communications.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Preparation of record documents.
 - l. Use of the premises.
 - m. Work restrictions.
 - n. Working hours.
 - o. Responsibility for temporary facilities and controls.
 - p. Procedures for moisture and mold control.
 - q. Procedures for disruptions and shutdowns.
 - r. Construction waste management and recycling.
 - s. Parking availability.
 - t. Office, work, and storage areas.
 - u. Equipment deliveries and priorities.
 - v. First aid.
 - w. Security.
 - x. Progress cleaning.
 4. Notes: OWNER shall conduct the meeting and will record and distribute meeting notes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise CONTRACTING OFFICER of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility requirements.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written instructions.
 - n. Warranty requirements.
 - o. Compatibility of materials.

- p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
- 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 - 4. Reporting: Distribute notes of the meeting to each party present and to other parties requiring information within three days of meeting event.
 - 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at regular intervals to be determined at the preconstruction meeting. Coordinate dates of meetings with preparation of payment requests.
- 1. Coordinate dates of meetings with preparation of payment requests.
 - 2. Attendees: In addition to representatives of OWNER and CONTRACTING OFFICER, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 3. Agenda: Review and correct or approve notes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. CONTRACTOR's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to CONTRACTOR's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Status of RFIs.
 - 16) Status of proposal requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.

4. Notes: Entity responsible for conducting the meeting will record and distribute the meeting notes to each party present and to parties requiring information, within three days of the meeting event.
 - a. Schedule Updating: Revise CONTRACTOR's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

- E. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
 1. Attendees: In addition to representatives of OWNER, CONTRACTING OFFICER each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve notes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Construction Waste Management Requirements
 - 12) Progress cleaning.
 - 13) Quality and work standards.
 - 14) Change Orders.
 3. Notes: Entity responsible for conducting the meeting will record and distribute the meeting notes to each party present and to parties requiring information, within three days of the meeting event.
 - a. Schedule Updating: Revise CONTRACTOR's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 PART 2 - PRODUCTS

NOT USED

PART 3 PART 3 - EXECUTION

NOT USED

END OF SECTION 01 31 00

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SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other DIVISION 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Startup construction schedule.
 - 2. CONTRACTOR's construction schedule.
 - 3. Construction schedule updating reports.
 - 4. Daily construction reports.
 - 5. Material location reports.
 - 6. Site condition reports.
 - 7. Special reports.
 - a. Preconstruction photographs.
 - b. Periodic construction photographs.
 - c. Progress documentation construction photographs.
 - d. Final completion construction photographs.
- B. Related Requirements:
 - 1. DIVISION 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 2. DIVISION 01 Section "Submittal Procedures" for submitting schedules, reports, and photographic documentation.
 - 3. DIVISION 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.
 - 4. DIVISION 01 Section "Closeout Procedures" for submitting photographic documentation as project record documents at Project closeout.
 - 5. DIVISION 02 Section "Selective Demolition" for photographic documentation before cutting, patching, or demolition operations commence.

1.03 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by OWNER.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.

- F. Float: The measure of leeway in starting and completing an activity.
 - 1. Float time belongs to the OWNER.
 - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
 - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Fragment: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
- H. Major Area: A significant roof section, or a similar significant construction element.
- I. Milestone: A key or critical point in time for reference or measurement.
- J. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.
- K. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.04 INFORMATIONAL SUBMITTALS

- A. Submittal Schedule: Submit two (2) hard copies of submittal schedule at project kickoff meeting.

Arrange the following information in tabular form:

- 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for OWNER's final release or approval.
 - 7. Approval of cost-loaded preliminary construction schedule will not constitute approval of Schedule of Values for cost-loaded activities.
- B. Startup construction schedule: Submit five (5) hard copies.
 - 1. Approval of cost-loaded, startup construction schedule will not constitute approval of schedule of values for cost-loaded activities.
 - C. Preliminary Network Diagram: Submit five (5) copies of size required to display entire network for entire construction period. Show logic ties for activities.
 - D. CONTRACTOR's Construction Schedule: Submit five (5) copies of Initial schedule, of size required to display entire schedule for entire construction period.
 - 1. Submit a working electronic copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.
 - E. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
 - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
 - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
 - 3. Total Float Report: List of all activities sorted in ascending order of total float.
 - 4. Earnings Report: Compilation of CONTRACTOR's total earnings from the Notice to Proceed until most recent Application for Payment.
 - F. Construction Schedule Updating Reports: Submit with Applications for Payment.

- G. Daily Construction Reports: Submit at five copies at weekly intervals.
- H. Material Location Reports: Submit at five copies at weekly intervals.
- I. Field Condition Reports: Submit five copies at time of discovery of differing conditions.
- J. Special Reports: Submit five copies at time of unusual event.
- K. Photographic Documentation:
 - 1. Key Plan: Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph. Indicate elevation or location of construction. Include same information as corresponding photographic documentation.
 - 2. Photo log: Submit photo log with two horizontal photographs per page. Include sequential identifier, date of photograph, description of vantage point and direction (by compass point). Include description of feature(s) being photographed.
 - 3. Digital Photographs: Submit image files within three days of taking photographs.
 - a. Digital Camera: Minimum sensor resolution of 8 megapixels.
 - b. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph, accompanied by key plan file.
 - 4. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of OWNER.
 - d. Name of CONTRACTOR.
 - e. Date photograph was taken.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.05 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 48 hours of OWNER's request. Scheduling Consultant may be either CONTRACTOR employee or subconsultant and shall be approved by OWNER.
- B. Project Kickoff Meeting: Conduct conference at Project site to comply with requirements in DIVISION 01 Section "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and CONTRACTOR's construction schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including work stages, area separations, interim milestones.
 - 4. Review delivery dates for OWNER-furnished products.
 - 5. Review schedule for work of OWNER's separate contracts.
 - 6. Review submittal requirements and procedures.
 - 7. Review time required for review of submittals and resubmittals.
 - 8. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 9. Review time required for Project closeout and OWNER startup procedures, including commissioning activities.
 - 10. Review and finalize list of construction activities to be included in schedule.
 - 11. Review procedures for updating schedule.

1.06 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

- B. Coordinate CONTRACTOR's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.07 USAGE RIGHTS

- A. Obtain and transfer copyright usage rights from photographer to OWNER for unlimited reproduction of photographic documentation.

PART 2 PRODUCTS

2.01 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
 - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and CONTRACTOR's Construction Schedule.
 - 2. Initial Submittal: Submit concurrently with preliminary network diagram. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of CONTRACTOR'S Construction Schedule.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of final completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each section or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by OWNER.
 - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - a. Major or Critical Submittals are identified on Submittal Register found at the end of Section 01 33 00 "Submittal Procedures."
 - 3. Submittal Review Time: Include review and resubmittal times indicated in DIVISION 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in CONTRACTOR's construction schedule with submittal schedule.
 - 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 - 5. Final Completion: Indicate completion in advance of date established for Final Completion, and allow time for OWNER's administrative procedures necessary for certification of Final Completion and Acceptance by OWNER.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Work under More Than One Contract: Include a separate activity for each contract.
 - 2. Work by OWNER: Include a separate activity for each portion of the Work performed by OWNER.
 - 3. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.

- d. Partial use before Substantial Completion.
- e. Use of project restrictions.
- f. Provisions for future construction.
- g. Seasonal variations.
- h. Environmental control.
4. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Utility flushing.
 - m. Startup and placement into final use and operation.
5. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities.

- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Work accepted by the OWNER prior to Final Completion and Final Completion and acceptance by the OWNER. Interim milestones shall be discussed in the pre-construction meeting.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.

2.03 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: Submit diagram within 14 days of date established for the Notice to Proceed. Outline significant construction activities for the first 60 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare CONTRACTOR's construction schedule using a computerized cost- and resource-loaded, time-scaled CPM network analysis diagram for the Work.
 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established of Contract award.
 - a. Failure to include any work item required for performance of this Contract shall not excuse CONTRACTOR from completing all work within applicable completion dates, regardless of OWNER's approval of the schedule.
 2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
 3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
 4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
 - a. Preparation and processing of submittals.
 - b. Mobilization and demobilization.
 - c. Purchase of materials.
 - d. Delivery.
 - e. Fabrication.
 - f. Utility interruptions.
 - g. Installation.
 - h. Work by OWNER that may affect or be affected by CONTRACTOR's activities.
 - i. Testing and commissioning.
 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
 4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
 - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
- E. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. CONTRACTOR or subcontractor and the Work or activity.
 2. Description of activity.
 3. Main events of activity.
 4. Immediately preceding and succeeding activities.
 5. Early and late start dates.
 6. Early and late finish dates.
 7. Activity duration in workdays.
 8. Total float or slack time.
 9. Average size of workforce.
 10. Dollar value of activity (coordinated with the schedule of values).
- F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
 2. Changes in early and late start dates.
 3. Changes in early and late finish dates.
 4. Changes in activity durations in workdays.
 5. Changes in the critical path.
 6. Changes in total float or slack time.
 7. Changes in the Contract Time.
- G. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
 2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
 3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
 4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
 - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
 - b. Submit value summary printouts one week before each regularly scheduled progress meeting.
- H. Identify potential schedule risks outside of Critical Path.

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 7. Accidents.
 - 8. Meetings and significant decisions.
 - 9. Unusual events (see special reports).
 - 10. Stoppages, delays, shortages, and losses.
 - 11. Meter readings and similar recordings.
 - 12. Emergency procedures.
 - 13. Orders and requests of authorities having jurisdiction.
 - 14. Change Orders received and implemented.
 - 15. Change Directives received and implemented.
 - 16. Services connected and disconnected.
 - 17. Equipment or system tests and startups.
 - 18. Partial completions and occupancies.
 - 19. Substantial Completions authorized.
- B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
- C. Field Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.05 SPECIAL REPORTS

- A. General: Submit special reports directly to OWNER within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by CONTRACTOR's personnel, evaluation of results or effects, and similar pertinent information. Advise OWNER in advance when these events are known or predictable.

2.06 DIGITAL IMAGES

- A. Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.
- B. Photographic submittals shall be compiled into a photo log naming the files utilizing the date, location, and description of photo content.

PART 3 EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

1. In-House Option: OWNER may waive the requirement to retain a consultant if CONTRACTOR employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.
 2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.
- B. CONTRACTOR's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities.
1. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 2. As the Work progresses, indicate final completion percentage for each activity.
- C. Distribution: Distribute copies of approved schedule to OWNER, testing and inspecting agencies, and other parties identified by CONTRACTOR with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

3.02 CONSTRUCTION PHOTOGRAPHS

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs shall be oriented in landscape only. Photographs with blurry or out-of-focus areas will not be accepted. Wide range photographs showing vicinity of detailed photographs shall accompany close-up detail photographs
1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
1. Date and Time: Include date and time in file name for each image.
 2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to OWNER.
- C. Preconstruction Photographs: Before commencement of excavation, cutting, or demolition, take photographs of Project site and surrounding properties, including existing items to remain during construction. Take photographs from a selection of different vantage points, as directed by the Contracting Officers.
1. Flag construction limits before taking construction photographs.
 2. Take a minimum of 8 photographs to show existing conditions adjacent to property before starting the Work.
- D. Periodic Construction Photographs: Take a minimum of 12 digital photographs bi-weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken. Utilize common vantage points from the Preconstruction Photographs when feasible.

END OF SECTION 01 32 00

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SECTION 01 33 00 – SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other DIVISION 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
 - 1. DIVISION 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
 - 2. DIVISION 01 Section "Construction Progress Documentation" for submitting schedules and reports, including CONTRACTOR's construction schedule.
 - 3. DIVISION 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
 - 4. DIVISION 01 Section "General Requirements" for submitting record Drawings, record Specifications, and record Product Data.

1.03 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require OWNER's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require OWNER's responsive action. Submittals may be rejected for not complying with requirements.
- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.04 ACTION SUBMITTALS

- A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by OWNER and additional time for handling and reviewing submittals required by those corrections.

1.05 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Submittal Register Form is included in this document for reference and record keeping.
- B. CONTRACTOR's Digital Data Files: Electronic copies of the Contract Drawings will be provided in PDF format for CONTRACTOR's use in preparing submittals. It is the CONTRACTOR's responsibility to field-verify dimensions.

- C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. OWNER reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- D. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on OWNER's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. OWNER will advise CONTRACTOR when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow 15 days for review of each resubmittal.

1.06 SUBMITTAL PROCEDURES

- A. Submit electronically when required by Specification Sections. Contact OWNER as defined during the Project kickoff meeting. An FTP/FTA site or direct posting site will be provided after award to post submittals and to receive return submittals if requested by OWNER.

- B. OWNER will distribute to other interested parties as necessary.

- C. Submittals shall be in English language.

- D. Weights, measures, and units shall be English units with SI metric values following in parenthesis.

- E. Symbols and drawings shall conform to ANSI Y32.2/IEEE 315/CSA Z99.

- F. Submittals shall include the following Identification and Information:
 - 1. Include a submittal transmittal form with all submittals. Incorporate the following:
 - a. Sequential Transmittal number.
 - b. Name of firm or entity that prepared each submittal on label or title block.
 - c. Provide a space approximately 5 by 8 inches below title block to record CONTRACTOR's review and approval markings and action taken by OWNER.
 - d. Include the following information for processing and recording action taken:
 - 1) Project name.
 - 2) Date.
 - 3) Name of OWNER.
 - 4) Name of CONTRACTOR.
 - 5) Name of subcontractor (if applicable).
 - 6) Name of supplier (if applicable).
 - 7) Name of manufacturer (if applicable).
 - 8) Submittal number or other unique identifier, including revision identifier.
 - a) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g. 01 33 00.01) Resubmittals shall include an alphabetic suffix after another decimal point (e.g. 01 33 00.01.A).
 - 9) Number and title of appropriate Specification Section.
 - 10) Drawing number and detail references, as appropriate.
 - 11) Category and type of submittal.
 - 12) Location(s) where product is to be installed, as appropriate.
 - 13) Include a brief narrative explaining intended purpose of the product, as appropriate.

- 14) If the submittal is a resubmittal, attach a separate sheet, prepared on CONTRACTOR's letterhead, a record narrative of changes from the previous submittal.
 - 15) Name and Signature of transmitter.
 - e. Assemble each submittal individually and appropriately for transmittal handling.
 - f. OWNER will return without review submittals received from sources other than CONTRACTOR.
2. Physical Material Sample Submittals: Include completed submittal transmittal form.

1.07 CONTRACTOR RESPONSIBILITIES

- A. Review submittals prior to submission. CONTRACTOR shall review and apply stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer/ product, dimensions, and coordination of information with other parts of the Work.
- B. Determine and verify:
 1. Field measurements.
 2. Field construction criteria.
 3. Catalog numbers and similar data.
 4. Conformance to Specifications.
- C. Coordinate each submittal with other submittals and with requirements of Work and of Contract Documents.
- D. Notify OWNER in writing, at time of submission, of any deviations in submittals from requirements of Contract Documents. Any such deviations permitted by OWNER will require modifications of Contract Documents.
- E. Provide space on Shop Drawings for CONTRACTOR and OWNER stamps.
- F. When Shop Drawings are revised for resubmission, identify all changes made since previous submission.
- G. Submittals containing language imposing duties on others (such as verification of dimensions or supply of related information) inconsistent with contract language shall be null and void.
- H. Submittals shall not be used as media for inquiries for information or for verification of information that must be supplied by others to CONTRACTOR. Inquiries or verification of information shall be made by separate CONTRACTOR submittal using Request for Information (RFI) process.
- I. Begin no fabrication or Work which requires submittal review until return of submittals by OWNER with stamp, as either "Reviewed" or "Reviewed as Noted". Submittals returned "Reviewed as Noted-Resubmit" require resubmittal.
- J. Distribute copies of reviewed submittals that carry OWNER stamp as either "Reviewed" or "Reviewed as Noted" as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- K. Submittals not requested will not be recognized or processed.

1.08 OWNER DUTIES

- A. Review required submittals with reasonable promptness and in accord with schedule, only for general conformance to design concept of Project and compliance with information given in Contract Documents. Review shall not extend to means, methods, sequences, techniques, or procedures of construction or to safety precautions or program incident thereto. Review of a separate item as such will not indicate approval of assembly in which item functions.

- B. Affix stamp and initials or signature, and indicate requirements for resubmittal, or review of submittal. OWNER's action on submittals is classified as follows:
1. No Exceptions Taken: Submittal has been reviewed and appears to be in conformance to design concept of Project and Contract Documents. CONTRACTOR may proceed with fabrication of work in submittal.
 2. Exceptions As Noted: Submittal has been reviewed and appears to be in conformance to design concept of Project and Contract Documents, except as noted by reviewer. Contractor may proceed with fabrication of work in submittal with modifications and corrections as indicated by reviewer.
 3. Revise and Resubmit: Submittal has been reviewed and appears not to be in conformance to design concept of Project or with Contract Documents. CONTRACTOR shall not proceed with fabrication of work in submittal, but instead shall make any corrections required by reviewer and resubmit for review.
 4. Returned without Review: Submittal is being returned without having been reviewed because: 1) not required by Contract Documents; 2) grossly incomplete; 3) indicates no attempt at conformance to Contract Documents; 4) cannot be reproduced; 5) lacks CONTRACTOR's completed approval stamp; or 6) lacks design professional's seal when required by law or Contract Documents. If submittal is required by Contract Documents, CONTRACTOR shall not proceed with Work as detailed in submittal, but instead shall correct defects and resubmit for review.
 5. For Information Only: Submittal has not been reviewed but is being retained for informational purposes only.
 6. Void: Submittal is voided because it is no longer required or has been superseded by another submittal.
- C. Return one electronic copy of submittals to CONTRACTOR. CONTRACTOR shall make additional distribution as required.
- D. Review of submittals shall not relieve CONTRACTOR from responsibility for any variation from Contract Documents unless CONTRACTOR has, in writing, called OWNER's attention to such variation at time of submission, and OWNER has given written concurrence pursuant to Contract Documents to specific variation, nor shall any concurrence by OWNER or other reviewer relieve CONTRACTOR from responsibility for errors or omissions in submittals.

1.09 SHOP DRAWINGS SUBMITTALS

- A. Submit for review for limited purpose of checking for conformance to information given and design concept expressed in Contract Documents.
- B. Designate in construction schedule, or in separate coordinated submittal schedule, dates for submission and dates that reviewed submittals will be needed.
- C. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in Work or in work of other contractors.
- D. Present in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable review of information as required.
- E. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Drawings.
- F. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- G. Equipment which is identified on Contract Documents with tag number or name shall be identified on Shop Drawing with same tag.
- H. Schedule submittals to expedite Project. Coordinate submission of related items.

- I. For each submittal for review, allow 15 days to complete review process.
- J. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- K. Shop Drawings shall be submitted in electronic format.
 1. Submit electronic copy to OWNER at project site, or post in FTP site. Specific instructions will be provided after award.
 2. Submittal Transmittal form (see pdf attached) shall be provided in Word format for CONTRACTOR to edit and use with each submittal. MSWord template will be provided after award.
 3. Text documents shall be submitted in .pdf format except for the shop drawing Transmittal Form.
 4. Drawings shall be submitted in .pdf or .tif format.
 5. Electronic submittal shall be suitable for reproduction in black and white.
 6. Samples may be submitted to OWNER at address decided during Preconstruction meeting.
- L. Submittals shall contain Submittal Transmittal Form as described under 1.06. Submittals shall also contain:
 1. Field dimensions, clearly identified as such.
 2. Relation to adjacent or critical features of Work or materials.
 3. Applicable standards, such as ASTM.
 4. Identification of deviations from Contract Documents.
 5. Identification of revisions on resubmittals.
 6. An 8" x 3" blank space for CONTRACTOR and reviewer stamps.
 7. Indication of CONTRACTOR's approval, initialed or signed, with wording substantially as follows:

"Contractor represents to Owner that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or assumes full responsibility for doing so and has reviewed or coordinated each submittal with requirements of Work and Contract Documents."
 8. If Contract Documents include performance specifications stating required results which can be verified as meeting stipulated criteria, so that further design by CONTRACTOR prior to fabrication is necessary, Submittal depicting such design must be prepared under seal of registered professional engineer licensed in the state of Louisiana and Submittal shall be signed and sealed in accordance with applicable regulations and with following certification statement:

"I hereby certify that this engineering document was prepared by me or under my direct personal supervision, that I am a duly licensed professional engineer under laws of state of Louisiana and I accept responsibility for adequacy of this document to meet criteria stipulated in Contract Documents."
- M. Product Data:
 1. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
 2. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- N. Design data:
 1. Submit for OWNER's knowledge.
 2. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

- O. Data sheets:
 - 1. Data sheets may require information not known until CONTRACTOR's engineering is complete. Furnish estimated values based on good engineering judgment. Estimated values shall be identified by placement of "(est.)" next to value.
 - 2. Data Sheets shall be updated and resubmitted by CONTRACTOR once final values are known.
 - 3. Do not leave items blank or labeled "To Be Determined" or "Later."
 - 4. Do not submit manufacturer Product Data instead of completed data sheets.

- P. Test reports:
 - 1. Submit for OWNER's knowledge.
 - 2. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

- Q. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Owners, and other information as specified or otherwise requested.

- R. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

- S. Certificates:
 - 1. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor.
 - 2. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
 - 3. Certificates and Certification Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 4. Certificates may be recent or previous test results on material or product, but must be acceptable to reviewer.

- T. Test and Inspection Report Submittals: Comply with requirements specified in Division 01 Section 01 40 00 "Quality Requirements".

- U. Manufacturer's instructions:
 - 1. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Owner in quantities specified for Product Data.
 - 2. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

- V. Manufacturer's field reports:
 - 1. Submit report within 30 days of observation for information.
 - 2. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

- W. Erection drawings:
 - 1. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
 - 2. Data indicating inappropriate or unacceptable Work may be subject to action Owner.

- X. Samples:
 - 1. Samples for selection as specified in product sections:
 - a. Submit for aesthetic, color, or finish selection.
 - b. Submit samples of finishes for selection.
 - 2. Submit to illustrate functional and aesthetic characteristics of product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

3. Include identification on each sample, with full Project information.
 4. Submit number specified in individual Specification Sections; 2 of which will be retained by OWNER.
 5. Reviewed Samples which may be used in Work are indicated in individual Specification Sections.
 6. Samples will not be used for testing purposes unless specifically stated in specification section.
 7. Field Samples and mock-ups:
 - a. Erect at Project Site, at location acceptable to OWNER.
 - b. Fabricate each Sample and mock-up complete and finished.
 - c. Remove mock-ups upon acceptance of Work or when acceptable to OWNER.
- Y. Proposed products list:
1. Within 15 days after date of Notice to Proceed, submit list of major products proposed to OWNER for use, with name of manufacturer, trade name, and model number of each product.
 2. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- Z. Operations and maintenance manuals:
1. Designate in construction schedule, or in separate coordinated schedule, dates for submission and dates that reviewed operations and maintenance manuals will be needed.
 2. Operations and maintenance manuals shall be presented in clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable reviewer to review information as required. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Drawings.

1.10 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in submittals required by OWNER and resubmit until stamped as either "No Exceptions Taken," "Exceptions as Noted," or "For Information Only."
- B. Text and depictions changed on Submittal shall be back-circled (clouded).
- C. OWNER will assume that portions of Submittal not back-circled have not been changed by CONTRACTOR from previous submission.
- D. Indicate revision number and date in document revision block.

1.11 DISTRIBUTION

- A. Distribute reproductions of Shop Drawings which carry OWNER stamp as either "No Exceptions Taken" or "Exceptions as Noted" to:
 1. Job site file.
 2. Record Documents file.
 3. Other affected contractors.
 4. Subcontractors.
 5. Supplier or fabricator.

1.12 CONSTRUCTION PROGRESS DOCUMENTATION

- A. Construction progress schedules:
 1. Submit preliminary outline Schedules to OWNER within 15 days after Notice to Proceed, or as established in Notice to Proceed for coordination with Owner's requirements. After review, submit detailed schedules within 15 days modified to accommodate revisions recommended by OWNER.
 - a. Submit revised Progress Schedules with each Application for Payment. Refer to 01 32 00.
 - b. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
 2. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

1.13 PHOTOGRAPHIC DOCUMENTATION

- A. Provide photographs of Site and construction throughout progress of Work produced by a photographer acceptable to OWNER. Refer to See 01 32 00.
- B. Submit photographs with each Application for Payment.
- C. Photographs: Refer to requirements described in Section 01 32 00.

1.14 SAFETY PROCEDURES MANUAL

- A. Prepare and submit to Owner safety procedures manual defining CONTRACTOR's safety program for work on site. Manual shall include:
 - 1. Safety responsibilities of CONTRACTOR's personnel.
 - 2. Description of CONTRACTOR's safety program.
 - 3. Requirements of use of personal protective equipment.
 - 4. General safety-related rules of conduct.
 - 5. Fire prevention measures.
 - 6. Accident reporting procedures.
 - 7. Procedures for hot work (welding, cutting, etc.), overhead work, and work in enclosed, confined spaces (tank, boiler, etc.). Reference 29 CFR Part 1910.

1.15 SUBMITTAL TRANSMITTAL FORM PROCEDURES

- A. Submittals shall be accompanied by completed copies of Submittal Transmittal form, bound herein. An electronic version of transmittal form is available and may be obtained from OWNER. Reproduce additional copies as required.
- B. Submit 3 copies of transmittal form for initial submittals and resubmittals. Sequentially number transmittal form. Revise submittals with original number and sequential alphabetic suffix.
- C. Prior to submittal, complete information under heading "CONTRACTOR's Transmittal."
- D. OWNER will complete information under "Reviewer's Action."
- E. Do not include submittals for more than one section of Specifications on Submittal Transmittal form.
- F. Identify project title, location, and number and contract title and number.
- G. Identify preparer name and, submittal number, including preparer's submittal revision number.
- H. A brief description under "Title" should clearly identify specific application of equipment or material covered by Submittal, utilizing where possible same title used in Drawings and Specifications.
- I. Identify Specification Section number.
- J. Apply CONTRACTOR's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of Work and Contract Documents.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION 01 33 00

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SUBMITTAL TRANSMITTAL

Transmittal No. _____	Project Location _____	
Project No. _____	Date Received _____	Contract Title _____
Contract No. _____	Date Distributed _____	Project Title _____

CONTRACTOR'S TRANSMITTAL

ENGINEER'S/ARCHITECT'S ACTION

STATUS ABBREVIATIONS
 R - Reviewed
 RN - Reviewed as Noted
 RNR - Reviewed as Noted Resubmit
 RS - Resubmit
 RET - Returned Without Review
 FIO - For Information Only
 V - Void

Preparer	Preparer Submittal No.	Rev No.	Title	Section	Dwg No.	Status

CONTRACTOR'S Remarks

Address _____

By _____ Date _____

Action of any kind on drawings by ENGINEER/ARCHITECT does not relieve CONTRACTOR from responsibility for errors, correctness of details, or conformance to the Contract.

ENGINEER'S/ARCHITECT'S Remarks

By _____

Date _____



Stanley Consultants

SECTION 01 40 00 – QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other DIVISION 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve CONTRACTOR of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit CONTRACTOR's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for CONTRACTOR to provide quality-assurance and quality-control services required by OWNER or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Requirements:
 - 1. DIVISIONS 01, 02 through 40 Sections for specific test and inspection requirements.

1.03 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by OWNER.
- C. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.
- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, e.g., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. Installer/Applicator/Erector: CONTRACTOR or another entity engaged by CONTRACTOR as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).
- I. Experienced: When used with an entity or individual, "experienced" means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- J. Special Tests and Inspections: Testing or inspection of materials, installation, fabrication, erection, or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and referenced standards.
 1. Periodic Special Inspection: The part-time or intermittent observation of work requiring special inspection by an approved special inspector who is present in the area where the work has been or is being performed and at the completion of the work.

1.04 CONFLICTING REQUIREMENTS

- A. Referenced Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to OWNER for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to OWNER for a decision before proceeding.

1.05 INFORMATIONAL SUBMITTALS

- A. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.06 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 1. Date of issue.
 2. Project title and number.
 3. Name, address, and telephone number of testing agency.
 4. Dates and locations of samples and tests or inspections.
 5. Names of individuals making tests and inspections.
 6. Description of the Work and test and inspection method.
 7. Identification of product and Specification Section.
 8. Complete test or inspection data.
 9. Test and inspection results and an interpretation of test results.
 10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 12. Name and signature of laboratory inspector.
 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 1. Name, address, and telephone number of technical representative making report.

2. Statement on condition of substrates and their acceptability for installation of product.
 3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 5. Other required items indicated in individual Specification Sections.
- C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.07 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.
- F. Specialists: Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
1. Requirements of authorities having jurisdiction shall supersede requirements for specialists.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
1. CONTRACTOR responsibilities include the following:
 - a. Provide test specimens representative of proposed products and construction.
 - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

- c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
 - d. When testing is complete, remove test specimens, assemblies, mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to OWNER with copy to CONTRACTOR. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.08 QUALITY CONTROL

- A. CONTRACTOR Responsibilities: Tests and inspections not explicitly assigned to Owner are CONTRACTOR's responsibility. Perform additional quality-control activities required to verify that the Work complies with requirements, whether specified or not.
1. CONTRACTOR will furnish Government with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Payment for these services will be made by the CONTRACTOR.
 3. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to CONTRACTOR.
 4. Testing and inspecting requested by CONTRACTOR and not required by the Contract are CONTRACTOR's responsibility.
 5. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 6. Where quality-control services are indicated as CONTRACTOR's responsibility, submit a certified written report, in duplicate, of each quality-control service.
- B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in DIVISION 01 Section "Submittal Procedures."
- C. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- D. Retesting/Reinspecting: Regardless of whether original tests or inspections were CONTRACTOR's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- E. Testing Agency Responsibilities: Cooperate with OWNER and CONTRACTOR in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify OWNER and CONTRACTOR promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through CONTRACTOR.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform any duties of CONTRACTOR.
- F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.

2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.09 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: CONTRACTOR will engage the services of qualified Special Inspectors acceptable to the Contracting Officer, to conduct special tests and inspections.
1. CONTRACTOR shall complete "Statement of Special Inspections" attached to this Section upon award, and shall perform all necessary inspections per the requirements specified herein, and the Building Code:
- B. Special Tests and Inspections: Conducted by a qualified testing agency as required by authorities having jurisdiction, as indicated in individual Specification Sections, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviews the completeness and adequacy of those procedures to perform the Work.
 2. Notifying OWNER and CONTRACTOR promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to OWNER with copy to CONTRACTOR and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected work.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in DIVISION 01 Section "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are CONTRACTOR's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 43 33 – MANUFACTURER'S FIELD SERVICES

PART 1 GENERAL

1.01 INSTALLATION SUPERINTENDENT RESPONSIBILITIES

- A. *Contractor shall* provide qualified Installation Superintendent(s), as necessary to:
 - 1. Instruct and advise installation Contractor regarding proper method for unloading, erecting, and installing equipment to assure installation in accordance with manufacturer's instructions.
 - 2. Assure that alignment and clearances of equipment are checked and adjusted to allowable tolerances.
 - 3. Inspect completed installation to assure that apparatus is in operating condition, making such detailed checks of equipment installation as are necessary to ascertain that equipment is assembled, installed, aligned, connected, lubricated, and prepared for operation in accordance with manufacturer's instructions and recommendations.
 - 4. Provide Engineer with duplicate copies of final alignment and clearance measurements on all rotating or reciprocating equipment. Measurements shall clearly identify each piece of equipment.
 - 5. Supervise preliminary operation of equipment and necessary adjustments.
 - 6. Fully instruct Owner's operating personnel in operation and maintenance of equipment.
- B. Presence of Installation Superintendent will in no way relieve Contractor of any responsibility assumed under Agreement.
- C. Work and abilities of Installation Superintendent shall be subject to review of Engineer. If Engineer determines that any Installation Superintendent is not properly qualified, Contractor shall replace Installation Superintendent upon written notification by Engineer.
- D. Contractor shall provide continuity in assignment of Installation Superintendent to Work. In event substitution of Installation Superintendent is made which is not at request of Engineer, substitute's time for "familiarization" shall be at Contractor's expense.

1.02 SERVICE ENGINEER RESPONSIBILITIES

- A. Contractor shall provide qualified Service Engineer(s), as necessary to:
 - 1. Supervise assembly of equipment.
 - 2. Inspect equipment after it is installed to assure that all details of installation are correct and that equipment is prepared for operation in accordance with manufacturer's instructions and recommendations.
 - 3. Check connections to equipment and adjust, or supervise adjustment of, control and indicating devices after equipment has been installed and connected.
 - 4. Fully instruct Owner's operating personnel in operation and maintenance of equipment.
- B. Presence of Service Engineer will in no way relieve Contractor of any responsibility assumed under Agreement.
- C. Work and abilities of Service Engineer shall be subject to review of Engineer. If Engineer determines that any Service Engineer is not properly qualified, Contractor shall replace Service Engineer upon written notification by Engineer.
- D. Contractor shall provide continuity in assignment of Service Engineer to Work. In event substitution of Service Engineer is made which is not at request of Engineer, substitute's time for "familiarization" shall be at Contractor's expense.
- E. Service Engineer shall make trips only with approval of Engineer, shall report in person daily to Resident Project Representative while at site, and shall submit written record of time spent at site and report on results of trip to site to Resident Project Representative weekly.

- F. If any of Service Engineer's time spent at site or if any of his trips to site are required to make corrections to equipment supplied under Agreement resulting from defective design, material or workmanship used in manufacture of equipment, such time and trips will be at Contractor's expense and will not be counted against number of working days or trips specified, nor will unit *adjustment* prices apply.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

SECTION 01 60 00 – PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 PRODUCTS

- A. Provide products of qualified manufacturers suitable for intended use. Provide products of each type by a single manufacturer unless specified otherwise.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacturer for components being replaced.

1.02 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
- D. Schedule delivery to minimize long-term storage at Project sites and to prevent overcrowding of construction spaces.
- E. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

1.03 RECEIVING, UNLOADING AND STORING

- A. Receive and unload shipments to plant sites from suppliers of equipment under this Contract.
- B. Unload equipment as soon as possible after arrival.
- C. Pay freight car and truck demurrage, detention, and any other costs which may be billed to OWNER due to failure to unload cars or trucks within time required by freight companies.
- D. Store materials in a manner that will not endanger or otherwise be detrimental to structures.
- E. Store materials to allow for inspection and measurement of quantity or counting of units.
- F. Provide physical protection for equipment placed in storage.
 - 1. Store and maintain materials and equipment after receipt until completed installation is accepted by OWNER. Such storage and maintenance shall be in accordance with manufacturer's recommendations and requirements of these Specifications. Provide materials, equipment, and labor required for such storage and maintenance. CONTRACTOR shall be accountable for any deterioration of materials or equipment occasioned by improper storage or maintenance, and shall recondition, repair, or replace any such materials or equipment without additional cost to OWNER.
 - 2. Stored equipment shall be supported above ground and shall be covered with canvas or other heavy-duty sheeting. Cover shall be securely fastened and shall be replaced if torn or otherwise damaged during storage period.

3. Following items shall be stored in weatherproof building complete with bins for storage of small pieces of equipment. Heat to a minimum of 50°F (10°C).
 - a. Electronic instruments and cabinets.
 - b. Electrical equipment with general-purpose enclosures.
 - c. Insulation materials.
 - d. Miscellaneous electronic equipment, gaskets, and small, machined parts.
 - e. Instruments and controls.

- G. Inspect stored equipment weekly. Renew protective coatings as necessary to preserve fitness of equipment.

1.04 GENERAL STORAGE

- A. Store products immediately on delivery in accordance with manufacturer's instructions, with seals and labels intact. Protect until installed.
- B. Arrange storage in manner to provide access for maintenance of stored items and for inspection.

1.05 ENCLOSED STORAGE

- A. Store products subject to damage by elements in substantial weathertight enclosures.
- B. Maintain temperature and humidity within ranges required by manufacturer's instructions.
- C. Provide humidity control and ventilation for sensitive products, as required by manufacturer's instructions.
- D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

1.06 EXTERIOR STORAGE

- A. Provide substantial platforms, blocking, or skids, to support fabricated products above ground; slope to provide drainage. Protect products from soiling and staining.
- B. For products subject to discoloration or deterioration from exposure to elements, cover with impervious sheet material. Provide ventilation to avoid condensation.
- C. Store loose granular materials on clean, solid surfaces such as pavement, or on rigid sheet materials, to prevent mixing with foreign matter.
- D. Provide surface drainage to prevent flow or ponding of rainwater.
- E. Prevent mixing of refuse or chemically injurious materials or liquids.

1.07 MAINTENANCE OF STORAGE

- A. Periodically inspect stored products on scheduled basis. Maintain log of inspections, make available to OWNER on request.
- B. Verify storage facilities comply with manufacturer's product storage requirements.
- C. Verify manufacturer required environmental conditions are maintained continually.
- D. Verify surfaces of products exposed to elements are not adversely affected and if weathering of finishes is acceptable under requirements of Contract Documents.

1.08 MAINTENANCE OF EQUIPMENT STORAGE

- A. For electrical equipment in long-term storage, manufacturer's service instructions shall accompany each item, with notice of enclosed instructions shown on exterior of package.
- B. Service equipment on regularly scheduled basis, maintaining log of services; submit as record document.

1.09 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve CONTRACTOR of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to OWNER.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for OWNER.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
 - 3. See DIVISIONS 01, 02 and 40 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in DIVISION 01 Section "Closeout Procedures"

1.10 PRODUCTS LIST

- A. Within 30 days after effective date of Agreement, submit electronically complete list of major products which are proposed for installation to OWNER.
- B. Tabulate products by Specification section number and title.
- C. For products specified only by reference standards, list for each such product:
 - 1. Name and address of manufacturer.
 - 2. Trade name.
 - 3. Model or catalog designation.
 - 4. Manufacturer's data:
 - a. Reference standards.
 - b. Performance test data.

1.11 PRODUCT OPTIONS

- A. For products specified only by reference standard, select product meeting that standard, by any manufacturer.
- B. For products specified by naming several products or manufacturers, select any one of products and manufacturers named which complies with Specifications.
- C. For products specified by naming one or more products or manufacturers and stating, "or equal," submit request as for substitutions for any product or manufacturer which is not specifically named in accordance with 1.12 below.

- D. For products specified by naming only one product and manufacturer, there is no option and no substitution will be allowed.
- E. Whenever Specifications call for item by manufacturer's name and type and additional features of item are specifically required by Specifications, additional features specified shall be provided whether or not they are normally included in standard manufacturer's item listed.

1.12 SUBSTITUTIONS

- A. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.
- B. For period of 30 days after effective date of Agreement, OWNER will consider formal requests from CONTRACTOR for substitution of products in place of those specified. After end of that period, requests will be considered only in case of product unavailability or other conditions beyond control of CONTRACTOR.
- C. Submit 3 copies of request for substitution for consideration using attached Product Substitution Request Form. Limit each request to one proposed Substitution. Support each request with:
 - 1. Complete data substantiating compliance of proposed substitutions with requirements stated in Contract Documents. Burden of proof is on proposer.
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature; identify:
 - 1) Product description.
 - 2) Reference standards.
 - 3) Performance and test data.
 - c. Samples, as applicable.
 - d. Name and address of similar projects on which product has been used, and date of each installation.
 - 2. Itemized comparison of proposed substitution with product specified; list significant variations.
 - 3. Data relating to changes in construction schedule.
 - 4. Any effect of substitution on separate contracts.
 - 5. List of changes required in other work or products.
 - 6. Accurate cost data comparing proposed substitution with product specified. Amount of any net change to Contract Price.
 - 7. Designation of required license fees or royalties.
 - 8. Designation of availability of maintenance services, sources, or replacement materials.
- D. Substitutions will not be considered for acceptance when:
 - 1. They are indicated or implied on Shop Drawings.
 - 2. They are requested directly by Subcontractor or supplier.
 - 3. Acceptance will require substantial revision of Contract Documents.
- E. Substitute products shall not be ordered or installed without written notification from OWNER's acceptance.
- F. OWNER will determine acceptability of proposed substitutions.

1.13 CONTRACTOR'S REPRESENTATION

- A. In making formal request for substitution CONTRACTOR represents that:
 - 1. It has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.
 - 2. It will provide same warranties or Bonds for substitution as for product specified or as required by OWNER.
 - 3. It will coordinate installation of accepted substitution into Work, and will make such changes as may be required for Work to be complete in all respects.

4. It waives claims for additional costs caused by substitution which may subsequently become apparent.
5. Cost data is complete and includes related costs under its Agreement, but not:
 - a. Costs under separate contracts.
 - b. OWNER's costs for redesign or revision of Contract Documents.
6. It will reimburse OWNER for charges of OWNER's consultants for evaluating any proposed substitute, whether proposed substitute is accepted or rejected.

1.14 OWNER DUTIES

- A. Review CONTRACTOR's requests for substitution with reasonable promptness.

PART 2 PRODUCTS

2.01 PRODUCT SELECTION PROCEDURES

- A. Procurement of Domestic Products: Specify products that comply with the minimum American-made content standard and other provisions stated under the Buy American Act.
- B. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. OWNER reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," OWNER will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
- C. Product Selection Procedures:
 1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for CONTRACTOR's convenience will not be considered.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for CONTRACTOR's convenience will not be considered.
 3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide the named products that complies with requirements.
 - b. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.

4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for CONTRACTOR's convenience will not be considered unless otherwise indicated.
 - b. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.

2.02 COMPARABLE PRODUCTS

- A. Conditions for Consideration: OWNER will consider CONTRACTOR's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, OWNER will return requests without action, except to record noncompliance with these requirements.
- B. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
- C. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
- D. Evidence that proposed product provides specified warranty.
- E. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and Owners, if requested.
- F. Samples, if requested

PART 3 EXECUTION

NOT USED

END OF SECTION 01 60 00

SECTION 01 73 00 – EXECUTION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other DIVISION 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
 1. Construction layout.
 2. Field engineering and surveying.
 3. Installation of the Work.
 4. Cutting and patching.
 5. Coordination of OWNER-installed products.
 6. Starting and adjusting.
 7. Protection of installed construction.
 8. Correction of the Work.
- B. Related Requirements:
 1. DIVISION 01 Section "Summary of Work" for limits on use of Project site.
 2. DIVISION 01 Section "Submittal Procedures" for submitting surveys.
 3. DIVISION 01 Section "Closeout Procedures" for submitting Project Record Documents, recording OWNER-accepted deviations.

1.03 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.04 INFORMATIONAL SUBMITTALS

- A. Certificates: Submit certificate signed by professional engineer certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- C. Certified Surveys: Submit two copies signed by land surveyor.

1.05 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land- surveying services of the kind indicated.

PART 2 PRODUCTS

2.01 MATERIALS

- A. General: Comply with requirements specified in other Sections.
 - 1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with requirements in DIVISION 01 Affirmative Procurement requirements Section.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work. CONTRACTOR responsible for contacting utility locates. CONTRACTOR will coordinate with OWNER for any digging permits. Any work requiring open flame, welding, grinding, etc. will require a Burn Permit to be issued by OWNER. All required permits must be approved prior to the work taking place.
 - 1. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.
 - 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of CONTRACTOR, submit a request for information to OWNER according to requirements in DIVISION 01 Section "Project Management and Coordination."

3.03 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- E. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- F. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.04 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in DIVISION 01 Section "Summary."
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Proceed with patching after construction operations requiring cutting are complete.

3.05 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

3.06 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.

END OF SECTION 01 73 00

SECTION 01 77 00 – CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUBSTANTIAL COMPLETION

- A. When the CONTRACTOR considers the Work is substantially complete, submit written notice, with list of items to be completed or corrected (CONTRACTOR's punch list). CONTRACTOR shall indicate the value of each item on the list and reasons why the Work is incomplete.
1. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - a. Deficiencies and Omission List: Prepare a list of items to be completed and corrected, the value of items on the list, and reasons why the Work is not complete.
 - b. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - c. Obtain and submit releases permitting Government unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - d. Prepare and submit Project Record Document, operation and maintenance manuals, Final Completion construction photographs, damage surveys, property surveys, and similar final record information.
 - e. Deliver tools, spare parts, extra materials, and similar items to location designated by the Contracting Officer. Label with manufacturer's name and model number where applicable.
 - f. Complete startup and testing of systems and equipment.
 - g. Submit test/adjust/balance records.
 - h. Terminate and remove temporary facilities from Project site, along with construction tools, and similar elements.
 - i. Advise the OWNER of changeover in heat and other utilities, where applicable
 - j. Submit changeover information related to OWNER 's occupancy, use, operation, and maintenance.
 - k. Complete final cleaning requirements, including touchup painting.
 - l. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Within reasonable time, OWNER will inspect to determine status of completion.
- C. Should OWNER determine that Work is not substantially complete, it will promptly notify CONTRACTOR in writing, giving reasons therefor.
- D. CONTRACTOR shall remedy deficiencies, and send second written notice of substantial completion, and OWNER will reinspect Work.
- E. When OWNER determines that Work is substantially complete, it will prepare Certificate of Substantial Completion in accordance with General Conditions.

1.02 FINAL COMPLETION

- A. When the CONTRACTOR considers the Work is complete, it shall submit written certification that:
1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents, and deficiencies listed with Certificate of Substantial Completion have been corrected.
 4. Equipment and systems have been tested in presence of OWNER and are operational.
 5. Work is complete and ready for final inspection.
- B. OWNER will inspect to verify status of completion with reasonable promptness.

- C. Should OWNER consider that Work is incomplete or defective, it will promptly notify CONTRACTOR in writing, listing incomplete or defective Work.
- D. CONTRACTOR shall take immediate steps to remedy deficiencies and send second written certification that Work is complete, and OWNER will reinspect Work.
- E. When OWNER finds Work is acceptable, it will consider closeout submittals.

1.03 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. There shall be a maximum of thirty (30) days allowed between Pre-Final Inspection and Final Acceptance for the completion of outstanding punch list items.
- B. OWNER cannot take Beneficial Occupancy if there are any life safety items included among the outstanding punch list items.
- C. Preparation: OWNER will include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by CONTRACTOR that are outside the limits of construction. Use form provided by the OWNER.
 - 1. Organize list of spaces in sequential order. Organize items applying to each space by major element
 - 2. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Contracting Officer.
 - d. Name of CONTRACTOR.
 - e. Page number.

1.04 CLOSEOUT SUBMITTALS

- A. Closeout Submittals will be provided within eight (8) weeks of the last pump station commissioning completed of the project.
- B. 5 hard copies, 2 thumb drives, and files in fileshare will be provided.
- C. Evidence of compliance with requirements of governing authorities:
- D. Certificate of occupancy.
- E. Certificates of inspection, including but limited to:
 - 1. Mechanical
 - 2. Electrical.
 - 3. Others as appropriate.
- F. Project record documents
 - 1. Project Management Files
 - 2. Photo Log
 - 3. RFI Log
 - 4. As-Built Drawings
 - 5. Warranty data
 - 6. Submittal Logs
 - 7. Product Data
- G. Operation and maintenance data, instructions to OWNER's personnel: In accordance with Section 01 78 23.

- H. Warranties and Bonds.
- I. Evidence of payment and release of liens.
- J. Consent of Surety to final payment.
- K. Certificates of insurance for products and completed operations: In accordance with Supplementary Conditions.

1.05 ADJUSTMENT OF ACCOUNTS

- A. Submit final statement of accounting, reflecting adjustments to Contract Price:
- B. Original Contract Price.
- C. Additions and deductions resulting from:
 - 1. Previous Change Orders.
 - 2. Allowances.
 - 3. Unit prices.
 - 4. Deductions for uncorrected Work.
 - 5. Penalties and bonuses.
 - 6. Deductions for liquidated damages.
 - 7. Deductions for reinspection payments.
 - 8. Other adjustments.
- D. Total Contract Price, as adjusted.
- E. Previous payments.
- F. Sum remaining due.
- G. OWNER will issue final Change Order, reflecting approved adjustments to Contract Price not previously made by Change Orders.

1.06 WARRANTIES:

- A. Time of Submittal: Submit written warranties on request of OWNER for designated portions of the Work where commencement of warranties other than date of Final Acceptance is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of CONTRACTOR.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals

1.07 APPLICATION FOR FINAL PAYMENT

- A. Submit Application for Final Payment in accordance with procedures and requirements in conditions of Agreement.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION 01 77 00

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SECTION 01 78 23 – OPERATING AND MAINTENANCE DATA

PART 1 GENERAL

1.01 OPERATING AND MAINTENANCE DATA REQUIREMENTS

- A. Operating and maintenance data shall be in English language.
- B. Compile product data and related information appropriate for OWNER's maintenance and operation of products furnished under Agreement.
- C. Prepare operating and maintenance data as specified in this section and as referenced in other pertinent sections of Specifications.
- D. Instruct OWNER 's personnel in maintenance of products and in operation of equipment and systems. See equipment specifications for training requirements.

1.02 QUALITY ASSURANCE

- A. Preparation of data shall be done by personnel:
 - 1. Trained and experienced in maintenance and operation of described products.
 - 2. Familiar with requirements of this section.
 - 3. Skilled as technical writers to extent required to communicate essential data.
 - 4. Skilled as draftsmen competent to prepare required drawings.

1.03 FORM OF SUBMITTALS

- A. Prepare data in form of an instructional manual for use by OWNER 's personnel.
- B. Format:
 - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to OWNER.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
 - b. Enable inserted reviewer comments on draft submittals.
 - 2. Three paper copies. Include a complete operation and maintenance directory. Enclose title pages and directories in clear plastic sleeves.
- C. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial completion and at least 15 days before commencing demonstration and training. OWNER will return copy with comments.
 - 1. Sheet size: 8-1/2" x 11" minimum.
 - 2. Paper: 20 lb minimum, white, for typed pages.
 - 3. Text: Manufacturer's printed data, or neatly typewritten.
 - 4. Drawings:
 - a. Provide reinforced punched binder tab, bind in with text.
 - b. Larger size drawings shall be folded to 8-1/2" x 11" and inserted into pockets.
 - 5. Provide fly-leaf for each separate product, or each piece of operating equipment.
 - a. Provide typed description of product, and major component parts of equipment.
 - b. Provide indexed tabs.
 - 6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS." List:
 - a. Title of Project.
 - b. Identity of separate structure as applicable.
 - c. Identity of general subject matter covered in manual.
 - 7. Binders:
 - a. Commercial quality 3-ring binders with durable and cleanable plastic covers.
 - b. Maximum ring size: 1".
 - c. When multiple binders are used, correlate data into related consistent groupings.

1.04 CONTENT OF MANUAL

- A. Neatly typewritten table of contents for each volume, arranged in systematic order.
 - 1. Contractor, name of responsible principal, address, and telephone number.
 - 2. List of each product required to be included, indexed to content of volume.
 - 3. List, with each product, name, address, and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance contractor, as appropriate.
 - c. Identify area of responsibility of each.
 - d. Local source of supply for parts and replacement and list of recommended spare parts.
 - 4. Identify each product by product name and other identifying symbols as set forth in Contract Documents, including nameplate information and shop order numbers for each item of equipment furnished.
- B. Product data:
 - 1. Include only those sheets which are pertinent to specific product.
 - 2. Annotate each sheet to:
 - a. Clearly identify specific product or part installed.
 - b. Clearly identify data applicable to installation.
 - c. Delete references to inapplicable information.
- C. Drawings:
 - 1. Supplement product data with Drawings as necessary to clearly illustrate:
 - a. Relations of component parts of equipment and systems.
 - b. Control and flow diagrams.
 - 2. Coordinate Drawings with information in Project record documents to assure correct illustration of completed installation.
 - 3. Do not use Project record documents as maintenance Drawings.
- D. Written text, as required to supplement product data for particular installation.
 - 1. Organize in consistent format under separate headings for different procedures.
 - 2. Provide logical sequence of instructions for each procedure.
- E. Copy of each warranty, Bond, and service contract issued.
 - 1. Provide information sheet for OWNER 's personnel, giving:
 - a. Proper procedures in event of failure.
 - b. Instances which might affect validity of warranties or Bonds.

1.05 MANUAL FOR MATERIALS AND FINISHES

- A. Submit 5 copies of complete manual in final form.
- B. Contents, for architectural products, applied materials and finishes:
 - 1. Manufacturer's data, giving full information on products.
 - a. Catalog number, size, composition.
 - b. Color and texture designations.
 - c. Information required for re-ordering special-manufactured products.
- C. Contents, for moisture protection and weather-exposed products:
 - 1. Manufacturer's data, giving full information on products.
 - a. Applicable standards.
 - b. Chemical composition.
 - c. Details of installation.
 - 2. Instructions for inspection, maintenance, and repair.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit 3 copies of complete manual in final form Contents, for each unit of equipment and system, as appropriate:
 - 1. Description of unit and component parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
 - 2. Operating procedures:
 - a. Startup, break-in, routine, and normal operating instructions.
 - b. Regulation, control, stopping, shutdown, and emergency instructions.
 - c. Summer and winter operating instructions.
 - d. Special operating instructions.
 - 3. Maintenance procedures:
 - a. Routine operations.
 - b. Guide to "trouble-shooting."
 - c. Disassembly, repair, and reassembly.
 - d. Alignment, adjusting, and checking.
 - 4. Servicing and lubrication schedule: List of lubricants required.
 - 5. Manufacturer's printed operating and maintenance instructions.
 - 6. Description of sequence of operation by control manufacturer.
 - 7. Original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - a. Predicted life of parts subject to wear.
 - b. Items recommended to be stocked as spare parts.
 - 8. As-installed control diagrams by controls manufacturer.
 - 9. Each contractor's coordination Drawings.
 - 10. Chart of valve tag numbers, with location and function of each valve.
 - 11. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 - 12. Other data as required under pertinent sections of Specifications.
- C. Content, for each electrical and electronic system, as appropriate.
 - 1. Description of system and component parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, and tests.
 - c. Complete nomenclature and commercial number of replacement parts.
 - 2. Circuit directories of panelboards:
 - a. Electrical service.
 - b. Controls.
 - c. Communications.
 - 3. As-installed color-coded wiring diagrams.
 - 4. Operating procedures:
 - a. Routine and normal operating instructions.
 - b. Sequences required.
 - c. Special operating instructions.
 - 5. Maintenance procedures:
 - a. Routine operations.
 - b. Guide to "trouble-shooting."
 - c. Disassembly, repair, and assembly.
 - d. Adjustment and checking.
 - 6. Manufacturer's printed operating and maintenance instructions.
 - 7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 - 8. Other data as required under pertinent sections of Specifications.
- D. Prepare and include additional data when need for such data becomes apparent during instruction of OWNER t's personnel.

- E. Preliminary draft:
 - 1. Provide 2 copies with shipped equipment.
 - 2. Submit 3 copies to OWNER of proposed formats and outlines of contents prior to start of Work. OWNER will review draft and return 1 copy with comments.
- F. Submit 1 copy of completed data in final form 15 days prior to final inspection or acceptance. Copy will be returned after final inspection or acceptance, with comments.
- G. Submit specified copies of approved data in final form 10 days after final inspection or acceptance.

1.07 DEMONSTRATION AND INSTRUCTION OF GOVERNMENT'S PERSONNEL

- A. Demonstrate operation and maintenance of products to OWNER 's personnel 2 weeks prior to date of Substantial Completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within 6 months.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with OWNER 's personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at time agreed with OWNER.
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- F. Amount of time required for instruction on each item of equipment and system is that specified in individual sections.

PART 2 PRODUCTS

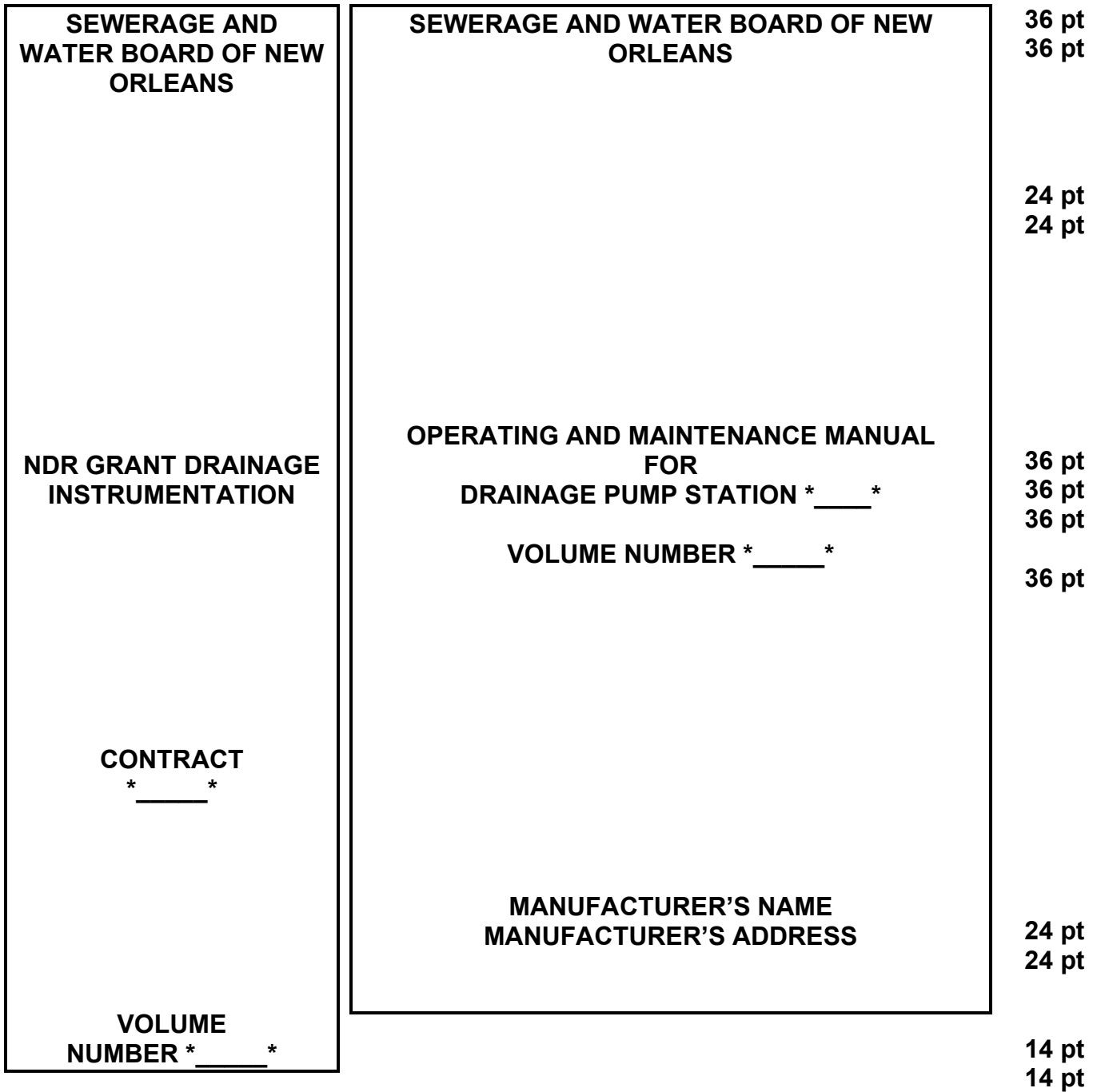
NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION 01 78 23

OPERATING AND MAINTENANCE MANUAL COVER DIAGRAM



SPINE

COVER

1. Imprinting shall be in Arial font.
 2. Spine printing shall be 12-point.
 3. Cover printing shall be in point sizes indicated.
- * If more than one volume is necessary, imprint cover with volume numbers.

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SECTION 01 91 13 – GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDE

- A. Perform commissioning in a systematic process to ensure that all systems perform interactively according to design intent and Owner's operational needs. Commissioning process shall encompass and coordinate separate functions of system documentation, equipment startup, control system calibration, testing and balancing, performance testing, and training.
- B. Commissioning during construction phase is intended to achieve following specific objectives according to Contract Documents:
 - 1. Verify applicable equipment and systems are installed in accordance with manufacturer's recommendations and to industry accepted minimum standards and that they receive adequate operational checkout by installing contractors.
 - 2. Verify and document proper performance of equipment and systems.
 - 3. Verify operation and maintenance documentation left on Site is complete.
 - 4. Verify Owner's operating personnel are adequately trained.
- C. Commissioning process shall not take away from or reduce responsibility of Contractor to provide finished and fully functioning product.

1.02 RELATED SECTIONS

- A. General Conditions of the Construction Contract.
- B. Section 01 73 00 - Execution and Closeout Requirements: Substantial Completion and Functional Completion milestones relative to commissioning.
- C. *Section 01 77 00 - Closeout Submittals: Operation and Maintenance Documentation.
- D. *Section 01 78 23 – Operation and Maintenance Data: Operation and Maintenance Documentation.

1.03 DEFINITIONS

- A. Acceptance Phase - phase of construction after startup and initial checkout when functional performance tests, operation and maintenance documentation review, and training occurs.
- B. Approval - acceptance that a piece of equipment or system has been properly installed and is functioning in tested modes according to Contract Documents.
- C. Architect / Engineer - Prime consultant and subconsultants who comprise design team, generally mechanical designer/engineer and electrical designer/engineer.
- D. OWNER - an independent agent, not otherwise associated with Architect / Engineer team members or Contractor, though he/she may be hired as a subcontractor to them. OWNER directs and coordinates day-to-day commissioning activities. OWNER does not take an oversight role like Construction Manager. OWNER is part of Construction Manager team or shall report directly to Construction Manager.
- E. Commissioning Plan - an overall plan, developed before or after bidding, that provides structure, schedule and coordination planning for commissioning process.
- F. Contractor - Provider of labor, materials, equipment, and services to complete the Work as outlined in the Contract Documents.
- G. Control system - central building energy management control system.

- H. Construction Manager:
 - 1. Owner's representative in day-to-day activities of construction. In general, construction management services contractor is hired by Owner to assist in overall management of project including supervising and on-site managing authority over a project's construction. The General Contractor reports to Construction Manager. Construction Manager is Owner's on-site representative.
- I. Data Logging - monitoring flows, currents, status, pressures, etc. of equipment using stand-alone data loggers separate from control system.
- J. Deferred Functional Tests - Functional tests that are performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions that disallow test from being performed.
- K. Deficiency - a condition in installation or function of a component, piece of equipment or system that is not in compliance with Contract Documents (that is, does not perform properly or is not complying with design intent).
- L. Design Intent - a dynamic document that provides explanation of ideas, concepts and criteria that are considered to be very important to owner. It is initially outcome of programming and conceptual design phases.
- M. Design Narrative or Design Documentation - sections of either Design Intent or Basis of Design.
- N. Factory Testing - testing of equipment on-site or at factory by factory personnel with an Owner's representative present.
- O. Functional Performance Test - test of dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is dynamic testing of systems (rather than just components) under full operation (e.g., chiller pump is tested interactively with chiller functions to see if pump ramps up and down to maintain differential pressure setpoint). Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. Systems are run through all control system's sequences of operation and components are verified to be responding as sequences state. Traditional air or water test and balancing is not functional testing, in the commissioning sense of the word. Testing and balancing contractor's primary work is setting up system flows and pressures as specified, while functional testing is verifying that which has already been set up. Contractor develops functional test procedures in a sequential written form, coordinates, oversees and documents actual testing, which is usually performed by installing contractor or vendor. Functional tests are performed after prefunctional checklists and startup are complete.
- P. Indirect Indicators - indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100% closed.
- Q. Manual Test - using hand-held instruments, immediate control system readouts or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make "observation").
- R. Monitoring - recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or trending capabilities of control systems.
- S. Noncompliance - see Deficiency.
- T. Nonconformance - see Deficiency.
- U. Overwritten Value - writing over a sensor value in control system to see response of a system (e.g., changing outside air temperature value from 50F to 75F to verify economizer operation). See also "Simulated Signal."

- V. Owner-Contracted Tests - tests paid for by Owner outside of the Agreement with Contractor and for which OWNER does not oversee. Tests will not be repeated during functional tests if properly documented.
- W. Phased Commissioning - commissioning that is completed in phases (by floors, for example) due to size of structure or other scheduling issues, in order minimize total construction time.
- X. Prefunctional Checklist - a list of items to inspect and elementary component tests to conduct to verify proper installation of equipment, provided by Contractor to Subcontractor. Prefunctional checklists are primarily static inspections and procedures to prepare equipment or system for initial operation (e.g., belt tension, oil levels OK, labels affixed, gages in place, sensors calibrated, etc.). However, some prefunctional checklist items entail simple testing of function of a component, a piece of equipment or system (such as measuring voltage imbalance on a three phase pump motor of a chiller system). The word 'prefunctional' refers to before functional testing. Prefunctional checklists augment and are combined with manufacturer's start-up checklist.
- Y. Project Manager - contracting and managing authority for Owner over design and/or construction of project, a staff position.
- Z. Sampling. - functionally testing only a fraction of total number of identical or near identical pieces of equipment. Refer to article "Functional Performance Testing" for additional details.
- AA. Seasonal Performance Tests – Functional Tests that are deferred until system(s) will experience conditions closer to their design conditions.
- BB. Simulated Condition - condition that is created for purpose of testing response of a system (e.g., applying a hair blower to a space sensor to see response in a VAV box).
- CC. Simulated Signal - disconnecting a sensor and using a signal generator to send an amperage, resistance or pressure to transducer and DDC system to simulate a sensor value.
- DD. Startup - initial starting or activating of dynamic equipment, including executing prefunctional checklists.
- EE. Subcontractors – Specialty contractors who hold contracts with the Contractor to furnish and install building components and systems.
- FF. Test Procedures - step-by-step process which must be executed to fulfill test requirements. The test procedures are developed by Contractor.
- GG. Test Requirements - requirements specifying what modes and functions, etc. shall be tested. The test requirements are not detailed test procedures. The test requirements are specified in Contract Documents
- HH. Trending - monitoring using building control system.
- II. Vendor - supplier of equipment.

1.04 SUBMITTALS

- A. OWNER will provide appropriate Subcontractors with specific request for type of submittal documentation OWNER requires to facilitate commissioning work. Requests will be integrated into normal submittal process and protocol of construction team. At minimum, request will include manufacturer and model number, manufacturer's printed installation and detailed start-up procedures, full sequences of operation, operation and maintenance data, performance data, any performance test procedures, control drawings and details of Owner-contracted tests. In addition, installation and checkout materials that are actually shipped inside equipment and actual field checkout sheet forms to be used by factory or field technicians shall be submitted to OWNER. All documentation requested

by OWNER will be included by Subcontractors in their operation and maintenance data manual contributions.

- B. OWNER will review submittals related to commissioned equipment for conformance to Contract Documents as it relates to commissioning process, to functional performance of equipment and adequacy for developing test procedures. Review will be primarily to aid in development of functional testing procedures and only secondarily to verify compliance with equipment specifications. OWNER will notify Construction Manager, Project Manager, or Engineer as requested, of items missing or areas that are not in conformance with Contract Documents and which require resubmission.
- C. OWNER may request additional design narrative from Engineer and controls contractor, depending on completeness of design intent documentation and sequences provided with Specifications.
- D. Submittals to OWNER do not constitute compliance for operation and maintenance manual documentation. Operation and maintenance manuals are responsibility of Contractor, though OWNER will review them.
- E. Written work products: Commissioning process generates a number of written work products described in various parts of Specifications. Commissioning plan lists all formal written work products, describes briefly their contents, who is responsible to create them, their due dates, who receives and approves them and location of specification to create them. Written products are:

Product	Developed By
Final commissioning plan	Contractor
Meeting minutes	Contractor
Commissioning schedules	Contractor and Construction Manager
Equipment documentation submittals	Subcontractors
Sequence clarifications	Subcontractors and Architect / Engineer as needed
Prefunctional checklists	Contractor
Startup and initial checkout plan	Subcontractors and Contractor (compilation of existing documents)
Startup and initial checkout forms filled out	Subcontractors
Final TAB report	TAB Subcontractor
Issues log (deficiencies)	Contractor
Commissioning Progress Record	Contractor
Deficiency reports	Contractor
Functional test forms	Contractor
Filled out functional tests	Contractor
O&M manuals	Subcontractors
Commissioning record book	Contractor
Overall training plan	Construction Manager
Specific training agendas	Subcontractors
Final commissioning report	Contractor
Misc. approvals	OWNER

1.05 QUALITY ASSURANCE

- A. Meetings:
 - 1. Scoping meeting. Within 60 days of commencement of construction, Contractor will schedule, plan and conduct a commissioning scoping meeting with entire commissioning team in attendance. Meeting minutes will be distributed to all parties by Contractor. Information gathered from this meeting will allow Contractor to revise commissioning plan to its "final" version, which will also be distributed to all parties.
 - 2. Miscellaneous meetings. Other meetings will be planned and conducted by Contractor as construction progresses. Meetings will cover coordination, deficiency resolution, and planning issues with particular Subcontractors. Contractor will plan meetings and will minimize

unnecessary time being spent by Subcontractors. For large projects, meetings may be held monthly, until final 3 months of construction when they may be held as frequently as one per week.

B. Coordination:

1. Members of commissioning team shall consist of Project Manager, designated representative of Owner's Construction Management firm, Contractor, electrical subcontractor, controls subcontractor, and other installing subcontractors or vendors. Owner's building or plant operator/engineer shall also be a member of commissioning team. Management: Members of commissioning team shall work together to fulfill their contracted responsibilities and meet objectives of the Contract Documents.

C. Reporting:

1. Contractor will provide regular reports to Construction Manager, Project Manager, or Owner, depending on management structure, with increasing frequency as construction and commissioning progresses. Standard forms are provided and referenced in commissioning plan.
2. Contractor will regularly communicate with all members of commissioning team, keeping them apprised of commissioning progress and scheduling changes through memos, progress reports, etc.
3. Testing or review approvals and nonconformance and deficiency reports are made regularly with review and testing as described in later sections.
4. Final summary report (approximately 4 to 6 pages, not including backup documentation) by Contractor will be provided to Construction Manager, Project Manager, or Owner, focusing on evaluating commissioning process issues and identifying areas where process could be improved. Acquired documentation, logs, minutes, reports, deficiency lists, communications, findings, unresolved issues, etc., will be compiled in appendices and provided with summary report. Prefunctional checklists, functional tests, and monitoring reports will not be part of final report but will be stored in Commissioning Record in operation and maintenance manuals.

1.06 ENGINEER'S RESPONSIBILITIES

A. Construction and acceptance phase:

1. Perform normal submittal review, construction observation, "as-built" Record Drawing preparation, etc., as contracted. On-site observation shall be completed just prior to system startup.
2. Provide design narrative and sequences documentation requested by OWNER. Engineer shall assist (along with Subcontractors) in clarifying operation and control of commissioned equipment in areas where specifications, control drawings or equipment documentation is not sufficient for writing detailed testing procedures.
3. Attend commissioning scoping meetings and other selected commissioning team meetings.
4. Participate in resolution of system deficiencies identified during commissioning, according to Contract Documents.
5. Prepare and submit final record "as-built" design intent and operating parameters documentation for inclusion in operation and maintenance manuals. Review and approve operation and maintenance manuals.
6. Provide presentation at one training session for Owner's personnel.
7. Review prefunctional checklists for major pieces of equipment for sufficiency prior to their use.
8. Review functional test procedure forms for major pieces of equipment for sufficiency prior to their use.
9. Witness testing of selected pieces of equipment and systems.

B. Warranty period: Participate in resolution of noncompliance, nonconformance and design deficiencies identified during commissioning during warranty period commissioning.

C. Attend commissioning scoping meeting and additional meetings, as necessary.

D. Follow commissioning plan.

1.07 COMMISSIONING AUTHORITY'S RESPONSIBILITIES

- A. Commissioning Authority shall not be responsible for design concept, design criteria, compliance with codes, design or general construction scheduling, cost estimating, or construction management. Commissioning Authority may assist with problem-solving, nonconformance or deficiencies. Primary role of Commissioning Authority shall be to develop and coordinate execution of testing plan, observe and document performance that systems are functioning in accordance with documented design intent and in accordance with Contract Documents. Contractor shall provide tools and labor to start, check-out and functionally test equipment and systems.
- B. Construction and acceptance phase:
1. Coordinate and direct commissioning activities in a logical, sequential, and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with necessary parties, frequently updated timelines and schedules, and technical expertise.
 2. Coordinate commissioning work and, with Construction Manager, ensure that commissioning activities are being scheduled into master schedule.
 3. Revise commissioning plan as necessary.
 4. Plan and conduct commissioning scoping meeting and other commissioning meetings.
 5. Request and review additional information required to perform commissioning tasks, including operation and maintenance materials, Contractor start-up, and checkout procedures.
 6. Before startup, gather and review current control sequences and interlocks and work with Subcontractors and design engineers until sufficient clarity has been obtained, in writing, to be able to write detailed testing procedures.
 7. Review Contractor submittals applicable to systems being commissioned for compliance with commissioning needs, concurrent with Engineer reviews.
 8. Write and distribute prefunctional tests and checklists.
 9. Develop enhanced start-up and initial systems checkout plan with Subcontractors.
 10. Perform site visits, as necessary, to observe component and system installations. Attend selected planning and job-site meetings to obtain information on construction progress. Review construction meeting minutes for revisions/substitutions relating to commissioning process. Assist in resolving any discrepancies.
 11. Notify Owner of prefunctional tests and checklist completion by reviewing prefunctional checklist reports and by selected site observation and spot checking.
 12. Notify Owner of systems startup by reviewing start-up reports and by selected site observation.
 13. With necessary assistance and review from installing subcontractors, write functional performance test procedures for equipment and systems. Test procedures may include energy management control system trending, stand-alone data logger monitoring, or manual functional testing. Submit to Construction Manager for review, and for approval if required.
 14. Analyze functional performance trend logs and monitoring data to verify performance.
 15. Coordinate and witness functional performance tests performed by installing subcontractors. Coordinate retesting as necessary until satisfactory performance is achieved.
 16. Maintain master deficiency and resolution log and separate testing record. Provide Construction Manager with written progress reports and test results with recommended actions.
 17. Review equipment warranties to ensure that Owner's responsibilities are clearly defined.
 18. Compile and maintain commissioning record and building systems book(s).
 19. Review operation and maintenance manuals.
 20. Provide final commissioning report as specified below.

1.08 CONSTRUCTION MANAGER'S - OWNER'S REPRESENTATIVE'S RESPONSIBILITIES

- A. Construction and acceptance phase:
1. Facilitate coordination of commissioning work by Contractor, ensure that commissioning activities are being scheduled into master schedule.
 2. Review and approve final commissioning plan.
 3. Attend commissioning scoping meeting and other commissioning team meetings.
 4. Perform normal review of Contractor submittals.
 5. Furnish copy of construction documents, addenda, change orders and approved submittals and Shop Drawings related to commissioned equipment to Contractor.

6. Prior to testing, review and approve functional performance test procedures.
7. When necessary, observe and witness prefunctional checklists, startup and functional testing of selected equipment.
8. Review commissioning progress and deficiency reports.
9. Coordinate resolution of noncompliance and design deficiencies identified in all phases of commissioning.
10. Sign-off (final approval) on individual commissioning tests as completed and passing. Recommend completion of commissioning process to Project Manager.
11. Assist Contractor in coordinating training of owner personnel.

B. Attend commissioning scoping meeting and additional meetings, as necessary.

C. Follow commissioning plan.

1.09 OWNER'S PROJECT MANAGER'S RESPONSIBILITIES

A. Construction and acceptance phase:

1. Manage contract of Engineer and of Contractor.
2. Arrange for facility operating and maintenance personnel to attend various field commissioning activities and field training sessions according to commissioning plan - construction phase.
3. Provide final approval for completion of commissioning work.

B. Warranty period: Ensure seasonal or deferred testing and deficiency issues are addressed.

C. Attend commissioning scoping meeting and additional meetings, as necessary.

D. Follow commissioning plan.

1.10 CONTRACTOR'S RESPONSIBILITIES

A. Construction and acceptance phase:

1. Ensure that commissioning activities are being scheduled into master schedule.
2. Include cost of commissioning in total Contract Price.
3. Furnish copy of construction documents, addenda, change orders and approved submittals and Shop Drawings related to commissioned equipment to Commissioning Authority.
4. In each Purchase Order or subcontract written, include requirements for submittal data, operation and maintenance data, commissioning tasks and training.
5. Ensure Subcontractors execute commissioning responsibilities according to Contract Documents and schedule.
6. Facilitate commissioning scoping meeting and other necessary meetings scheduled to facilitate commissioning process.
7. Coordinate training of Owner's personnel.
8. Prepare operation and maintenance manuals, according to Contract Documents, including clarifying and updating original sequences of operation to record "as-built" conditions.

B. Warranty period:

1. 12 Month Warranty period.
2. Ensure Subcontractors execute seasonal or deferred functional performance testing according to Contract Documents.
3. Ensure Subcontractors correct deficiencies and make necessary adjustments to operation and maintenance manuals and "as-built" Record Drawings for applicable issues identified in seasonal testing.

C. Attend commissioning scoping meeting and additional meetings, as necessary.

D. Follow commissioning plan.

1.11 VENDOR'S RESPONSIBILITIES

- A. Provide requested submittal data, including detailed start-up procedures and specific responsibilities of Owner to keep warranties in force.
- B. Assist in equipment testing per agreements with Subcontractors.
- C. Include special tools and instruments (only available from vendor, specific to a piece of equipment) required for testing equipment in accordance with Contract Documents in bid price.
- D. Analyze specified products and verify that designer has specified newest most updated equipment reasonable for Project's scope and budget.
- E. Review test procedures for equipment installed by manufacturer's factory representatives.
- F. Attend commissioning scoping meeting and additional meetings, as necessary.
- G. Follow commissioning plan.

1.12 SCHEDULING

- A. Contractor shall work with OWNER according to established protocols to schedule commissioning activities. Contractor shall provide sufficient notice to OWNER for scheduling commissioning activities. Contractor shall integrate commissioning activities into master schedule. OWNER, Construction Manager, and Contractor shall address scheduling problems and make necessary notifications in timely manner to expedite commissioning process.
- B. Contractor shall provide initial schedule of primary commissioning events at commissioning scoping meeting. Commissioning plan shall provide format for schedule. As construction progresses, more detailed schedules shall be developed by Contractor. Commissioning plan shall also provide format for detailed schedules.

1.13 OWNER'S INSTRUCTION

- A. Contractor shall be responsible for training coordination and scheduling and ultimately for ensuring training is completed.
- B. Contractor shall be responsible for overseeing and approving content and adequacy of training of Owner personnel for commissioned equipment.
 - 1. Contractor shall interview facility manager and lead engineer to determine special needs and areas where training will be most valuable. Owner and shall decide how rigorous training should be for each piece of commissioned equipment. Contractor shall communicate results to Subcontractors and vendors who have training responsibilities.
 - 2. Contractor shall develop overall training plan, coordinate and schedule with OWNER for commissioned systems. Contractor shall develop criteria for determining that training was satisfactorily completed, including attending some of training, etc. Contractor shall recommend approval of training to Construction Manager using standard form. Construction Manager shall also sign approval form.
 - 3. At one of the training sessions, Contractor shall demonstrate use of blank functional test forms for re-commissioning equipment.
 - 4. Video taping of training sessions will be provided by Contractor and added to operation and maintenance manuals.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

- A. Standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by each contractor for equipment being tested. For example, mechanical subcontractor shall ultimately be responsible for standard testing equipment for HVAC

system and controls system, except for equipment specific to and used by testing and balancing contractor in their commissioning responsibilities. Two-way radios shall be provided by contractor for equipment being tested.

- B. Except for standalone data logging equipment that may be used by Commissioning Authority, special equipment, tools and instruments which are only available from Vendor, specific to a piece of equipment and required for testing equipment shall be provided, left on site, and shall become property of Owner.
- C. Data logging equipment and software required to test equipment will be provided by Contractor, but will not become property of Owner.
- D. Testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with tolerances specified. If not otherwise noted, following minimum requirements apply:
 - 1. Temperature sensors and digital thermometers shall have a certified calibration within past year to accuracy of 0.5°F and a resolution of $\pm 0.1^\circ\text{F}$.
 - 2. Pressure sensors shall have accuracy of $\pm 2.0\%$ of value range being measured (not full range of meter) and have been calibrated within last year.
 - 3. Equipment shall be calibrated according to manufacturer's recommended intervals and when dropped or damaged.
 - 4. Calibration tags shall be affixed or certificates readily available.
- E. Refer to Section 01 91 13-16 for details regarding equipment that may be required to simulate required test conditions.

PART 3 EXECUTION

3.01 COMMISSIONING PROCESS

- A. Commissioning plan shall provide guidance in execution of commissioning process. Immediately after initial commissioning scoping meeting, Contractor will develop plan, which is then considered "final" plan. Plan will continue to evolve and expand as project progresses.
- B. Commissioning tasks and sequence:
 - 1. Commissioning during construction shall begin with scoping meeting conducted by Commissioning Authority to review commissioning process with commissioning team members.
 - 2. Additional meetings required during construction shall be scheduled by Contractor with necessary parties attending, to plan, scope, coordinate, schedule future activities and resolve problems.
 - 3. Equipment documentation shall be submitted to Contractor during normal submittals, including detailed start-up procedures.
 - 4. Contractor shall work with Subcontractors in developing startup plans and startup documentation formats, including providing Subcontractors with prefunctional checklists to be completed, during startup process.
 - 5. Checkout and performance verification shall proceed from simple to complex; from component level to equipment to systems and intersystem levels with prefunctional checklists being completed before functional testing.
 - 6. Subcontractors shall execute and document prefunctional checklists and perform startup and initial checkout. Contractor shall document that checklists and startup were completed according to approved plans. Contractor may witness start-up of selected equipment.
 - 7. Contractor shall develop specific equipment and system functional performance test procedures. Subcontractors shall review procedures.
 - 8. Procedures shall be executed by Subcontractors, under direction of, and documented by Commissioning Authority.
 - 9. Items of noncompliance in material, installation, or setup shall be corrected at Subcontractor's expense and system shall be retested.
 - 10. Contractor review operation and maintenance documentation for completeness.
 - 11. Commissioning shall be completed prior to Substantial Completion.

12. Contractor shall review, preapprove, and coordinate training provided by Subcontractors and verify that training was completed.
13. Deferred testing shall be conducted, as specified or required.

3.02 STARTUP, PREFUNCTIONAL CHECKLISTS, AND INITIAL CHECKOUT

- A. Perform following procedures on equipment to be commissioned. Some systems that are not comprised so much of actual dynamic machinery, e.g., electrical system power quality, may have very simplified prefunctional checklists and startup.
- B. Prefunctional checklists shall verify that equipment and systems are hooked up and operational. It ensures that functional performance testing (in-depth system checkout) may proceed without unnecessary delays. Each piece of equipment receives full prefunctional checkout. No sampling strategies are used. Prefunctional testing for a given system must be successfully completed prior to formal functional performance testing of equipment or subsystems of given system.
- C. Start-up and initial checkout plan:
 1. Contractor shall ensure that there is written documentation that each manufacturer-recommended procedure has been completed. Parties responsible for prefunctional checklists and startup will be identified in commissioning scoping meeting and in checklist forms. Parties responsible for executing functional performance tests are identified in testing requirements in Section 20 08 00.
 2. Contractor shall adapt representative prefunctional checklists and procedures specified herein. Checklists shall indicate required procedures to be executed as part of startup and initial checkout of systems and party responsible for their execution.
 3. Contractor shall determine which trade is responsible for executing and documenting each of line item tasks and notes that trade on form. Each form will have more than one trade responsible for its execution.
 4. Subcontractor responsible for purchase of equipment shall develop full start-up plan by combining (or adding to checklists with manufacturer's detailed start-up and checkout procedures from operation and maintenance manual and normally used field checkout sheets. Plan shall include checklists and procedures with specific boxes or lines for recording and documenting checking and inspections of each procedure and a summary statement with signature block at end of plan.
 5. Full start-up plan to consist of:
 - a. Prefunctional checklists.
 - b. Manufacturer's standard written start-up procedures copied from installation manuals with check boxes by each procedure and a signature block added by hand at end.
 - c. Manufacturer's normally used field checkout sheets.
 6. Subcontractor shall submit full startup plan to Contractor for review and approval.
 7. Contractor shall review and approve procedures and format for documenting them, noting procedures that need to be added.
 8. Full start-up procedures and approval form may be provided to Construction Manager for review and approval, depending on management protocol.
- D. Sensor and actuator calibration:
 1. Field-installed temperature, relative humidity, CO, CO₂ and pressure sensors and gages, and actuators (dampers and valves) on equipment shall be calibrated using methods specified. Alternate methods may be used with prior written approval of Owner.
 2. Test instruments shall have had certified calibration within last 12 months. Sensors installed in unit at factory with calibration certification provided do not need to be field calibrated.
 3. Procedures used shall be fully documented on prefunctional checklists or other suitable forms, clearly referencing procedures followed and written documentation of initial, intermediate and final results.
 4. Sensor calibration methods:
 - a. Verify sensor locations are appropriate and away from causes of erratic operation. Verify sensors with shielded cable are grounded only at one end. For sensor pairs that are used to determine temperature or pressure difference, verify sensors are reading within 0.2°F of each other for temperature and within tolerance equal to 2% of reading, of each other, for pressure. Tolerances for critical applications may be tighter.

- b. Sensors without transmitters; standard application: Make reading with calibrated test instrument within 6" of site sensor. Verify that sensor reading (via permanent thermostat, gage or building automation system) is within tolerances in table below of instrument-measured value. If not, install offset in building automation system, calibrate or replace sensor.
 - c. Sensors with transmitters:
 - 1) Standard Application. Disconnect sensor. Connect signal generator in place of sensor. Connect ammeter in series between transmitter and building automation system control panel. Using manufacturer's resistance-temperature datum, simulate minimum desired temperature. Adjust transmitter potentiometer zero until 4 mA is read by ammeter. Repeat for maximum temperature matching 20 mA to potentiometer span or maximum and verify at building automation system. Record values and recalibrate controller as necessary to conform to specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction. Reconnect sensor. Make reading with calibrated test instrument within 6" of site sensor. Verify sensor reading (via permanent thermostat, gage or building automation system) is within tolerances in table below of instrument-measured value. If not, replace sensor and repeat. For pressure sensors, perform similar process with suitable signal generator.
 - 2) Critical applications: For critical applications (process, manufacturing, etc.) more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.
5. Tolerances, standard applications:

Sensor	Required Tolerance (±)	Sensor	Required Tolerance (±)
Cooling coil, chilled and condenser water temperatures	0.4°F	Flow rates, water Relative humidity	4% of design 4% of design
AHU wet bulb or dew point	2.0°F	Combustion flue temps	5.0F
Hot water coil and boiler water temperatures	1.5°F	Oxygen or CO ₂ monitor	0.1 % pts
Outside air, space air, duct air temperatures	0.4°F	CO monitor	0.01 % pts
Watt-hour, voltage and amperage	1% of design	Natural gas and oil flow rate	1% of design
Pressures, air, water and gas	3% of design	Steam flow rate	3% of design
Flow rates, air	10% of design	Barometric pressure	0.1 in. of Hg

- E. Execution of prefunctional checklists and startup:
- 1. Four weeks prior to startup, Subcontractors and vendors shall schedule startup and checkout with Construction Manager, and Contractor. Performance of prefunctional checklists, startup and checkout are directed and executed by Subcontractor or vendor. When checking off prefunctional checklists, signatures may be required of other Subcontractors for verification of completion of their work.
 - 2. Contractor shall observe, at minimum, procedures for each piece of primary equipment, unless there are multiple units, (in which case a sampling strategy may be used as approved by Construction Manager). In no case will number of units witnessed be less than four on any one building, nor less than 20% of total number of identical or very similar units.
 - 3. For lower-level components of equipment, (e.g., VAV boxes, sensors, controllers), Contractor shall observe sampling of prefunctional and start-up procedures. Sampling procedures are identified in commissioning plan.
 - 4. Subcontractors and vendors shall execute startup and provide Contractor with signed and dated copy of completed start-up and prefunctional tests and checklists.
 - 5. Only individuals that have direct knowledge and witnessed that line item task on prefunctional checklist was actually performed shall initial or check that item off. It is not acceptable for witnessing supervisors to fill out these forms.

- F. Deficiencies, nonconformance and approval in checklists and startup:
1. Subcontractors shall clearly list any outstanding items of initial start-up and prefunctional procedures that were not completed successfully, at bottom of procedures form or on an attached sheet. Procedures form and any outstanding deficiencies shall be provided to Contractor within 2 days of test completion.
 2. Contractor shall review report and submits either noncompliance report or approval form to Subcontractor or Construction Manager. Contractor shall work with Subcontractors and vendors to correct and retest deficiencies or uncompleted items. Contractor will involve Construction Manager and others as necessary. Installing Subcontractors or vendors shall correct all areas that are deficient or incomplete in checklists and tests in a timely manner, and shall notify Contractor as soon as outstanding items have been corrected and resubmit an updated start-up report and a Statement of Correction on original noncompliance report. When satisfactorily completed, Contractor recommends approval of execution of checklists and startup of each system to Construction Manager using a standard form.
 3. Items left incomplete, which later cause deficiencies or delays during functional testing may result in back-charges to responsible party. Refer to article "Documentation, Nonconformance and Approval of Tests."

3.03 FUNCTIONAL PERFORMANCE TESTING

- A. Functional performance testing shall demonstrate that each system is operating in accordance with documented design intent and Contract Documents. Functional testing shall facilitate bringing systems from state of Substantial Completion to full dynamic operation. During testing process, areas of deficient performance shall be identified and corrected, improving operation and functioning of systems.
- B. Each system shall be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load) where there is a specified system response. Verify each sequence in sequences of operation is required. Proper responses to such modes and conditions as power failure, freeze condition, low oil pressure, no flow, equipment failure, etc. shall also be tested.
- C. Development of test procedures: Before test procedures are written, Contractor shall obtain all requested documentation and a current list of change orders affecting equipment or systems, including an updated points list, program code, control sequences and parameters. Each Subcontractor or vendor responsible to execute a test shall provide limited assistance to Contractor in developing procedures review (answering questions about equipment, operation, sequences, etc.). Prior to execution, Contractor shall provide a copy of test procedures to Subcontractor(s) who shall review tests for feasibility, safety, equipment and warranty protection. Contractor may submit tests to Engineer for review, if requested.
- D. Purpose of specific test is to verify and document compliance with stated criteria of acceptance given on test form.
- E. Representative test formats and examples (not designed for this facility) are bound at end of this Section. The test procedure forms developed by Contractor shall include, but not be limited to, following information:
1. System and equipment or component name(s).
 2. Equipment location and ID number.
 3. Unique test ID number, and reference to unique prefunctional checklist and start-up documentation ID numbers for piece of equipment.
 4. Date.
 5. Project name.
 6. Participating parties.
 7. Copy of specification section describing test requirements.
 8. Copy of specific sequence of operations or other specified parameters being verified.
 9. Formulas used in any calculations.
 10. Required pre-test field measurements.

11. Instructions for setting up test.
12. Special cautions, alarm limits, etc.
13. Specific step-by-step procedures to execute test, in a clear, sequential and repeatable format.
14. Acceptance criteria of proper performance with a Yes / No check box to allow for clearly marking whether or not proper performance of each part of test was achieved.
15. Section for comments.
16. Signatures and date block for Commissioning Authority.

F. Test methods:

1. Functional performance testing and verification may be achieved by manual testing (persons manipulate equipment and observe performance) or by monitoring performance and analyzing results using control system's trend log capabilities or by standalone data loggers. Contractor may substitute specified methods or require additional method to be executed, other than what was specified, with approval of Construction Manager. This may require a Change Order and adjustment in charge to Owner. Contractor shall determine which method is most appropriate for tests that do not have a method specified.
2. Simulated conditions. Simulating conditions (not by an overwritten value) will be allowed, though timing testing to experience actual conditions is encouraged wherever practicable.
3. Overwritten values. Overwriting sensor values to simulate condition, such as overwriting outside air temperature reading in control system to be something other than it really is, will be allowed, but shall be used with caution and avoided when possible. Simulating a condition is preferable. e.g., for above case, by heating outside air sensor with hair blower rather than overwriting value or by altering appropriate setpoint to see desired response. Before simulating conditions or overwriting values, sensors, transducers and devices shall have been calibrated.
4. Simulated signals: Using signal generator creating simulated signal to test and calibrate transducers and DDC constants is acceptable instead of using sensor to act as signal generator via simulated conditions or overwritten values.
5. Altering setpoints: Rather than overwriting sensor values, and when simulating conditions is difficult, altering setpoints to test a sequence is acceptable. For example, to see AC compressor lockout work at an outside air temperature below 55°F, when outside air temperature is above 55°F, temporarily change lockout setpoint to be 2°F above current outside air temperature.
6. Indirect indicators: Relying on indirect indicators for responses or performance will be allowed only after visually and directly verifying and documenting, over range of tested parameters, that indirect readings through control system represent actual conditions and responses.
7. Setup: Each function and test shall be performed under conditions that simulate actual conditions as close as is practically possible. Subcontractor executing test shall provide all necessary materials, system modifications, etc. to produce necessary flows, pressures, temperatures, etc. necessary to execute test according to specified conditions. At completion of test, Subcontractor shall return all affected building equipment and systems, due to these temporary modifications, to their pre-test condition.
8. Sampling. Multiple identical pieces of nonlife-safety or otherwise noncritical equipment may be functionally tested using a sampling strategy. Significant application differences and significant sequence of operation differences in otherwise identical equipment invalidates their common identity. A small size or capacity difference, alone, does not constitute a difference. Specific recommended sampling rates are specified with each type of equipment in Section 20 08 00. It is noted that no sampling by Subcontractors is allowed in prefunctional checklist execution.
 - a. A common sampling strategy referenced in Specifications as "xx% Sampling - yy% Failure Rule" is defined by following example. Example below describes a 20% Sampling - 10% Failure Rule.

xx = percent of group of identical equipment to be included in each sample.
yy = percent of sample that if failing, will require another sample to be tested.

 - 1) Randomly test at least 20% (xx) of each group of identical equipment. In no case test less than three units in each group. This 20%, or three, constitute "first sample."
 - 2) If 10% (yy) of units in first sample fail functional performance tests, test another 20% of group (the second sample).
 - 3) If 10% of units in second sample fail, test all remaining units in whole group.

- 4) If at any point, frequent failures are occurring and testing is becoming more troubleshooting than verification, Commissioning Authority may stop testing and require responsible Subcontractor to perform and document a checkout of remaining units, prior to continuing with functionally testing remaining units.

- G. Coordination and Scheduling: Subcontractors shall provide sufficient notice to Contractor regarding their completion schedule for prefunctional checklists and startup of all equipment and systems. Contractor will schedule functional tests through Construction Manager and affected Subcontractors. Contractor will direct, witness and document functional testing of equipment and systems. Subcontractors shall execute tests.
- H. In general, functional testing is conducted after prefunctional testing and startup has been satisfactorily completed. Control system is sufficiently tested and approved by Contractor before it is used for testing and balancing or to verify performance of other components or systems. Air balancing and water balancing is completed and debugged before functional testing of air-related or water-related equipment or systems. Testing proceeds from components to subsystems to systems. When proper performance of all interacting individual systems has been achieved, interface or coordinated responses between systems is checked.
- I. Problem Solving: Contractor will recommend solutions to problems found and burden of responsibility to solve, correct and retest problems is with Contractor & Subcontractors and Engineer.

3.04 DOCUMENTATION OF TESTS

- A. Contractor will witness and document results of functional performance tests using specific procedural forms developed for that purpose.
- B. Prior to testing, these forms are provided to Construction Manager for review and approval and to Subcontractors for review.
- C. Contractor will include filled out forms in O&M manuals.

3.05 NONCONFORMANCE OF TESTS

- A. Contractor will record results of functional test on procedure or test form. Deficiencies or nonconformance issues will be noted and reported to Construction Manager on a standard non-compliance form.
- B. Corrections of minor deficiencies identified may be made during tests at discretion of Contractor. In such cases deficiency and resolution will be documented on procedure form.
- C. Every effort will be made to expedite testing process and minimize unnecessary delays, while not compromising integrity of procedures. However, Contractor will not be pressured into overlooking deficient work or loosening acceptance criteria to satisfy scheduling or cost issues, unless there is an overriding reason to do so at request of Construction Manager.
- D. As tests progress and a deficiency is identified, Commissioning Authority discusses issue with executing contractor.
 1. When there is no dispute on deficiency and Subcontractor accepts responsibility to correct it:
 - a. Contractor documents deficiency and Subcontractor's response and intentions and they go on to another test or sequence. After day's work, Commissioning Authority submits non-compliance reports to Construction Manager for signature, if required. A copy is provided to Subcontractor and Contractor. The Subcontractor corrects deficiency, signs statement of correction at bottom of non-compliance form certifying that equipment is ready to be retested and sends it back to Contractor.
 - b. The Contractor reschedules test and test is repeated.
 2. If there is a dispute about a deficiency, regarding whether it is a deficiency or who is responsible:

- a. Deficiency shall be documented on non-compliance form with Subcontractor's response and a copy given to Construction Manager and to Subcontractor representative assumed to be responsible.
 - b. Resolutions are made at lowest management level possible. Other parties are brought into discussions as needed. Final interpretive authority is with A/E. Final acceptance authority is with Owner.
 - c. Contractor documents resolution process.
 - d. Once interpretation and resolution have been decided, appropriate party corrects deficiency, signs statement of correction on non-compliance form and provides it to Contractor. Contractor reschedules test and test is repeated until satisfactory performance is achieved.
- E. Cost of retesting:
1. Responsibility of Subcontractor to retest a prefunctional or functional test, if Subcontractors are responsible for deficiency. If Subcontractors are not responsible, any cost recovery for retesting costs shall be negotiated with Contractor.
 2. For deficiency identified, not related to any prefunctional checklist or start-up fault, following shall apply:
 - a. Contractor and Construction Manager will direct retesting of equipment once at no "charge" to Owner for their time.
 - b. Contractor's and Construction Manager's time for a second retest will be charged to OWNER, who may choose to recover costs from responsible Subcontractor.
 3. Time for Contractor and Construction Manager to direct any retesting required because a specific prefunctional checklist or start-up test item, reported to have been successfully completed, but determined during functional testing to be faulty, will be backcharged to OWNER, who may choose to recover costs from party responsible for executing faulty prefunctional test.
 4. Refer to article "Sampling" for requirements for testing and retesting identical equipment.
- F. OWNER shall respond in writing to Contractor and Construction Manager at least as often as commissioning meetings are being scheduled concerning status of each apparent outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreements and proposals for their resolution.
- G. Owner retains original nonconformance forms until end of Project.
- H. Required retesting by any contractor shall not be considered a justified reason for a claim of delay or for a time extension by prime contractor.
- I. Failure due to manufacturer defect: If 10%, or three, whichever is greater, of identical pieces (size alone does not constitute a difference) of equipment fail to perform to Contract Documents (mechanically or substantively) due to manufacturing defect, not allowing it to meet its submitted performance spec, all identical units may be considered unacceptable by Construction Manager or Owner. In such case, Contractor shall provide Owner with following:
1. Within 1 week of notification from Construction Manager or Owner, Contractor or manufacturer's representative shall examine other identical units making a record of findings. Provide findings to Construction Manager or Owner within 2 weeks of original notice.
 2. Within 2 weeks of original notification, Contractor or manufacturer shall provide a signed and dated, written explanation of problem, cause of failures, etc. and all proposed solutions which shall include full equipment submittals. Proposed solutions shall not significantly exceed specification requirements of original installation.
 3. Construction Manager or Owner will determine whether a replacement of all identical units or a repair is acceptable.
 4. Two examples of proposed solution shall be installed by Contractor and Construction Manager will be allowed to test installations for up to one week, upon which Construction Manager or Owner will decide whether to accept solution.
 5. Upon acceptance, Contractor and/or manufacturer shall replace or repair all identical items, at their expense and extend warranty accordingly, if original equipment warranty had begun. Replacement/repair work shall proceed with reasonable speed beginning within 1 week from when parts can be obtained.

3.06 APPROVAL OF TESTS

- A. Contractor will note each satisfactorily demonstrated function on test form. Formal approval of functional test is made later after review by Contractor and by Construction Manager, if necessary. Contractor recommends acceptance of each test to Construction Manager using a standard form. Construction Manager gives final approval on each test using same form, providing a signed copy to Contractor.

3.07 DEFERRED TESTING

- A. Unforeseen deferred tests: If any check or test cannot be completed due to building structure, required occupancy condition, or other deficiency, execution of checklists and functional testing may be delayed upon approval of Owner. Tests shall be conducted in same manner as seasonal tests and as soon as possible. Services of necessary parties will be negotiated.
- B. Seasonal testing: During warranty period, seasonal testing (tests delayed until weather conditions are closer to system design) specified in Section 20 08 00 shall be completed. Commissioning Authority shall coordinate seasonal testing. Tests shall be executed, documented, and deficiencies corrected by appropriate Subcontractors, with facilities staff and Commissioning Authority witnessing. Final adjustments to operation and maintenance manuals and Project Record Drawings due to testing shall be made.

3.08 PHASED COMMISSIONING

- A. Startup and initial checkout shall be executed in phases.
- B. Phasing shall be planned and scheduled during coordination meeting of Construction Manager, Contractor and mechanical, testing and balancing, and controls contractors.
- C. Results shall be incorporated into master and commissioning schedule.

3.09 OPERATION AND MAINTENTANCE MANUALS

- A. Standard operation and maintenance manuals:
 - 1. Specific content and format requirements for standard operation and maintenance manuals shall be as specified in Section 01 78 23.
 - 2. Commissioning Authority review and approval: Prior to Substantial Completion, Contractor shall review operation and maintenance manuals, documentation and redline Record Drawings for systems commissioned to verify compliance with Contract Documents. Contractor shall communicate deficiencies in manuals to Construction Manager, Project Manager, or Engineer, as requested. Upon a successful review of corrections, Contractor shall recommend acceptance of these sections of operation and maintenance manuals to Construction Manager, Owner, or Engineer. Contractor shall review each equipment warranty and verify requirements to keep warranty valid are clearly stated. Contractor's work specified above does not supersede Engineer's review of operation and maintenance manuals according to Engineer's contract.
- B. Commissioning record in operation and maintenance manuals: Contractor shall compile, organize and index following commissioning data by equipment into labeled, indexed and tabbed, 3-ring binders and deliver to Contractor, to be included with operation and maintenance manuals. Three copies of manuals shall be provided. Format of manuals shall be:
 - 1. Tab I-1 - Commissioning Plan.
 - 2. Tab I-2 - Final Commissioning Report.
 - 3. Tab 01 - System Type 1 (chiller system, packaged unit, boiler system, etc.).
 - a. Sub-Tab A - Design narrative and criteria, sequences, approvals for Equipment 1.
 - b. Sub-Tab B - Startup plan and report, approvals, corrections, blank prefunctional checklists. Colored Separator Sheets—for each equipment type (fans, pumps, chiller, etc.)
 - c. Sub-Tab C - Functional tests (completed), trending and analysis, approvals and corrections, training plan, record and approvals, blank functional test forms and a recommended recommissioning schedule.

4. Tab 02 - System Type 2: Repeat same as for System 1.
- C. Final report details. Final commissioning report shall include executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods. For each piece of commissioned equipment, report shall contain disposition of commissioning authority regarding adequacy of equipment, documentation and training meeting contract documents in following areas:
 1. Equipment meeting equipment specifications.
 2. Equipment installation.
 3. Functional performance and efficiency.
 4. Equipment documentation and design intent.
 5. Operator training.
- D. Outstanding noncompliance items shall be specifically listed. Recommendations for improvement to equipment or operations, future actions, commissioning process changes, etc. shall also be listed.
- E. Each noncompliance issue shall be referenced to specific functional test, inspection, trend log, etc. where deficiency is documented.
- F. Functional performance and efficiency section for each piece of equipment shall include brief description of verification method used (manual testing, BAS trend logs, data loggers, etc.) and include observations and conclusions from testing.

3.10 SYSTEMS TO BE COMMISSIONED

The systems to be commissioned are detailed in each Drainage Pump Station package. A list of the anticipated I/O as well as the instrumentation installed at each Drainage Pump Station is provided for contractor reference. Some of the Drainage pump stations will require a new PLC, others will just require augmentation of the HMI and PLC to incorporate the new instrumentation. Please refer to Appendix B for the specific Drainage Pump Station Location Plans, Instrument List, I/O list and PLC recommendations. Each Drainage pump station HMI/PLC will be commissioned upon completion of that specific station. Therefore, it is expected that there will be 24 short commissioning efforts. Efficiencies in this planning are welcome during the commissioning scheduling efforts at the beginning of the project.

END OF SECTION

SECTION 02 41 19 – SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
- B. Related Sections:
 - 1. Division 01 Section "Summary of Work" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.

1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.04 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor and must be promptly moved from the job site.
- B. Decommissioned devices and instrumentation will be retained by OWNER.

1.05 INFORMATIONAL SUBMITTALS

- A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- B. Schedule of Selective Demolition Activities: Indicate the following:
 - 1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's and other tenants' on-site operations are uninterrupted.
 - 2. Interruption of utility services. Indicate how long utility services will be interrupted.
 - 3. Coordination for shutoff, capping, and continuation of utility services.
 - 4. Use of elevator and stairs.
 - 5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

- C. Inventory: Submit a list of items to be removed and salvaged and deliver to Owner prior to start of demolition.
- D. Predemolition Photographs or Video: Submit before Work begins.

1.06 FIELD CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.
 - 1. Comply with requirements specified in Division 01 Section "Summary of Work."
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect/Construction Coordinator of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
 - 1. Retain subparagraph below to cover instances where hazardous materials are unexpectedly found and must be remediated. See the General Conditions for additional requirements on hazardous materials.
 - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
 - 1. Maintain fire-protection facilities in service during selective demolition operations.

1.07 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Contractor.

- D. Perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.

3.02 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
 - 1. Provide at least 72 hours' notice to Owner if shutdown of service is required during changeover.
- C. Utility Requirements: Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.03 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
 - 3. Contractor shall use existing openings within the construction area, or provide new openings for the removal of debris and installation of, materials and equipment. All such openings shall be coordinated with the Construction Coordinator.
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
 - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
- C. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- D. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.

- E. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.04 POLLUTION CONTROLS

- A. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.
 - 1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
 - a. Water cannot be used as a dust control measure on the "Airside" portion of project. The contractor shall provide temporary enclosures for dust control with filters as required.
 - 2. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure. Vacuum carpeted areas.
- B. Disposal: Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Coordinate subparagraph below with use of elevators, stairs, or building entries permitted by building manager.
 - 2. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 3. Transportation of debris on the airside shall be in covered vehicles or in enclosed containers that prevent debris, sand, or dust from escaping from the covered vehicle or container.
 - 4. Loading of debris into disposal vehicles or containers within 300 feet of the boarding gates shall be contained inside the building or within temporary enclosures.
- C. Cleaning: Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

3.05 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
 - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 - 5. Maintain adequate ventilation when using cutting torches.
 - 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 - 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 9. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

- B. Removed and Salvaged Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after removal and cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area designated by Construction Coordinator.
 - 5. Protect items from damage during transport and storage.

- C. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Pack or crate items after cleaning and repairing. Identify contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.06 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

- B. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 3. Coordinate first subparagraph below with use of elevators, stairs, or building entries permitted by building manager.
 - 4. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
 - 5. Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

- B. Burning: Do not burn demolished materials.

- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

- D. Coordinate Disposal Location with OWNER for each pump station.

3.08 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

SECTION 40 66 63-13 – RADIO TELEMETRY SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procurement, installation, and testing of following for complete and operable communication system:
 - 1. Communications hardware.
 - 2. Radio transceivers.
 - 3. Omni-directional antenna.
 - 4. Directional antenna.
 - 5. Transmission cable and miscellaneous materials.
 - 6. Testing and commissioning.
- B. Work shall include complete installation of antennas, radios, cable, power supply and associated equipment to provide complete communication system.

1.02 INFORMATIONAL SUBMITTALS

- A. Spare parts lists including maintenance, special tools, test equipment, and name with address of manufacturer's local supplier for spare parts.

1.03 ACTION SUBMITTALS

- A. Submitted information relating to instrumentation and control devices shall be referenced by instrument tag number, as defined herein.
- B. Product Data: Manufacturer's data or specification sheets for installation and telemetry equipment showing design parameters, equipment catalog designations, and clearly identifying options provided.
- C. List of proposed material identifying manufacturer, and type for following:
 - 1. Radios.
 - 2. Antennas.
 - 3. Transmission cables.
 - 4. Surge suppressors.

1.04 CLOSEOUT SUBMITTALS

- A. Complete instruction manuals and parts list covering installation, operation, wiring interconnections, and maintenance of equipment. Manuals shall include interface drawings defining terminal numbers and functions for interface with other instruments or equipment.

1.05 MAINTENANCE MATERIALS

- A. Provide 1-year supply of spare parts as recommended by equipment manufacturer as part of initial installation.
- B. Include complete itemized list of radio system spare parts including pricing with Bid.

1.06 QUALITY ASSURANCE

- A. Regulatory requirements: Communication system shall operate within range of 902-928 MHz. Communication system shall utilize spread spectrum, frequency hopping technology. No FCC licensing shall be required.
- B. Provide instruments from same manufacturer and of same model series when multiple units of same item are required. Instruments and control equipment shall be readily available from U.S. suppliers.

- C. Furnish new and unused instruments and control devices.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

- A. Furnish equipment for performing testing. Test equipment shall remain property of Contractor.
- B. Testing equipment shall include, as minimum, following devices:
 1. System analyzer.
 2. Frequency counter.
 3. Digital power/multimeters.
 4. Field strength meter.
 5. Oscilloscope.
 6. Compass.
 7. Altimeters.

2.02 COMMUNICATIONS HARDWARE; GENERAL REQUIREMENTS

- A. Supply integrated radio modem hardware defined herein. Radio and modem shall be packaged together and internally interfaced with each other.
- B. Units shall be data transparent to allow for minimum amount of data transmission latency, and to limit data transmission overhead to allow radio modem to obtain data rates specified.

2.03 RADIO TRANSCEIVER

- A. Applications, tag, and operational settings:
 1. *Field Panel, Pump, RT-xxx, Remote.
 2. * Field Panel, Pump, RT-xxx,, Master.*
- B. Unlicensed radios
- C. Ethernet-based 900 MHz license free, spread spectrum radios. A combination of "Master" and "Remote" operational type radios shall be used throughout the sites. Operational modes shall be settable within single model radio. Refer to Device Location Plan for identification of radio quantities and type associated with each drainage pump station site.

2.04 OMNIDIRECTIONAL ANTENNA

- A. Application: Repeater site at each Field Panel.
- B. Provide omni-directional antenna suitable for data transfer.
- C. Frequency range: Antennas shall be factory tuned to 900 MHz.
- D. Gain: 7.0 dB.
- E. Connector: Type N, female.
- F. Antennas shall be encapsulated in white heavy-duty fiberglass radomes with thick walled aluminum mounting base and dc grounded.
- G. Mounting hardware: Clamps, standoff hardware as recommended by antenna manufacturer to adapt to tower. Provide with heavy-duty mast mount, Model MMK4, or equal.
- H. Provide with mechanical tilt up or down provisions as required for antenna location.

- I. Manufacturer: Banner Model DXM700-B1R2, or equal.

2.05 TRANSMISSION CABLE

- A. Antenna cable between antenna and radio receiver shall use splice-free, manufacturer provided cable.
- B. Installation per manufacturer's recommendation.
- C. Antenna shall be grounded as required for mounting location of antenna.
- D. Antenna cable grounding:
 - 1. Bare or green insulated in accordance with NEC, soft-drawn copper cable or bar, not smaller than 1/0 AWG.
 - 2. Ground rods: 5/8" (16 mm) diameter x 8' (2.4 m) long, with copper jacket bonded to steel core.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's recommendations.
- B. Ground antenna installations in accordance with local and national codes.
- C. Install warning signs in highly visible locations.
- D. Install equipment as defined in specification or as shown on Drawings.
- E. Mount rigidly supported, level and plumb, and in such manner to provide accessibility as much as possible; protection from damage; isolation from heat, shock, and vibration; and freedom from interference with other equipment, piping, and electrical work.

3.02 FIELD QUALITY CONTROL

- A. Notify Owner and Engineer prior to performing tests to permit observation.
- B. Work involved with testing shall be coordinated in presence of Owner and Engineer at their discretion.
- C. Notify Owner of any equipment or wiring furnished under this Contract which may be disclosed by tests as unsatisfactory.

3.03 PATH STUDY

- A. Verify need for additional radio equipment, such as repeater radios, antennas, antenna towers and associated equipment to existing communication system to meet requirements of specifications.
- B. There shall be no additional cost to Owner during installation for additional equipment not identified in path study report.
- C. Study shall include, as a minimum, following procedure:
 - 1. Determine transmitter deviation, integrity of transmitted tones and audios, and receiver sensitivity using system analyzer device.
 - 2. Use frequency counter device to determine center frequency of transmitter as well as frequency generating section in transmitters and receivers.
 - 3. Forward and reflected power and overall integrity of antenna systems shall be determined using power meter.
 - 4. Field strength meter shall be used to determine strength of signal to receiver of transceiver being tested.

5. Other tools, materials, and procedures used in normal course of testing.

END OF SECTION

- 1) JM Jording
- 2)

SECTION 40 68 66-13 – PROGRAMMING AND CONFIGURATION OF PROCESS CONTROL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This specification includes programming and commissioning of programming logic controllers (PLCs).
- B. 19 of the drainage pump stations will have existing PLC that will require programming updates to include the new devices.
- C. 5 of the drainage pump stations will need to have a new PLC installed to replace existing data collection systems.
- D. The number of devices to be integrated and is detailed in the Facility PLC I/O list and the Facility Instrument List provided for each pump station in Appendix B.
- E. Radio Devices:
 - 1. One transmitter is used at each major piece of equipment to receive the different devices associated with a piece of equipment.
 - 2. The radio transmits to a receiver at the PLC cabinet.
 - 3. The receiver then communicates all data via modbus communication link into the PLC.
 - 4. Configuration of each input is needed for each pump island transmitter and will be accomplished by the radio system supplier prior to shipping to the site.
 - 5. All transmitters will be synchronized with the receiver for each pump station by radio system supplier.
 - 6. Once the transmitters and receiver are coordinated and configured, the PLC programmer will map in the Modbus addresses from the receiver into the PLC.
- F. 16 of the drainage pump stations will need communication links (were available) or control wiring added between the existing generator control panel and the PLC. There will be approximately 6 data points per generator to coordinate.

1.02 WORK BY OTHERS

- A. Licensing of control system software furnished under this contract by Owner.

1.03 DEFINITIONS

- A. Terms defined to describe use and performance of instruments used in process industry and in accordance with ISA SP51.1 as follows:
 - 1. Accuracy: Degree of conformity of indicated value to a recognized accepted standard value, or ideal value.
 - 2. Availability: Ability of device or system to be used or acquired over a period of time.
 - 3. Redundancy: Amount of duplication for purpose of preventing failure of entire system upon failure of single component.
 - 4. Reliability: Probability that a device or system will perform its objective adequately, for period of time specified, under operating conditions specified.
 - 5. Repeatability: Ability to reproduce, among a number of consecutive measurements, output for same operating conditions, approaching from same direction for full range traverses.
- B. Network diagram: Diagram detailing major components and communication interconnections of system. Diagrams shall show interfaces between equipment, communication highway details including differentiating between fiber optics and copper cables, and listing communications protocols.
- C. Following definitions will be used in project correspondence and documentation. Owner will establish common library of terminology to be used by all parties.

1. Initialization – Process by which initial values of mode, setpoint and output of a control block are set.
2. Running – State in which device, which has been commanded to start, has achieved commanded state.
3. Stopped – State in which device, which has been commanded to stop, has achieved commanded state.
4. Tripped – Device has been stopped by something other than an operator command either within control system or external to control system.
5. Failed – State in which device, which has been commanded, has not achieved requested state within predefined time period.
6. Electrical Protection – Tripping of device for electrical reasons, changed device state independent of any system output or command, i.e. overcurrent, undervoltage, etc.
7. Hot Cut-Over (HCO) – Initiation of an active, operating system control loop onto DCS control.

1.04 ACTION SUBMITTALS

A. Prior to construction:

1. Control system network diagrams for each pump station.

B. During construction:

1. Detailed connection diagrams from end devices to the radio system.
2. Detailed connection diagrams for radio receiver and Generator Panel (if applicable) to the PLC Communication card.

1.05 INFORMATIONAL SUBMITTALS

A. Training plan containing course outlines and schedules for training to be provided on-site.

B. Factory demonstration test procedure.

C. Factory test schedule: Provide agenda for factory testing listing sequence in which system components shall be checked.

1.06 CLOSEOUT SUBMITTALS

A. Operation and maintenance manual, for information only:

1. Complete instruction manuals and parts lists covering installation, operation, and maintenance of panel-mounted devices. Manuals shall include interface drawings defining terminal numbers and functions for interface with other instruments and equipment.
2. Schematic and wiring diagrams for each panel and enclosure. Show color of wire, termination points, terminal numbers, cable, and wire numbers.
3. Manufacturer's data and or specification sheets for control system equipment, showing design parameters, equipment catalog designations, calibration range, features and options provided. All sheets shall be identified with corresponding identification numbers.

B. Prior to project closeout:

1. Final operation and maintenance manuals.
2. Provide submittals updated to reflect "as-built" conditions.
3. Provide USB flash drive containing programming files & back-up files for PLCs.

1.07 QUALITY ASSURANCE

A. Qualifications:

1. Contractor shall be certified under International Standards Organization (ISO9001) Quality Guidelines.
2. System integrator: Company specializing in programming systems specified with minimum 5 years documented experience. Contractor shall demonstrate minimum of 5 years experience for projects of similar size and complexity involving control systems with continuous process

operation, PID loop control, data communications, graphic screens and reports in similar applications.

- B. After functional testing is witnessed by Owner and Owner' representative, necessary corrections shall be made to system to satisfaction of Owner before system is shipped.
- C. Manufacturer's qualifications: Contractor shall use manufacturers who's equipment will continue to be manufactured for a period of at least 3 years or who will maintain a stock of compatible spare parts
- D. Regulatory requirements: Work shall be in accordance with applicable requirements of following codes and standards.
 - 1. Electronic Industry Association (EIA) 232-D – Interface Between Data Terminal Equipment and Data Communication Equipment Employing Serial Binary Data Interchange
 - 2. Institute of Electrical and Electronic Engineers (IEEE)
 - a. ANSI/IEEE C37.90.1 – Standard Surge Withstand Capability (SWC) Tests for Protection Relay Systems
 - b. ANSI/IEEE C37.90.2 – Trial Use Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Trans-receivers
 - 3. National Fire Protection Association (NFPA):
 - a. 70 – National Electrical Code
 - b. 85 – Boiler and Combustion Systems Hazards Code
 - 4. National Electrical Manufacturer's Association (NEMA):
 - a. AB-1 – Molded Case Circuit Breakers
 - b. ICS-1 – General Standards for Industrial Control and Systems
 - c. ICS-2 – Standards for Industrial Control Devices, Controllers and Assemblies
 - d. ICS-4 – Terminal Blocks for Industrial Use
 - e. ICS-6 – Enclosures for Industrial Controls and Systems
 - 5. International Society of Automation (ISA):
 - a. ANSI/ISA-50.00.01 – Compatibility of Analog Signals for Electronic Industrial Process Instruments
 - b. ANSI/ISA-51.1 – Process Instrumentation Terminology.
 - c. ISA-101 – Human Machine Interfaces

1.08

1.08

1.08 WARRANTY

- A. Manufacturer's warranty:
 - 1. Warranty shall not begin until acceptance after final inspection of system by Owner.
 - 2. Specified availability shall be maintained throughout warranty period. Failure to achieve specified availability may at Owner option result in extension of warranty period until specified performance has been met for a continuous period equivalent to warranty period.
- B. Special warranty:
 - 1. Provide extended warranty for software and firmware supplied. Warranty shall provide parts and maintenance for installed system to Owner for period extending through startup and acceptance period of plant and for period extending 5 years beyond that date.
 - 2. Warranty provisions of license agreement shall cover system software and firmware including any third party software supplied with system.
 - 3. Provide telephone support service for period beginning with delivery of equipment and extending throughout software warranty period. Service shall provide telephone consultation services as required on operation, configuration development, trouble shooting, and maintenance of system hardware or software by persons in Contractor's organization who are thoroughly familiar with equipment and software supplied.
- C. Extended correction period: Provide post-warranty software maintenance program. Program shall provide operating and configuration software upgrades for installed system to client for a period

extending through startup and acceptance period of plant and for a period extending 5 years beyond that date.

1.09 LICENSE

- A. Assign standard software license to Owner for software provided upon initial installation of each software component. Software licenses shall be issued in Owner's name and transferred without restrictions to Owner upon completion of Project.
- B. Extend to Owner all rights of software purchase including telephone support during warranty period.

PART 2 PRODUCTS

2.01 SYSTEM REQUIREMENTS

- A. System operation shall maintain constant duty cycle regardless of upsets, operator activities, or remote access of system from LAN.
- B. Process variables shall be scanned, limit checked, broadcast and updated on monitor displays each second, synchronously.
- C. Software maintenance functions shall not affect any drop in system except during download procedures.
- D. On-line self-diagnostic routines shall run automatically and notify operator of any malfunctions and location of malfunction.
- E. Provide special software required for system installation, operation, and maintenance.
- F. Expandability:
 - 1. Addition of new functions shall not affect existing operations and shall not degrade current performance.
 - 2. Expansion shall include addition of:
 - a. Configuration additions such as I/O points, alarming, logging, performance calculations, environmental monitoring, graphics displays, sequence of events reporting, and historical data collection.
 - b. Remote monitoring of system from existing LAN.
 - 3. Define overall system limitations proposed in terms of total I/O and update rates under all operating conditions.
 - 4. Expansion of system shall be implemented with software identical to that of base system if at all possible, or at a minimum shall be totally compatible with original system.
- G. Reliability:
 - 1. Control system shall operate with high degree of reliability.
 - 2. Control software shall implement simple, predictable, high-level task-specific organizations of modules.
 - 3. On-line diagnostics shall be provided to disconnect drop from process data highway should malfunction occur.
- H. Maintainability:
 - 1. Materials and equipment shall be standard products of reputable manufacturer regularly engaged in production of same.
 - 2. Maintenance procedures shall be simple, straight forward and well documented.
 - 3. Software tools required to maintain, expand, reconfigure, and reload system shall be provided.
- I. Communications:
 - 1. Highway data communication:

- a. Communication bus: Distributed controllers shall be interconnected with high-throughput network.
 - b. Communication protocol: Data highway communication shall use both synchronous and asynchronous modes.
 - c. Reliability: No single drop point of failure shall disable any part of data highway. Self-diagnostics shall cause any drop to disconnect itself from system upon detection of any unrecoverable error.
2. Management information communication:
- a. Communication Bus: Workstations shall interconnect to process data highway for LAN. It shall be possible for remote devices to interconnect via bridges, switches, or routers.
 - b. Communication protocol: Network shall be TCP/IP compliant.

2.02 PERFORMANCE REQUIREMENTS

- A. Accuracy: System shall report values conforming to standard values indicated by field instruments.
- B. Availability: Overall system availability (operator workstation to field instruments) shall be 99% over 30-day test period.
- C. Reliability: Overall system reliability shall be 99% over 30-day test period.
- D. Repeatability: System shall produce consistently acceptable results over 30-day test period.
- E. Screen access and update within network shall be less than 2 seconds.

2.03 SOURCE QUALITY CONTROL

- A. Prior to delivery of software, Owner shall witness performance tests.
- B. Contractor shall be responsible software provided for Contract and shall notify Owner, in writing, when it is considered complete, in good operating condition, and ready for performance tests.
- C. Testing costs:
 1. Pre-tests: Costs of conducting tests shall be borne by Contractor.
 2. Factory demonstration test:
 - a. Include cost of conducting factory demonstration test in Bid.
 - b. Owner will include cost (when necessary) of 1 person including round trip for 1-day duration to Contractor's facility for factory demonstration tests.
 - c. Owner and Owner' Representative will each render bill to be paid by Contractor covering costs incurred by retesting or supplemental testing exceeding limits noted herein.
 - d. Billings to Contractor for Owner and Owner' Representative costs for retesting and supplemental testing exceeding limits noted herein shall be paid directly to Owner or Owner' Representative, as appropriate, within 30 calendar days from receipt by Contractor. Contractor's failure to pay such billings shall be cause for withholding final payment in amount equal to such costs.
 - e. Owner' Representative costs, when applicable, will be determined at Owner's Representative current per diem rates, plus direct expenses.
- D. Factory demonstration tests:
 1. Contractor's factory demonstration test shall include but not be limited to following requirements as described herein.
 2. Visual inspection.
 - a. Verify correctness of required tag identification of each system component and accessory including radio system units, system processors, enclosures, peripherals, cabling, I/O boards, circuit breakers, power supply terminals, etc.
 - b. Verify physical appearance and workmanship, hardware redundancy, furnished spare allocations and expandability conforms to specifications.
 - c. Verify equipment is complete, marked and located according to parts lists, cabinet layouts and termination schedules.

- d. Check cable bundles, plugs and sockets, termination blocks and equipment racks and connections are clearly labeled.
3. Demonstration test:
 - a. Input/output points: Confirm point-to-point wiring by continuity and verify database addressing, ranges, and alarm assignments by simulating one I/O point per I/O module at termination unit and viewing response on operator workstation. If any I/O point fails testing outlined above, Owner or Engineer reserves right to test points on associated I/O module.
 - 1) Analog inputs scaling, engineering unit values, and scan rates shall be verified. While cycling through input span, database alarm functions shall be demonstrated by noting graphic displays, alarm displays, and hard copy alarm documentation when alarm limits are exceeded.
 - 2) Analog output values shall be checked.
 - 3) Digital inputs shall be toggled to confirm status change and scan rate. Database linkages shall be verified by observing associated display data fields while changing state of database points and noting changes in state/color in respective fields. If alarms are generated, verify alarm listings and hard copy documentation.
 - 4) Digital output shall be checked.
 - b. Demonstrate functionality of each control strategy.
 - 1) Use functional descriptions and control logic diagram.
 - 2) Simulate analog and discrete inputs as well as operator commands to demonstrate functionality of each control loop and sequence including both manual and automatic modes.
 - 3) Verify output signals response in proper direction and magnitude.
 - 4) Verify override and interlock logic.
 - 5) Verify action of controllers in both manual and automatic modes.
 - c. Demonstrate functionality of digital communication interfaces:
 - 1) Verify communication interface with PLCs by forcing values in control program and monitoring response from operator workstation. Approximately 10% of values will be verified.
 - 2) Verify that radio receiver has all new data in a Modbus map to coordinate with PLC.
 - 3) Sync and verify all radio transmitters are coordinated with radio receiver.
 - 4) Digital communications interfaces for generators and power quality meters will not be factory tested since hardware is not available for testing. Contractor shall demonstrate that interface has been completed.
 - d. Demonstrate on-line diagnostic capabilities including performance information statistics of stations and peripheral equipment.
 - e. Demonstrate data management functions. Owner to select displays and trends to be demonstrated.
 - 1) Review and verification of data field linkages.
 - 2) Include verification that data collection occurs and that data collected and stored can be retrieved and displayed in form of reports or historical trends.
 - 3) Simulated input data shall also be used to generate sample reports to confirm report format, calculation algorithms, and reporting frequencies.
 - 4) Check trend displays during testing period.
 - f. Demonstrate system report generation including one specific report and one overall plant report. Owner will select report to be demonstrated.
 - 1) Report content shall be verified to insure proper linkages, format, calculations and reporting frequencies.
 - 2) Report format and logging capabilities shall be verified by introduction of real time data into database.
 - 3) Report content shall be verified to insure proper linkages, format, calculations and reporting frequencies.
 - g. Demonstrate effects of system malfunctions on process controls.
 - 1) Check power and grounding systems according to drawings. With main power disconnected, test earth grounds on power supply system by checking that there is an open circuit between cabinet frame and power rails.
 - 2) Disconnect primary power supply to one of power modules in power supply systems. System should be unaffected in operation and supply failure alarm should be generated to operator for each system.

- 3) Disconnects highways and field buses to verify operation of redundant highway maintains system performance and a highway failure or backup highway selected alarm is generated.
 - 4) Check redundant cards to verify that backup cards maintain system performance and appropriate alarm is generated.
 - 5) Check that system properly reboots after power outage.
 4. After factory demonstration testing, witnessed by Owner, necessary corrections shall be made to system to satisfaction of Owner before system is shipped.
- E. Tests results:
1. If system fails to perform properly:
 - a. Make necessary changes and adjustments to equipment.
 - b. Notify Owner when system is ready for retesting.
 - c. Repeat factory demonstration testing at no cost to Owner or impact to project schedule.
 2. If testing is substantially correct with minor defects, Contractor shall verify deficiencies are corrected in writing to Owner.
 3. Upon completion of hardware factory demonstration testing, Contractor shall submit certificate of test performance and compliance to Owner.
 4. Upon completion of application software application factory demonstration testing, Contractor shall submit certified copy of test results to Owner. Included shall be a statement that system and application software have been tested and operate in accordance with specifications.

PART 3 EXECUTION

3.01 TRAINING

- A. Provide training at Owner's site facilities following site acceptance tests. Training shall include aspects of operator's interface, system operation, and maintenance. Purpose of training session will be to answer questions by operations and maintenance personnel, which have arisen out of initial use of system during site acceptance.
- B. Furnish training programs to train Owner' personnel in administration, configuration, operation, and maintenance of control system. Contractor shall provide basic required training and recommend additional training programs for Owner.
- C. Two separate training programs shall be developed. Sessions shall be presented as operational training (2 sessions) and maintenance and configuration training (1 session). Training programs shall be conducted for numbers of personnel as listed below.
 1. Maintenance and configuration training:
 - a. 2 maintenance technicians/personnel.
 - b. 2 engineers/personnel.
- D. Provide following quantities of training:
 1. Maintenance and Configuration Training: 2 hours.
- E. Provide copies of training material for Owner.
- F. Provide training to familiarize Owner' personnel with system. Training shall be oriented toward installed equipment and software and satisfy requirements for following.
 1. General training: Familiarize project management personnel, engineers, operators, and maintenance personnel with control system overview, philosophy, major hardware components, reporting, and data retrieval.
 2. Programmer training:
 - a. Use and modify programs, as desired, during plant operation.
 - b. Compose and generate required monitor-based process graphics and report/log formats.

- c. Write, edit, file, delete, and apply applicable programming language and high-level process control language programs necessary to implement control system and process information functions.
 - d. Function and use of support and application software.
- G. Training shall be taught by person with significant training experience. Instructor and course materials shall be approved in advance of training.
- H. Tuition costs associated with training shall be included with Bid. For on-site training, food, lodging, and travel expenses for trainer shall be included.
- I. Courses shall be scheduled such that courses do not overlap to allow same personnel to attend more than one training course.
- J. Training shall be scheduled by system supplier minimum of 60 days in advance of start of training.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Impulse, instrument air supply, control, and signal piping including tubing, fittings, valves, and support materials.
- B. Sun protection and instrument enclosures.
- C. Pre-insulated tubing bundle.
- D. Instrument mounting stands.
- E. Instruments and control equipment:
 - 1. Pressure sensing devices.
 - 2. Flow sensing devices.
 - 3. Level sensing devices.
 - 4. Temperature sensing devices.
 - 5. RPM & Direction.
 - 6. Power Meter.
- F. Installation of instrumentation and control equipment including field transmitters, sensing elements, and miscellaneous devices.
- G. The OWNER's Preferred Instrumentation List is included for reference.

1.02 INFORMATIONAL SUBMITTALS

- A. Submit with Bid: Preliminary instrument listing including instrument tag number, manufacturer, and model number.
- B. Submitted information relating to instrumentation and control devices shall be referenced by instrument tag number.
- C. Submittals provided without following information will be marked "returned without review" as defined in submittal section. Submittals shall clearly identify:
 - 1. Each item by instrument tag number as defined in each specific pump stations instrument index.
 - 2. Complete part or catalog number including material selections, design parameters, equipment catalog designations, calibration range, device options and accessories to be provided.
- D. Product Data: Spare parts lists including maintenance, special tools, test equipment, and name with address of manufacturer's local supplier for spare parts.

1.03 ACTION SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's data or specification sheets for instrumentation and control devices showing design parameters, equipment catalog designations, calibration range, and clearly identifying options provided.
 - 2. Instrument listing: Listing shall be oriented by instrument tag number and include manufacturer, model number, calibrated range, and setpoint values.
 - 3. Certified calculation sheets:
 - a. Flow meter sizing.
 - b. Thermowell stress analysis.
 - c. Control valve sizing and aerodynamic noise predictions.
 - d. Pressure relieving device sizing.

B. Shop Drawings:

1. Certified outline drawings.
2. Installation drawings including mounting and grounding requirements.
3. Wiring interconnection drawings for equipment and accessories provided. Wiring interconnection drawings shall define terminal numbers and functions for interface with other instruments and equipment.

1.04 CLOSEOUT SUBMITTALS

A. Operation and maintenance manuals:

1. Complete instruction manuals and parts lists covering installation, operation, wiring interconnections, and maintenance of equipment.
2. Control loop diagrams for instrument and control devices wired or tubed to control system enclosures. Diagrams shall be in accordance with minimum requirements of ANSI/ISA S5.4. Control loop diagrams shall also include manufacturer, model number, and calibrated range; setpoint values for alarm and shutdown devices; equipment numbers for racks, panels, and junction boxes; exact location of device including column, row, and elevation; and control of solenoid valve fail-safe operation. Assign tag number oriented cable, wire, and tube numbers.
3. Schematic drawings for motor or relay-based control logic. Show color of wire, all termination points, terminal numbers, cable and wire numbers. Assign cable and wire numbers for external panel wiring. Cable and wire numbers shall be tag number oriented.

B. Record Documents:

1. "As-built" control loop diagrams and schematic drawings as defined above.

1.05 MAINTENANCE MATERIALS

- A. Provide 1-year supply of spare parts as recommended by equipment manufacturer as part of initial installation.

1.06 QUALITY ASSURANCE

- A. Provide instruments from same manufacturer and of same model series when multiple units of same item are required.
- B. Instruments, control devices, and accessories shall be free of mercury and asbestos.
- C. Use plant instrument air source pressure or furnish pressure regulator with filter and output gage.
- D. Furnish insect-proof screens on vents.
- E. *Furnish new and unused instruments and control devices.*
- F. *Provide linkages, mounting accessories, etc. necessary to place device into service.*

PART 2 PRODUCTS

2.01 DESIGN REQUIREMENTS

A. Flow meters:

1. Orifice plates: ISA SP3.
2. Turbine flow meters: ISA SP31.
3. Submit certified calculation sheets verifying meter selection for operating conditions at minimum and maximum flow rate.

B. Temperature measurement:

1. Thermocouples: ISA SP1.1.
2. RTDs: ISA SP1.3.
3. Temperature gages: ISA SP1.4 and SP1.6.

4. Thermowells:
 - a. SAMA RC-17 application and dimensional standards.
 - b. Verify stress analysis calculations in accordance with ANSI/ASME PTC-19.3, Part 3, for operating conditions to demonstrate thermowell shall not exceed material stress limitations.

C. Analytical measurement:

1. Combustible gas detectors: ISA SP12.13.
2. Hydrogen sulfide detectors: ISA SP92.01.
3. Carbon monoxide detectors: ISA SP92.02.
4. Ammonia detectors: ISA SP92.03.
5. Chlorine detectors: ISA SP92.06.

- D. Verify pressure relieving device sizing for gas, liquid, and steam applications in accordance with ASME Boiler and Pressure Vessel Code, Section VIII – Rules for Construction of Pressure Vessels.

2.02 IMPULSE TUBING

A. Tubing:

1. Process: Water/air/steam/gas below 300 psig and 1,200°F.
 - a. Outside diameter: 0.5" (14 mm).
 - b. Wall thickness: 0.049" (1.5 mm).
 - c. Material (ASTM): A213.
 - d. Type: 316H stainless steel.
 - e. Construction: Seamless.
2. Process: Water/air/steam/gas at or above 300 psig, and below 2,500 psig and 1,200°F.
 - a. Outside diameter: 0.5" (14 mm).
 - b. Wall thickness: 0.083" (2.2 mm).
 - c. Material (ASTM): A213.
 - d. Type: 316H stainless steel.
 - e. Construction: Seamless.

2.03 INSTRUMENT VALVES

A. Low-pressure water, air, gas, and steam below 300 psig and 500°F service:

1. Type: Ball.
2. Material: Type 316 stainless steel, ASTM A479.
3. Pressure rating: 1,500 psig at 100°F.
4. Internals: Type 316 stainless steel ball, teflon packing.

B. Manufacturer: Swagelok, Parker, or equal.

2.04 INSTRUMENT MANIFOLDS

A. Type: 2-valve for pressure applications and 3-valve for differential pressure applications.

B. Pressure class: ASME/ANSI B16.34 Class 2500.

C. Material: ASTM A479 Type 316 stainless steel.

D. Internals: Carbide ball seat and graphoil packing.

E. Manufacturer: Anderson Greenwood Co., PGI International, or equal.

2.05 SUN PROTECTION CANOPY

A. Construction: Molded polyurethane or other chemical and ultraviolet light-resistant material.

B. Canopy shall fully protect instrument from exposure to direct sunlight.

- C. Mount directly to instrument, instrument mounting bracket, or other suitable support.

2.06 INSTRUMENT ENCLOSURE

- A. Construction: Molded polyurethane or other chemical, ultraviolet light- and fire-resistant material.
- B. Enclosure shall fully enclose instrument and manifold.
- C. Mount on same mounting bracket as instrument.

2.07 ELECTRICAL MATERIALS

- A. Rigid steel conduit:
 1. Material: Zinc-galvanized aluminum with smooth interior surface.
 2. Couplings, unions, fittings, and conduit bodies: Threaded type.
- B. Wire and cable:
 1. Analog signal cable:
 - a. Configuration: Twisted pair, shielded, and jacketed.
 - b. Insulation: 600-volt, 80°C, PVC, color-coded to permit identification of each conductor.
 - c. Conductors: Stranded copper, 16 AWG.
 - d. Shield: Metallized foil or tinned copper braid providing 100% coverage against noise together with 18 AWG stranded tinned copper drain wire.
 2. RTD extension wire:
 - a. 3-wire system:
 - 1) Configuration: Twisted triad, shielded, and jacketed.
 - 2) Insulation: 600-volt, 60°C, PVC, color-coded to permit identification of each conductor.
 - 3) Conductors: Stranded copper, 16 AWG.
 - 4) Shield: Metallized foil or tinned copper braid providing 100% coverage against noise together with 18 AWG stranded tinned copper drain wire.
 - b. 4-wire system:
 - 1) Configuration: 4-conductor twisted, shielded, and jacketed.
 - 2) Insulation: 300-volt, 80°C, PVC, color-coded to permit identification of each conductor.
 - 3) Conductors: Stranded copper, 18 AWG.
 - 4) Shield: Metallized foil or tinned copper braid providing 100% coverage against noise together with 20 AWG stranded tinned copper drain wire.
 3. Thermocouple extension wire:
 - a. Configuration: Single twisted pair, shielded, and jacketed.
 - b. Conductors: Solid, 16 AWG.
 - c. Insulation: 300-volt, 200°C, teflon FEP, color-coded as defined below.
 - d. Conductor, jacket, and color:
 - 1) Type EX:
 - 1) Jacket: Purple, teflon FEP.
 - 2) Positive conductor: Chromel, purple.
 - 3) Negative conductor: Constantan, red.
 - 4) Tolerance: $\pm 1.7^{\circ}\text{C}$ for 0 to 200°C.
 - 2) Type JX:
 - 1) Jacket: Black, teflon FEP.
 - 2) Positive conductor: Iron, white.
 - 3) Negative conductor: Constantan, red.
 - 4) Tolerance: $\pm 2.2^{\circ}\text{C}$ for 0 to 200°C.
 - 3) Type KX:
 - 1) Jacket: Yellow, teflon FEP.
 - 2) Positive conductor: Chromel, yellow.
 - 3) Negative conductor: Alumel, red.
 - 4) Tolerance: $\pm 2.2^{\circ}\text{C}$ for 0 to 200°C.
 - 4) Type TX:
 - 1) Jacket: Blue, teflon FEP.
 - 2) Positive conductor: Copper, blue.
 - 3) Negative conductor: Constantan, red.

- 4) Tolerance: $\pm 1.0^{\circ}\text{C}$ for 0 to 100°C .
 - e. Shield: Metallized foil or tinned copper braid providing 100% coverage against noise together with 18 AWG stranded tinned copper drain wire.
 - 4. Discrete signal cable:
 - a. Insulation: 600-volt, 90°F , PVC.
 - b. Conductors: 16 AWG, stranded copper.
 - 5. Power wire:
 - a. Insulation: 600-volt, 90°F .
 - b. Conductors: 12 AWG, stranded copper.
 - 6. Communication cable: _____.
- C. Wire and cable tags:
- 1. Type: Embossed, heat-shrink tubing.
 - 2. Color: White.

2.08 INSTRUMENT WIRING

- A. Provide No. 16 AWG single twisted shielded pair cable for 24-volt dc analog signals.
- B. Provide No. 16 AWG, 600-volt wire for 120-volt ac signals.
- C. Provide No. 12 AWG, 600-volt wire for 120-volt ac power circuits.

2.09 INSTRUMENTS AND CONTROL DEVICES

- A. Refer to each pump stations specific Instrument Index for device listing and instrumentation details.
 - 1. Information including but not limited to range and calibration data, sizes, special features, and process data (fluid and fluid state, pressure, temperature, and flow rates).
 - 2. Instrument and control devices shall be rated according to applicable design process temperatures and pressures.
- B. Pressure transmitters:
 - 1. Type: Absolute, differential, and/or gauge.
 - 2. Output: 4 – 20 mA.
 - 3. Materials of construction: Type 316 stainless steel flange and drain/vent.
 - 4. Isolating diaphragm: Type 316L stainless steel.
 - 5. O-ring: PVDF.
 - 6. Housing material: Polyurethane-covered aluminum.
 - 7. Manufacturer: Vega Bar 28, or equal.
- C. Thermocouple assemblies, thermocouples –:
 - 1. Sensors:
 - a. Thermocouple: Type J.
 - b. Cover style: Standard.
 - c. Cover material: Standard.
 - d. Sensor style: Spring loaded.
 - e. Element: Single, ungrounded.
 - f. Element length: Sized to suit thermowell.
 - g. Leads: 2-wire iron-constantan.
 - h. Sheath diameter: 1/4" (6 mm).
 - i. Sheath material: Type 316 stainless steel.
 - j. Extension type: 4" (100 mm) nipple-union-nipple.
 - k. Extension material: Carbon steel.
 - l. Connection: 1/2" (13 mm) NPT.
 - m. Electrical connection: 3/4" (19 mm) NPT.
 - 2. Thermowells:
 - a. Features specified on Section 40 91 00-13:
 - 1) Material of construction.
 - 2) Process connection.

- 3) Insertion length "U".
 - 4) Lagging: "F" length (lag extension "T" + 1-3/4" (44 mm)).
 - 5) Shank style.
 - b. Bore: 0.260" (6.604 mm).
 - c. Internal thread: 1/2" (13 mm) NPT.
 3. Manufacturer: Thermo Electric, Pyco, or equal.
- D. RTD assemblies:
1. Sensors:
 - a. RTD: 100 Ohm platinum, conforming to IEC 751 Class B.
 - b. Cover style: Standard.
 - c. Cover material: Standard.
 - d. Sensor style: Spring-loaded.
 - e. Element: Single.
 - f. Element length: Sized to suit thermowell.
 - g. Lead configuration: See Section 40 91 00-13.
 - h. Sheath diameter: 1/4" (6 mm).
 - i. Sheath material: Rated for high temperatures up to 1,070°F (577°C) or above.
 - j. Extension type: 4" (100 mm) nipple-union-nipple.
 - k. Extension material: Carbon steel.
 - l. Connection: 1/2" (13 mm) NPT.
 - m. Electrical connection: 3/4" NPT.
 2. Thermowells:
 - a. Features specified on Section 40 91 00-13:
 - 1) Material of construction.
 - 2) Process connection.
 - 3) Insertion length "U".
 - 4) Lagging: "F" length (lag extension "T" + 1-3/4" (44 mm)).
 - 5) Shank style.
 - b. Bore: 0.260" (6.604 mm).
 - c. Internal thread: 1/2" (13 mm) NPT.
 3. Manufacturer: Thermo Electric, Pyco, or equal.
- E. Vibration-Temperature Dual Sensors:
1. Sensor Housing: 316L Stainless Steel
 2. Communication Protocol: Modbus RTU serial
 3. Sensor Wiring: RS-485
 4. Mounting:
 - a. Refer to manufacturer's technical specifications for proper vibration axes determination.
 - 1) Assembly quick start guide #213323.
 - b. Mounting bracket shall be epoxied to motor
 - c. Part Number: BW-BKA-023
 5. Supply Voltage 10-30VDC
 6. Baud Rate: 9.6k
 7. Vibration:
 - a. Sampling frequency: 20 kHz
 - b. Frequency range: 10Hz to 4kHz
 - c. Measuring range: 0-46mm/sec
 - d. Sample duration 0.4s
 8. Temperature
 - a. Resolution 1°C
 - b. Measuring range: -40°C to 105°C
 - c. Accuracy: +/- 3°C
 9. Quick disconnect
 10. Manufacturer: Banner
 11. Model: QM30VT2-SS-QP

- A. Each instrument and control device shall have a tag permanently attached to case with following applicable information:
 - 1. Tag number.
 - 2. Manufacturer's name.
 - 3. Model number.
 - 4. Serial number.
 - 5. Operating range.
 - 6. Calibration setting/range.
 - 7. Power rating.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Install instrument and control devices in accordance with manufacturer's recommendations and/or where approved by Owner's Representative.
- B. Locate instruments and control devices as shown on Device Location Plans for each specific pump station. and/or designated by Owner's Representative.
- C. Mount instruments so they are rigidly supported, level and plumb, and in such a manner as to provide accessibility; protection from damage; isolation from heat, shock and vibration; and freedom from interference with other equipment, piping, and electrical work.
- D. Do not install instruments until heavy construction work adjacent to instruments has been completed to extent that damage will be unlikely to installation by such construction work.
- E. Manufacturer's recommendations referred to herein shall be as stated in manufacturer's installation manual and/or by manufacturer's service representative. Final interpretation of "installation requirements" will be by Owner's Representative.
- F. Perform welding in accordance with appropriate piping or structural welding specifications and procedures.

3.02 INSTRUMENT EQUIPMENT MOUNTING

- A. Mount instrumentation equipment to building steel, concrete floors, or walls using pipe mounting stands or field-fabricated mounting brackets.
 - 1. Secure instrumentation equipment mounting bracket to building steel by welding or bolting, and to concrete or masonry building structure by expansion-type anchors. Do not mount instrumentation equipment to exterior removable panels.
 - 2. Grout mounting brackets on concrete floors with nonmetallic, chloride-free gypsum material, ASTM C1107, Grade A; formulation suitable for application.
 - 3. If vibration-free location is not available for instrument mounting, appropriate vibration shock mounting shall be provided by use of rubber grommets or other vibration dampeners designed for vibration absorption subject to Owner's review. Mounting of process pressure and temperature gages or process pressure and temperature switches to process piping shall be allowable only if vibration is minimized.
 - 4. Install instrumentation mounted outdoors within sun protection enclosures. Enclosure opening shall face north or east, insofar as practicable.
- B. Instrument accessibility: Following general rules shall be adhered to, unless limited by other requirements in design of system.
 - 1. Locate instrument process connections for maximum convenience in operation and servicing of instrument. Orient connections so instruments or piping will not obstruct aisles, platforms, or ladders.
 - 2. Install field-mounted instruments so they are accessible from grade, platform, or permanent ladder. Instruments requiring adjustment or inspection shall be accessible for servicing from grade, walkway, platform, or permanent ladder.

3. Locate remote instruments and control devices (devices not located in or on process lines) at nominal height of 4-1/2' (1.35 m) above finished floor, grade, or platform. Provide instrument racks for location in which 3 or more instruments or control devices are located within close proximity of each other.
4. Mount local indicators, recorders, and controllers so they are readable, controllable, and serviceable from grade or platforms.

3.03 TUBING INSTALLATION - GENERAL

- A. Install instrument impulse piping parallel (except for slope) to building lines and other piping following instrument manufacturer's instructions.
- B. Tubing shall be continuously supported with 12-gage aluminum angle and held in place with appropriate tubing clips and fasteners. Install tubing supports in such a manner to preclude fatigue failure of tubing due to vibration.
- C. Only tool-made bends shall be acceptable.
- D. Minimize number of unions used to join tubing lengths.

3.04 IMPULSE TUBING INSTALLATION

- A. Instrument impulse piping work shall be from last block valve through, and including, blowdown piping to nearest equipment drain.
- B. Install horizontal impulse piping with slope of 1" per foot (25 mm per 300 mm).
 1. Slope impulse piping toward instrument for liquid and steam service.
 2. Slope impulse piping away from instrument for gas service.
- C. Blowdown and drain valves are required in impulse lines to all transmitters and instruments used on water, steam, and condensing vapor services.
- D. Attach isolation valves to instruments so that it is possible to disconnect instrument from connecting pipe without having to drain pipe.
- E. Install expansion loops in impulse piping installations where movement of last block valve and instrument is not in same plane or length of expansion varies.
- F. Support pressure gages and other instruments connected to impulse piping independently of tubing. Provide ample expansion loops in tubing connections to instruments subject to vibrations to prevent failure due to metal fatigue.
- G. Furnish and install accessories required for complete impulse piping system including instrument isolation valves, snubbers, siphons, and calibration and test connections at instrument.

3.05 CLEANING

- A. Before assembly or erection, thoroughly clean instruments of temporary protective coatings and foreign materials.
- B. After erection of equipment, clean external surfaces of oil, grease, dirt, or other foreign material.

3.06 WIRE AND CABLE INSTALLATION

- A. Maintain minimum of 1' (300 mm) separation between signals operating at voltages greater than 120-volts ac and instrumentation or communications signals. Group and route wire/cables as follows:
 1. Low-voltage/low current dc instrumentation signals (30-volts/50 mA or lower).
 2. High-voltage dc alarm signals (48-volts or greater).
 3. Low-voltage ac control signals (120-volts or lower).

4. High-voltage ac power signals (greater than 120-volts).
 5. Communications signals.
- B. Install continuous wire from terminal-to-terminal. Splices not acceptable.
- C. Shielded signal cable:
1. Connect shields to common ground at source of loop power.
 2. Shields of multiple cable runs shall be connected on separate terminal blocks, but not grounded.
 3. Cut and tape shield at destination end.
- D. Identify both ends of wires and/or cables with permanent wire marker.

END OF SECTION

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR ADDITIONAL INSTRUMENTATION

SWBNO PREFERRED INSTRUMENTS/DEVICES LIST

Instrument/Equipment	Reference instrument provided by client	Suggested alternative	Comments
Vibration - bearing	Banner QM30 Sensor		
Temperature - bearing			
Vibration - vac. pump/ motor/ gearbox	Banner QM30 Sensor		
Temperature - vac. pump/ motor/ gearbox			
Oil Level - bearing	Vega Point 21		
RPM/Direction Sensor	Turck TM18, Banner Q45		
Vacuum Pressure	Vega Bar 28		
Oil Temperature	ElectroSensors		
Oil Pressure	Vega Bar 28		
Fuel Pressure	Vega Bar 28		
Power Meter	SEL-849		
Power Meter			
Radar Level Sensor	Vega PSC21		
Radio System Antenna	Banner BWA Series		
Radio System Gateway Controller	Banner DXM700		
Radio System Gateway	Banner DX80		

SECTION 40 94 43 – PROGRAMMABLE LOGIC PROCESS CONTROLLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Programmable controller system.
- B. Local non-networked graphic operator interface.
- C. Performance tests.

1.02 WORK BY OTHERS

- A. Field installation of equipment.
- B. Enclosures for remote I/O racks.
- C. Field wiring of devices to input/output (I/O) terminal strips for controller equipment.
- D. Programming and configuration.

1.03 INFORMATIONAL SUBMITTALS

- A. Product Data:
 - 1. Manufacturer's installation instructions and product data.
 - 2. Complete set of instruction manuals sufficient for installation, programming, and operation of equipment supplied.

1.04 ACTION SUBMITTALS

- A. Shop Drawings:
 - 1. System network drawing indicating model numbers of items provided.
 - 2. Outline and installation drawings for equipment and accessories provided, including mounting requirements, and grounding requirements. Submittal shall clearly identify each item by instrument tag number or specification section number and paragraph, part or catalog number and options or accessories provided.
 - 3. Graphic screens associate with graphic operator interface specified in this section in .pdf file format.
- B. Quality assurance data:
 - 1. Recommended spare parts list.
 - 2. Name and address of Owner's local supplier for spare parts.
 - 3. Name and address of nearest technical support. Provide description of technical support and availability for following:
 - a. Equipment, system software, and data communication.
 - b. Application software.
 - 4. Within 30 days of Factory Demonstration Tests, provide detailed performance criteria and testing procedures used to determine satisfactory operation meeting functional performance criteria of control algorithms, data communications, graphic displays, etc., including operating system(s) for process control equipment hardware and software.

1.05 CLOSEOUT SUBMITTALS

- A. Record documents which accurately record actual location of controller cabinets and input and output devices connected to system. Include:
 - 1. Interconnection wiring and cabling information.
 - 2. Terminal block layouts in controller cabinets.
 - 3. Input/output schedule in Microsoft Excel or Microsoft Access file format.
 - 4. Electronic media and hard copy of ladder logic and control description in .jpg format.
- B. Operation and maintenance data for each item, including each type of I/O card and processing card provided.
 - 1. Bound copies of operating and programming instructions for all items.
 - 2. Card replacement, adjustments, and preventative maintenance procedures and materials.
 - 3. Complete set of instruction manuals sufficient for installation, programming, and operation of equipment furnished.

1.06 MAINTENANCE MATERIALS

- A. Furnish the following spare equipment/parts:

1. 2 isolated input cards.
2. 2 isolated output cards.
3. 2 24 volts dc output cards for control panel graphics.
4. 2 analog input cards and 2 analog output cards.
5. One spare memory module for each type of programmable controller furnished.
6. 2 spare programmable controller power supplies.
7. 2 spare remote data communication transmission modem.
8. 2 spare memory module for local graphic operator interface.
9. Additional spare part as recommended by manufacturer.*

1.07 QUALITY ASSURANCE

- A. Design, construct, and test in conformance to NEMA ICS 1, ICS 2, and ICS 3.

1.08 DELIVERY, HANDLING, AND STORAGE

- A. Delivery, storage, and protection shall be in accordance with manufacturer's recommended procedures.
- B. Accept products on site in factory containers and verify damage.
- C. Store products in clean, dry area. Maintain temperature in accordance with NEMA ICS 1.

1.09 WARRANTY

- A. Warranty shall not begin until final acceptance of system by Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Automation Direct – Productivity 2000

2.02 PERFORMANCE REQUIREMENTS

- A. Functional performance: Configuration and base level programs shall conform to control strategies and graphic displays specified.
- B. Reliability:
 1. Equipment hardware and software shall have uptime operation meeting functional performance criteria in manner reasonably satisfactory to Owner and Engineer.
 2. Control equipment shall have no component whose failure shall cause system to be non-operative.

2.03 PROGRAMMABLE CONTROLLER SYSTEM

- A. System shall provide following capabilities:
 1. Field instrumentation wiring terminations, instrument signal input/output for system, monitor and control functions, operator interface via local graphic operator displays, and self-diagnostics.
 2. Ability to expand control equipment, i.e. add controllers and local graphic interface panels. Control equipment shall be computer-compatible, but shall not require computer for data communication device expansion.
 3. Capable of supporting copper or fiber-optic data communication for processor, work station, and remote I/O networking.
 4. Multiple processors shall function as a network interfaced through data communication system with network programming capability. Processors shall support simultaneous on-line/remote programming and continuous data acquisition and control. Programming shall employ fill-in-the-blanks or interactive techniques.
- B. Data communication system shall be capable of supporting copper or fiber-optic media for processor, work station, local graphic operator interfaces, and remote I/O networking.
 1. Arrange system as indicated on each Pump Station's PLC Layout Drawing.
 2. System hardware shall have sufficient data protection to prevent erroneous data communication during power-up or power-down.
 3. System shall recognize transmission format errors and either correct or request retransmission.
 4. Construct data communication of multipoint, multidrop configuration.
 5. Contractor shall be responsible for confirming final selection of components to support a fully complete and operable system.

- C. Supply cabinets, consoles, power supplies, digital instrumentation, communications, interconnecting cables as required, and necessary voltage regulation or conditioning equipment for complete and operable system meeting performance and control description specifications.
- D. Power supply: 120 volts ac, single-phase, 60 Hz.
- E. Manufacturer shall have application training and customer assistance services available.
- F. Major assemblies, subassemblies, circuit card, and devices shall be permanently marked with manufacturer's part or identification number.
- G. Controller system shall be of expandable design supporting replaceable I/O modules and remote I/O. Components shall be serviced and supported by same company.
- H. Label I/O card strips with English descriptions.
- I. Provide 10 spare CDs, DVDs, or other acceptable electronic media for use with programming panel.

2.04 SYSTEM COMPONENTS

- A. Manufacturer: Automation Direct Productivity 2000.
- B. Chassis:
 - 1. Main base housing:
 - a. Slots: 4, 7 or 11.
 - 1) Refer to Facility PLC Modification List for each pump station's IO
 - b. Part number:
 - 1) P2-04B
 - 2) P2-07B
 - 3) P2-11B
- C. Power supply/sequencer module:
 - 1. Available input power source: 120VAC.
 - 2. Mounted in Slot 1 of base housing chassis.
 - 3. Part number: P2-01AC.
- D. Main chassis CPU module:
 - 1. Controller shall be configured by system integrator.
 - 2. Mounted in Slot 2 of base housing chassis.
 - 3. Scan Time: 500 microseconds.
 - 4. Communication ports:
 - a. Two (2) 10/100baseT Ethernet
 - b. One (1) RS 232
 - c. One (1) RS 485 – 3-pin terminal
 - d. One (1) MicroUSB
 - 5. Removable Media: MicroSD card slot
 - 6. Battery backed static RAM (SRAM).
 - 7. 512 KB boot/downloader flash.
 - 8. 500kB retentivememory.
 - 9. Lithium battery: 3.0V. 560 mA coin-type.
 - 10. Configuration software requirements:
 - a. Programming via ProductivitySuite configuration software. Configuration software shall support relay ladders, structured text, function block diagram and sequential function chart programming.
 - b. Program CPU on-line or off-line.
 - 11. Part number: P2-550.
- E. Local I/O modules:
 - 1. In addition to I/O quantities shown on Drawings, provide 20% spare installed I/O points of each type.
 - 2. Discrete input:
 - a. Capacity: 16-point.
 - b. Voltage: *24-volt dc, internally powered.
 - c. Grouping: Two isolated commons.
 - d. Requires P2-RTB removable terminal block.
 - e. Part number: P2-16N3
 - 3. Discrete output:
 - a. Capacity: 16-point.
 - b. Voltage: 24-volt dc, externally powered (sinking).
 - c. Loading: 0.25 amperes maximum per point.

- d. Grouping: 1 group of 16 with common source and ground.
- e. Requires P2-RTB removable terminal block.
- f. Part number: P2-16TD1P.
- 4. Relay contact output:
 - a. Capacity: 16-point.
 - b. Voltage: Rated 120-volt ac or 24-volt dc.
 - c. Loading: 1 amperes maximum per point.
 - d. Grouping: 2 Groups of 8, each with their own common
 - 1) 8A per common.
 - e. Requires P2-RTB removable terminal block.
 - f. Part number: P2-16TR.
- 5. Communication Module:
 - a. Communication Ports (4):
 - 1) One (1) RS-485 – 4-pin terminal
 - 2) Three (3) RS-232 – RJ12
 - b. Port Protocols:
 - 1) Modbus RTU
 - 2) ASCII
 - c. Refer to manufacturer's technical specifications for individual port configuration options.
- 6. Analog input:
 - a. Capacity: 8-point.
 - b. Voltage/current: 24-volt dc 4-20.
 - c. Grouping: Non-isolated and externally powered.
 - d. Part number: P2-08AD1.
- 7. Analog output:
 - a. Capacity: 8-point, isolated.
 - b. Voltage/current: 24-volt dc 4-20 mA, internally powered.
 - c. Loading: 0-810 ohm.
 - d. Resolution: 16-bit.
 - e. Part number: P2-08DA-1.
- F. I/O expansion CPU module:
 - 1. Controller shall be configured by system integrator.
 - 2. Mounted in Slot 2 of expansion housing chassis.
 - 3. System clock speed: 25 MHz.
 - 4. Communication ports: One 10/100baseT Ethernet, three RS-232, and one RS-485 communication serial ports.
 - 5. 64 MB synchronous dynamic RAM (SDRAM).
 - 6. 512 KB boot/downloader flash.
 - 7. 32 MB simultaneous read/write flash memory.
 - 8. Lithium battery: 3.6 volts. 950 mA-hr 1/2 AA battery.
 - 9. Configuration software requirements:
 - a. Programming via ControlWave Designer IEC 61131-3 compliant configuration software. Configuration software shall support relay ladders, structured text, function block diagram and sequential function chart programming.
 - b. Program CPU on-line or off-line.
 - 10. Part number: 396458-18-1.

2.05 PROGRAMMING DEVICE

- A. Computer capable of interfacing with programmable controllers furnished by this contract. New laptop computer equipped with configuration and communication software shall be furnished to Owner.
- B. Programming device shall incorporate:
 - 1. Alphanumeric keypad.
 - 2. Function keys shall allow user to construct a relay ladder diagram on operator display screen, as well as complete programming instructions.
- C. Programming controls shall permit user to enter, edit, and delete logic and to monitor registers in decimal, hexadecimal, binary or ASCII and obtain On/Off status of discrete I/O points.

2.06 PROGRAM DOCUMENTATION AND REPORT GENERATION SYSTEM

- A. Programmable controller manufacturer shall provide a program documentation package to perform following tasks:
 - 1. Ladder diagram reports complete with ladder rungs; English description for every contact, bit, or word; organized logic sections with comment lines to identify logic function; rung comments to facilitate maintenance; and element cross references.
 - 2. Cross reference report: Sequential listing by element address of associated lines (or rungs).
 - 3. Input/output configuration summary: Table of entire I/O address range, showing which addresses are used by programmable controller program, which addresses have descriptions, and which are hardwired I/O points.
 - 4. Contact address listing: Lists I/O addresses and their associated symbolic definitions.
 - 5. Record, load, and verification of program logic with program file on compatible electronic media, and program difference listings.

2.07 LOCAL GRAPHIC OPERATOR INTERFACE

- A. Graphics display(s) capable of accessing information from programmable controller's processor.
- B. Interactive capability to allow operator to control I/O devices and acknowledge alarms from graphics display. Operator shall be able to change modes between manual and automatic control, change device states between on and off, enter control and process variable setpoints, timer and counter settings, and loop information by 1 or 2 keystroke action.
- C. Security levels shall be accessible by user-defined passwords. Levels shall include engineering configuration of graphic displays and setting system parameters, operator control functions only, and process monitoring only.
- D. Processor:
 - 1. Processors shall be capable of accessing field I/O points and registers available from programmable controller.
 - 2. Failure of graphic operator interface processor shall in no way affect programmable controller functions.
 - 3. Multiple tasks shall be executed allowing concurrent program modification and real-time monitoring and control. Processor operating system shall execute commands entered by operator at same time it reads and updates input from field devices.
 - 4. Processor shall have sufficient memory for storage, display, and execution of graphic with excess memory of 30% available for future programming needs, minimum 512 MB.
 - 5. Control program and display configuration shall be retained by hard disk or battery power to allow reloading after power failure.
 - 6. Processor shall perform continuous diagnostic scans to detect data communication status and programmable controller status. System shall recognize transmission format errors and either correct or request retransmission.
 - 7. Operating system: Windows 10.

2.08 PROGRAMMING

- A. Configuration of control systems and their entry into microprocessor-based control system shall be responsibility of Contractor. Refer to Section 40 68 66-13 for programming and configuration requirements.
- B. Entry and interaction of operator displays (overviews, summaries, loops, groups, graphics, etc.) with control units shall be responsibility of Contractor. Refer to Section 40 68 66-13 for graphics display requirements.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's recommendations and/or where designated by Engineer.
- B. Locate PLC where shown on Drawings and/or designated by Engineer. Enclosure shall be positioned to allow doors to be fully opened for easy access to wiring and components.
- C. Mount rigidly supported, level and plumb, and in such manner as to provide accessibility; protection from damage; isolation from heat, shock, and vibration; and freedom from interference with other equipment, piping, and electrical work. Equipment shall not be installed until adjacent heavy construction work has been completed to extent that damage will be unlikely to installation by such construction work.

- D. Manufacturer's recommendations referred to herein shall be as stated in manufacturer's instruction books and/or by manufacturer's service representative. Final interpretation of "installation requirements" will be by Engineer.

3.02 FIELD QUALITY CONTROL

- A. Following field demonstration tests shall be conducted:
 1. Perform visual check to ensure correct equipment.
 2. Latest revision of configuration and base level programs has been loaded.
 3. Complete loop functional checks shall be performed.
 4. Input signals shall be applied to each loop, and when applicable, outputs measured.
 5. Compare input/output values to graphic operator interface values.
 6. Verify configuration displayed on graphic operator interface.

3.03 REFERENCE DOCUMENTS

- A. A brief summary of modifications for each PLC is included for reference.

END OF SECTION

Control Panel/PLC Description	Panel ID	Existing Controller Type	New Controller Type	Existing UPS	Description of Panel Modifications	Drawings Available?
DPS-01	PLC-DPS01	P2-550	N/A	YES	1. Install a new 7 slot base. Add a power supply and P2-RS remote I/O module. Provide ethernet cable to connect existing controller to the remote I/O module. 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-RS module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.	Yes
DPS-02	PLC-DPS02	P2-550	N/A		1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.	
DPS-03	PLC-DPS03	P2-550	N/A		1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.	
DPS-04	PLC-DPS04	P2-550	N/A		1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.	
DPS-05	PLC-DPS05	P2-550	N/A		1. Install a new 7 slot base. Add a power supply and P2-RS remote I/O module. Provide ethernet cable to connect existing controller to the remote I/O module. 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to the new P2-RS module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.	
DPS-06	PLC-DPS06	P2-550	N/A		1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.	
DPS-07	PLC-DPS07	P2-550	N/A		1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.	

DPS-10	PLC-DPS10	P2-550	N/A		<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 	
DPS-11	PLC-DPS11	P2-550	N/A		<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 	
DPS-12	PLC-DPS12	P2-550	N/A		<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 	
DPS-13	PLC-DPS13	P2-550	N/A		<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 	
DPS-14	PLC-DPS14	P2-550	N/A		<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 	
DPS-15	PLC-DPS15	P2-550	N/A		<ol style="list-style-type: none"> 1. Install a new 7 slot base. Add a power supply and P2-RS remote I/O module. Provide ethernet cable to connect existing controller to the remote I/O module. 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to the new P2-RS module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 4. Install a new canopy to prevent rain and moisture from further impacting the enclosure. 	
DPS-16	PLC-DPS16	N/A	P2-550		<ol style="list-style-type: none"> 1. Install a new enclosure with a new 7 slot base. Add a power supply and P2-550 Controller. 2. Install a new P2-SCM module. 3. Install a new radio receiver in new PLC panel. Connect radio receiver over serial link to the new P2-SCM module. 4. Install a new UPS. Power existing PLC & new equipment off the new UPS. 5. Coordinate location of new PLC with Owner. 	
DPS-17	PLC-DPS17	P2-550	N/A		<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 	

DPS-18	PLC-DPS18	N/A	P2-550	<ol style="list-style-type: none"> 1. Install a new enclosure with a new 7 slot base. Add a power supply and P2-550 Controller. 2. Install a new P2-SCM module. 3. Install a new radio receiver in new PLC panel. Connect radio receiver over serial link to the new P2-SCM module. 4. Install a new UPS. Power existing PLC & new equipment off the new UPS. 5. Coordinate location of new PLC with Owner. 6. Integrate Mission Control Box IO into new PLC. Add modules as needed to accomodate the new hardwired signals.
DPS-19	PLC-DPS19	P2-550	N/A	<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.
DPS-20	PLC-DPS20	P2-550	N/A	<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.
Dwyer	PLC-DPSDWY	P2-550	N/A	<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS.
Elaine	PLC-DPSELN	N/A	P2-550	<ol style="list-style-type: none"> 1. Install a new enclosure with a new 7 slot base. Add a power supply and P2-550 Controller. 2. Install a new P2-SCM module. 3. Install a new radio receiver in new PLC panel. Connect radio receiver over serial link to the new P2-SCM module. 4. Install a new UPS. Power existing PLC & new equipment off the new UPS. 5. Coordinate location of new PLC with Owner. 6. Integrate Mission Control Box IO into new PLC. Add modules as needed to accomodate the new hardwired signals.
Grant	PLC-DPSGRNT	N/A	P2-550	<ol style="list-style-type: none"> 1. Install a new enclosure with a new 7 slot base. Add a power supply and P2-550 Controller. 2. Install a new P2-SCM module. 3. Install a new radio receiver in new PLC panel. Connect radio receiver over serial link to the new P2-SCM module. 4. Install a new UPS. Power existing PLC & new equipment off the new UPS. 5. Coordinate location of new PLC with Owner. 6. Integrate Mission Control Box IO into new PLC. Add modules as needed to accomodate the new hardwired signals.

Prepared By:
Checked By:

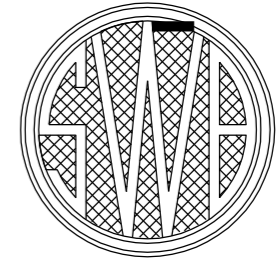
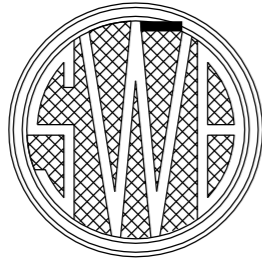
Sewerage Water Board of New Orleans
Drainage Pump Stations
NDR Grant Additional Instrumentation
Facility PLC Modifications

Revision:
Rev Date:

I-10	PLC-DPSI10	P2-550	N/A		<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 	
Oleander	PLC-DPSOLN	N/A	P2-550		<ol style="list-style-type: none"> 1. Install a new enclosure with a new 7 slot base. Add a power supply and P2-550 Controller. 2. Install a new P2-SCM module. 3. Install a new radio receiver in new PLC panel. Connect radio receiver over serial link to the new P2-SCM module. 4. Install a new UPS. Power existing PLC & new equipment off the new UPS. 5. Coordinate location of new PLC with Owner. 6. Integrate Mission Control Box IO into new PLC. Add modules as needed to accomodate the new hardwired signals. 	
Pritchard	PLC-DPSPRT	P2-550	N/A	No	<ol style="list-style-type: none"> 1. Install a new P2-SCM communication module in slot 4 2. Install a new radio receiver in existing PLC panel. Connect radio receiver over serial link to a new P2-SCM module. 3. Install a new UPS. Power existing PLC & new equipment off the new UPS. 	

SEWERAGE AND WATER BOARD OF NEW ORLEANS

ENGINEERING DEPARTMENT



DRAINAGE PUMP STATIONS

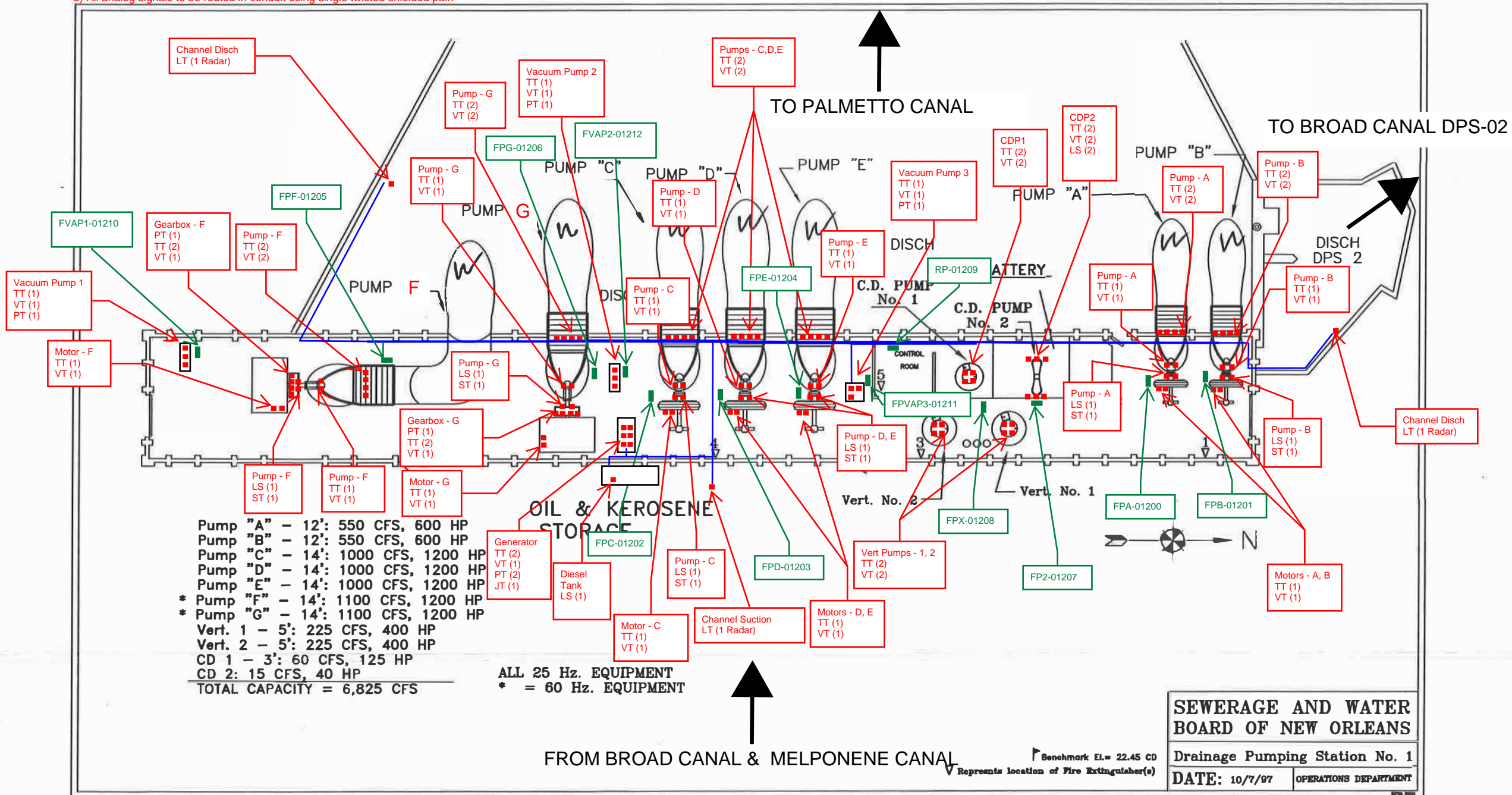
NDR GRANT— ADDITIONAL INSTRUMENTATION PROJECT

APPENDIX B

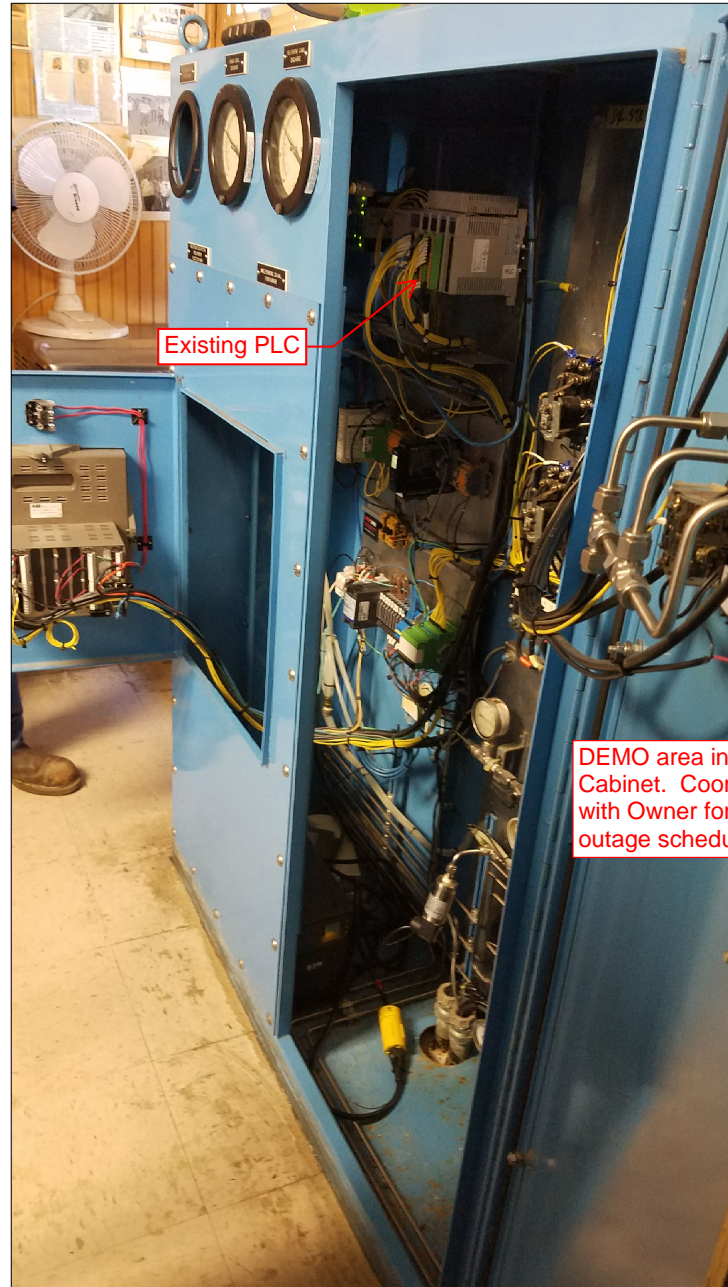
DRAINAGE PUMP STATIONS					
MAJOR STATIONS			MINOR STATIONS		
SERIAL NO.	STATION NAME	TITLE	SERIAL NO.	STATION NAME	TITLE
1	DPS-01	DRAINAGE PUMP STATION 1	1	DPS-14	DRAINAGE PUMP STATION 14
2	DPS-02	DRAINAGE PUMP STATION 2	2	DPS-15	DRAINAGE PUMP STATION 15
3	DPS-03	DRAINAGE PUMP STATION 3	3	DPS-16	DRAINAGE PUMP STATION 16
4	DPS-04	DRAINAGE PUMP STATION 4	4	DPS-18	DRAINAGE PUMP STATION 18
5	DPS-05	DRAINAGE PUMP STATION 5	5	DPS-19	DRAINAGE PUMP STATION 19
6	DPS-06	DRAINAGE PUMP STATION 6	6	DPS-20	DRAINAGE PUMP STATION AMID (20)
7	DPS-07	DRAINAGE PUMP STATION 7	7	DPS-I10	DRAINAGE PUMP STATION I-10
8	DPS-10	DRAINAGE PUMP STATION 10	8	DPS-ELN	DRAINAGE PUMP STATION ELAINE
9	DPS-11	DRAINAGE PUMP STATION 11	9	DPS-OLN	DRAINAGE PUMP STATION OLEANDER
10	DPS-12	DRAINAGE PUMP STATION 12	10	DPS-PRT	DRAINAGE PUMP STATION PRITCHARD
11	DPS-13	DRAINAGE PUMP STATION 13	11	DPS-DWY	DRAINAGE PUMP STATION DWYER
12	DPS-17	DRAINAGE PUMP STATION 17	12	DPS-GRNT	DRAINAGE PUMP STATION GRANT

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.

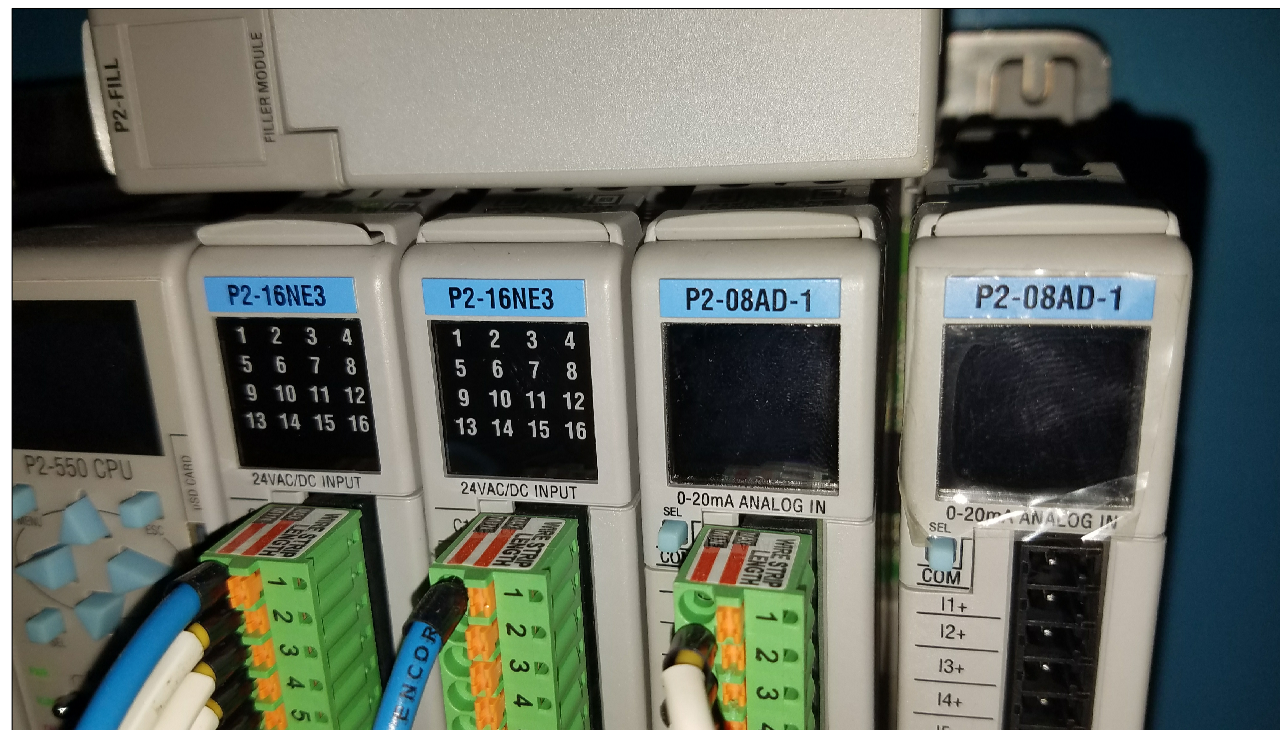
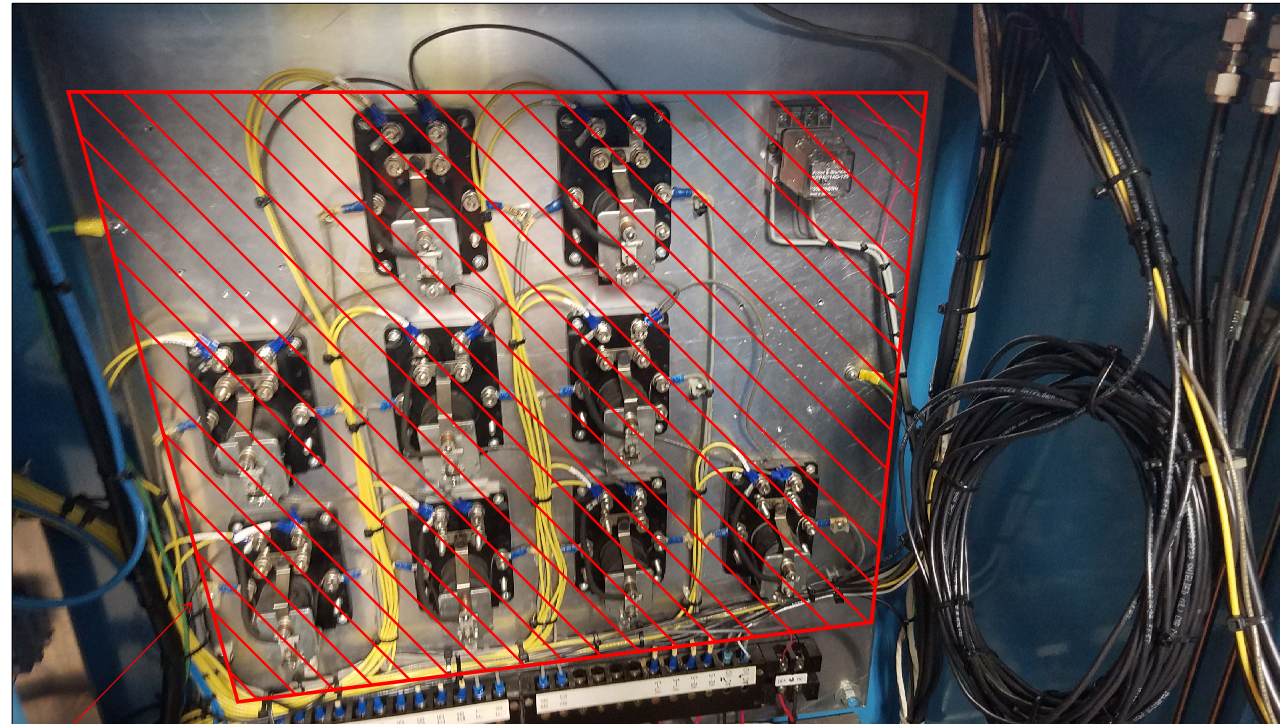


SEWERAGE AND WATER BOARD OF NEW ORLEANS
Drainage Pumping Station No. 1
DATE: 10/7/97 **OPERATIONS DEPARTMENT**



Existing PLC

DEMO area in PLC Cabinet. Coordinate with Owner for outage schedule.



NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.

2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.

3. Connect existing PLC through a serial link to the new DIN rail mounted base.

4. New base will be an 7 module base (P2-7B) to accommodate the new analog and discrete signals.

5. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"

6. Install wireless receiver enclosure and connect to existing PLC via new communication module.

7. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.

8. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS01-HPA-VT-01000	Pump A Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS01-HPA-VT-01001	Pump A NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	VI	DPS01-HPA-VT-01002	Pump A DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPS01-HPA-VT-01003	Pump A Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	LS	DPS01-HPA-LS-01004	Pump A Oil Level	Ashcroft		N/A	N/A	DI					
6	TI	DPS01-HPA-TT-01005	Pump A NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS01-HPA-TT-01006	Pump A DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	TI	DPS01-HPA-TT-01007	Pump A Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
9	SI	DPS01-HPA-ST-01008	Pump A RPM	Banner		0-2000	RPM	AI					
10	TI	DPS01-HPA-TT-01009	Pump A Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS01-HPB-VT-01050	Pump B Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS01-HPB-VT-01051	Pump B NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	VI	DPS01-HPB-VT-01052	Pump B DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	VI	DPS01-HPB-VT-01053	Pump B Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
15	LS	DPS01-HPB-LS-01054	Pump B Oil Level	Ashcroft		N/A	N/A	DI					
16	TI	DPS01-HPB-TT-01055	Pump B NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS01-HPB-TT-01056	Pump B DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	TI	DPS01-HPB-TT-01057	Pump B Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
19	SI	DPS01-HPB-ST-01058	Pump B RPM	Banner		0-2000	RPM	AI					
20	TI	DPS01-HPB-TT-01059	Pump B Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
21	VI	DPS01-HPC-VT-01100	Pump C Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	VI	DPS01-HPC-VT-01101	Pump C NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
23	VI	DPS01-HPC-VT-01102	Pump C DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
24	VI	DPS01-HPC-VT-01103	Pump C Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
25	LS	DPS01-HPC-LS-01104	Pump C Oil Level	Ashcroft		N/A	N/A	DI					
26	TI	DPS01-HPC-TT-01105	Pump C NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
27	TI	DPS01-HPC-TT-01106	Pump C DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
28	TI	DPS01-HPC-TT-01107	Pump C Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
29	SI	DPS01-HPC-ST-01108	Pump C RPM	Banner		0-2000	RPM	AI					
30	TI	DPS01-HPC-TT-01109	Pump C Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
31	VI	DPS01-HPD-VT-01150	Pump D Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
32	VI	DPS01-HPD-VT-01151	Pump D NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
33	VI	DPS01-HPD-VT-01152	Pump D DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
34	VI	DPS01-HPD-VT-01153	Pump D Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
35	LS	DPS01-HPD-LS-01154	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
36	TI	DPS01-HPD-TT-01155	Pump D NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
37	TI	DPS01-HPD-TT-01156	Pump D DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
38	TI	DPS01-HPD-TT-01157	Pump D Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
39	SI	DPS01-HPD-ST-01158	Pump D RPM	Banner		0-2000	RPM	AI					
40	TI	DPS01-HPD-TT-01159	Pump D Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
41	VI	DPS01-HPE-VT-01200	Pump E Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
42	VI	DPS01-HPE-VT-01201	Pump E NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
43	VI	DPS01-HPE-VT-01202	Pump E DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
44	VI	DPS01-HPE-VT-01203	Pump E Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
45	LS	DPS01-HPE-LS-01204	Pump E Oil Level	Ashcroft		N/A	N/A	DI					
46	TI	DPS01-HPE-TT-01205	Pump E NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
47	TI	DPS01-HPE-TT-01206	Pump E DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
48	TI	DPS01-HPE-TT-01207	Pump E Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
49	SI	DPS01-HPE-ST-01208	Pump E RPM	Banner		0-2000	RPM	AI					
50	TI	DPS01-HPE-TT-01209	Pump E Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
51	VI	DPS01-HPF-VT-01250	Pump F Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
52	VI	DPS01-HPF-VT-01251	Pump F NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
53	VI	DPS01-HPF-VT-01252	Pump F DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
54	VI	DPS01-HPF-VT-01253	Pump F Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
55	LS	DPS01-HPF-LS-01254	Pump F Oil Level			N/A	N/A	DI					
56	TI	DPS01-HPF-TT-01255	Pump F NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
57	TI	DPS01-HPF-TT-01256	Pump F DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
58	TI	DPS01-HPF-TT-01257	Pump F Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
59	SI	DPS01-HPF-ST-01258	Pump F RPM	Banner		0-2000	RPM	AI					
60	PI	DPS01-HPF-PT-01259	Pump F Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
61	TI	DPS01-HPF-TT-01260	Pump F Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
62	VI	DPS01-HPF-VT-01261	Pump F Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
63	TI	DPS01-HPF-TT-01262	Pump F Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
64	TI	DPS01-HPF-TT-01263	Pump F Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
65	VI	DPS01-HPG-VT-01300	Pump G Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
66	VI	DPS01-HPG-VT-01301	Pump G Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
67	VI	DPS01-HPG-VT-01302	Pump G Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
68	VI	DPS01-HPG-VT-01303	Pump G Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
69	LS	DPS01-HPG-LS-01304	Pump G Oil Level	Ashcroft		N/A	N/A	DI					
70	TI	DPS01-HPG-TT-01305	Pump G Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
71	TI	DPS01-HPG-TT-01306	Pump G Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
72	TI	DPS01-HPG-TT-01307	Pump G Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
73	SI	DPS01-HPG-ST-01308	Pump G RPM	Banner		0-2000	RPM	AI					
74	PI	DPS01-HPG-PT-01309	Pump G Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
75	TI	DPS01-HPG-TT-01310	Pump G Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
76	VI	DPS01-HPG-VT-01311	Pump G Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
77	TI	DPS01-HPG-TT-01312	Pump G Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
78	TI	DPS01-HPG-TT-01313	Pump G Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
79	TI	DPS01-VAP1-TT-01350	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
80	VI	DPS01-VAP1-VT-01351	Vacuum Pump 1 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
81	PI	DPS01-VAP1-PT-01352	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
82	TI	DPS01-VAP2-TT-01400	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
83	VI	DPS01-VAP2-VT-01401	Vacuum Pump 2 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
84	PI	DPS01-VAP2-PT-01402	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
85	TI	DPS01-VAP3-TT-01450	Vacuum Pump 3 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
86	VI	DPS01-VAP3-VT-01451	Vacuum Pump 3 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
87	PI	DPS01-VAP3-PT-01452	Vacuum Pump 3 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
88	JI	DPS01-GEN-JT-01500	Generator Power	SEL		0-4160	VOLTS	AI					Device located in electrical gear
89	LS	DPS01-TNK-LS-0550	Diesel Tank Level	Ashcroft		N/A	N/A	DI					
90	TI	DPS01-VP1-TT-01600	Pump V1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
91	TI	DPS01-VP1-TT-01601	Pump V1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
92	VI	DPS01-VP1-VT-01602	Pump V1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
93	VI	DPS01-VP1-VT-01603	Pump V1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
94	TI	DPS01-VP2-TT-01650	Pump V2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
95	TI	DPS01-VP2-TT-01651	Pump V2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
96	VI	DPS01-VP2-VT-01652	Pump V2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
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FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
97	VI	DPS01-VP2-VT-01653	Pump V2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
98	TI	DPS01-CD1-TT-01700	Pump CD1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
99	TI	DPS01-CD1-TT-01701	Pump CD1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
100	VI	DPS01-CD1-VT-01702	Pump CD1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
101	VI	DPS01-CD1-VT-01703	Pump CD1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
102	LS	DPS01-CCD2-LS-01750	Pump CD2 Oil Level	Ashcroft		N/A	N/A	DI					
103	LS	DPS01-CCD2-LS-01751	Pump CD2 Oil Level	Ashcroft		N/A	N/A	DI					
104	TI	DPS01-CCD2-TT-01752	Pump CD2 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
105	TI	DPS01-CCD2-TT-01753	Pump CD2 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
106	VI	DPS01-CCD2-VT-01754	Pump CD2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
107	VI	DPS01-CCD2-VT-01755	Pump CD2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
108	LI	DPS01-SCT-LT-01800	Suction Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
109	LI	DPS01-DSCH-LT-01801	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
110	LI	DPS01-DSCH-LT-01802	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

PREPARED BY: JMJ

CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS01-HPA-VT-01000	Pump A Motor Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
2	VI	DPS01-HPA-VT-01001	Pump A NDE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
3	VI	DPS01-HPA-VT-01002	Pump A DE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
4	VI	DPS01-HPA-VT-01003	Pump A Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
5	LS	DPS01-HPA-LS-01004	Pump A Oil Level	PLC-DPS01	DI			2			N/A	N/A	
6	TI	DPS01-HPA-TT-01005	Pump A NDE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
7	TI	DPS01-HPA-TT-01006	Pump A DE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
8	TI	DPS01-HPA-TT-01007	Pump A Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
9	SI	DPS01-HPA-ST-01008	Pump A RPM	PLC-DPS01	AI			2			0-2000	RPM	
10	TI	DPS01-HPA-TT-01009	Pump A Motor Temperature	PLC-DPS01	AI			2			0-221	DEG F	
11	VI	DPS01-HPB-VT-01050	Pump B Motor Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
12	VI	DPS01-HPB-VT-01051	Pump B NDE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
13	VI	DPS01-HPB-VT-01052	Pump B DE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
14	VI	DPS01-HPB-VT-01053	Pump B Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
15	LS	DPS01-HPB-LS-01054	Pump B Oil Level	PLC-DPS01	DI			2			N/A	N/A	
16	TI	DPS01-HPB-TT-01055	Pump B NDE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
17	TI	DPS01-HPB-TT-01056	Pump B DE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
18	TI	DPS01-HPB-TT-01057	Pump B Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
19	SI	DPS01-HPB-ST-01058	Pump B RPM	PLC-DPS01	AI			2			0-2000	RPM	
20	TI	DPS01-HPB-TT-01059	Pump B Motor Temperature	PLC-DPS01	AI			2			0-221	DEG F	
21	VI	DPS01-HPC-VT-01100	Pump C Motor Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
22	VI	DPS01-HPC-VT-01101	Pump C NDE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
23	VI	DPS01-HPC-VT-01102	Pump C DE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
24	VI	DPS01-HPC-VT-01103	Pump C Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
25	LS	DPS01-HPC-LS-01104	Pump C Oil Level	PLC-DPS01	DI			2			N/A	N/A	
26	TI	DPS01-HPC-TT-01105	Pump C NDE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
27	TI	DPS01-HPC-TT-01106	Pump C DE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
28	TI	DPS01-HPC-TT-01107	Pump C Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
29	SI	DPS01-HPC-ST-01108	Pump C RPM	PLC-DPS01	AI			2			0-2000	RPM	
30	TI	DPS01-HPC-TT-01109	Pump C Motor Temperature	PLC-DPS01	AI			2			0-221	DEG F	
31	VI	DPS01-HPD-VT-01150	Pump D Motor Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
32	VI	DPS01-HPD-VT-01151	Pump D NDE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
33	VI	DPS01-HPD-VT-01152	Pump D DE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
34	VI	DPS01-HPD-VT-01153	Pump D Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
35	LS	DPS01-HPD-LS-01154	Pump D Oil Level	PLC-DPS01	DI			2			N/A	N/A	
36	TI	DPS01-HPD-TT-01155	Pump D NDE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
37	TI	DPS01-HPD-TT-01156	Pump D DE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
38	TI	DPS01-HPD-TT-01157	Pump D Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
39	SI	DPS01-HPD-ST-01158	Pump D RPM	PLC-DPS01	AI			2			0-2000	RPM	
40	TI	DPS01-HPD-TT-01159	Pump D Motor Temperature	PLC-DPS01	AI			2			0-221	DEG F	
41	VI	DPS01-HPE-VT-01200	Pump E Motor Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
42	VI	DPS01-HPE-VT-01201	Pump E NDE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
43	VI	DPS01-HPE-VT-01202	Pump E DE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
44	VI	DPS01-HPE-VT-01203	Pump E Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	

PREPARED BY: JMJ

CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
45	LS	DPS01-HPE-LS-01204	Pump E Oil Level	PLC-DPS01	DI			2			N/A	N/A	
46	TI	DPS01-HPE-TT-01205	Pump E NDE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
47	TI	DPS01-HPE-TT-01206	Pump E DE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
48	TI	DPS01-HPE-TT-01207	Pump E Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
49	SI	DPS01-HPE-ST-01208	Pump E RPM	PLC-DPS01	AI			2			0-2000	RPM	
50	TI	DPS01-HPE-TT-01209	Pump E Motor Temperature	PLC-DPS01	AI			2			0-221	DEG F	
51	VI	DPS01-HPF-VT-01250	Pump F Motor Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
52	VI	DPS01-HPF-VT-01251	Pump F NDE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
53	VI	DPS01-HPF-VT-01252	Pump F DE Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
54	VI	DPS01-HPF-VT-01253	Pump F Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
55	LS	DPS01-HPF-LS-01254	Pump F Oil Level	PLC-DPS01	DI			2			N/A	N/A	
56	TI	DPS01-HPF-TT-01255	Pump F NDE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
57	TI	DPS01-HPF-TT-01256	Pump F DE Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
58	TI	DPS01-HPF-TT-01257	Pump F Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
59	SI	DPS01-HPF-ST-01258	Pump F RPM	PLC-DPS01	AI			2			0-2000	RPM	
60	PI	DPS01-HPF-PT-01259	Pump F Gearbox Oil Pressure	PLC-DPS01	AI			2			0-100	PSI	
61	TI	DPS01-HPF-TT-01260	Pump F Gearbox Oil Temperature	PLC-DPS01	AI			2			0-221	DEG F	
62	VI	DPS01-HPF-VT-01261	Pump F Gearbox Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
63	TI	DPS01-HPF-TT-01262	Pump F Gearbox Temperature	PLC-DPS01	AI			2			0-221	DEG F	
64	TI	DPS01-HPF-TT-01263	Pump F Motor Temperature	PLC-DPS01	AI			2			0-221	DEG F	
65	VI	DPS01-HPG-VT-01300	Pump G Motor Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
66	VI	DPS01-HPG-VT-01301	Pump G Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
67	VI	DPS01-HPG-VT-01302	Pump G Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
68	VI	DPS01-HPG-VT-01303	Pump G Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
69	LS	DPS01-HPG-LS-01304	Pump G Oil Level	PLC-DPS01	DI			2			N/A	N/A	
70	TI	DPS01-HPG-TT-01305	Pump G Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
71	TI	DPS01-HPG-TT-01306	Pump G Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
72	TI	DPS01-HPG-TT-01307	Pump G Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
73	SI	DPS01-HPG-ST-01308	Pump G RPM	PLC-DPS01	AI			2			0-2000	RPM	
74	PI	DPS01-HPG-PT-01309	Pump G Gearbox Oil Pressure	PLC-DPS01	AI			2			0-100	PSI	
75	TI	DPS01-HPG-TT-01310	Pump G Gearbox Oil Temperature	PLC-DPS01	AI			2			0-221	DEG F	
76	VI	DPS01-HPG-VT-01311	Pump G Gearbox Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
77	TI	DPS01-HPG-TT-01312	Pump G Gearbox Temperature	PLC-DPS01	AI			2			0-221	DEG F	
78	TI	DPS01-HPG-TT-01313	Pump G Motor Temperature	PLC-DPS01	AI			2			0-221	DEG F	
79	TI	DPS01-VAP1-TT-01350	Vacuum Pump 1 Temp	PLC-DPS01	AI			2			0-221	DEG F	
80	VI	DPS01-VAP1-VT-01351	Vacuum Pump 1 Vib	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
81	PI	DPS01-VAP1-PT-01352	Vacuum Pump 1 Pressure	PLC-DPS01	AI			2			-15-0	PSI	
82	TI	DPS01-VAP2-TT-01400	Vacuum Pump 2 Temp	PLC-DPS01	AI			2			0-221	DEG F	
83	VI	DPS01-VAP2-VT-01401	Vacuum Pump 2 Vib	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
84	PI	DPS01-VAP2-PT-01402	Vacuum Pump 2 Pressure	PLC-DPS01	AI			2			-15-0	PSI	
85	TI	DPS01-VAP3-TT-01450	Vacuum Pump 3 Temp	PLC-DPS01	AI			2			0-221	DEG F	
86	VI	DPS01-VAP3-VT-01451	Vacuum Pump 3 Vib	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
87	PI	DPS01-VAP3-PT-01452	Vacuum Pump 3 Pressure	PLC-DPS01	AI			2			-15-0	PSI	
88	JJ	DPS01-GEN-JT-01500	Generator Power	PLC-DPS01	AI			2			0-4160	VOLTS	

PREPARED BY: JMJ

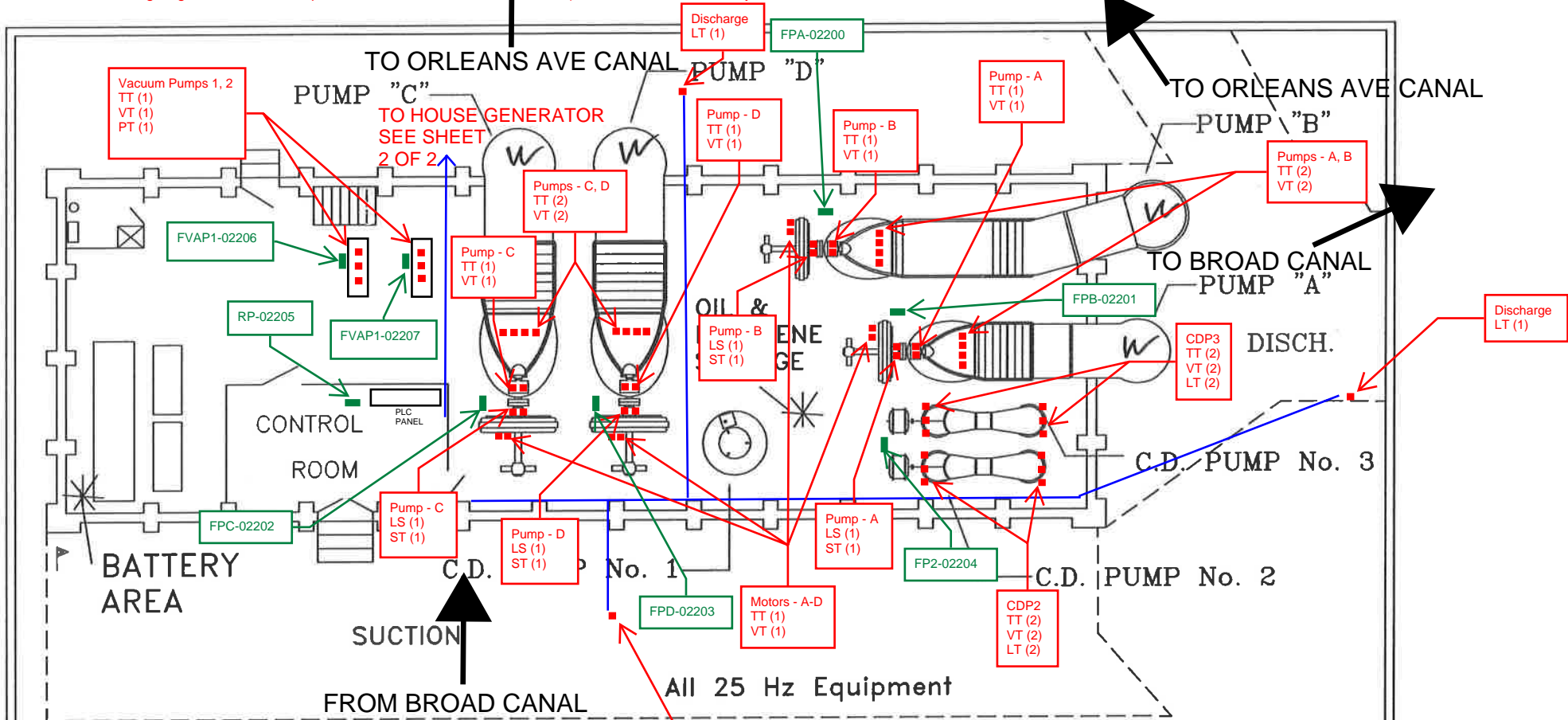
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
89	PI	DPS01-GEN-PT-01501	Generator Fuel Pressure	PLC-DPS01	AI			2			0-100	PSI	Signal derived from generator control panel
90	PI	DPS01-GEN-PT-01502	Generator Oil Pressure	PLC-DPS01	AI			2			0-100	PSI	Signal derived from generator control panel
91	TI	DPS01-GEN-TT-01503	Generator Oil Temperature	PLC-DPS01	AI			2			0-221	DEG F	Signal derived from generator control panel
92	VI	DPS01-GEN-VT-01504	Generator Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	Signal derived from generator control panel
93	TI	DPS01-GEN-TT-01505	Generator Temperature	PLC-DPS01	AI			2			0-221	DEG F	Signal derived from generator control panel
94	LS	DPS01-TNK-LS-0550	Diesel Tank Level	PLC-DPS01	DI			2			N/A	N/A	
95	TI	DPS01-VP1-TT-01600	Pump V1 Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
96	TI	DPS01-VP1-TT-01601	Pump V1 Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
97	VI	DPS01-VP1-VT-01602	Pump V1 Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
98	VI	DPS01-VP1-VT-01603	Pump V1 Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
99	TI	DPS01-VP2-TT-01650	Pump V2 Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
100	TI	DPS01-VP2-TT-01651	Pump V2 Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
101	VI	DPS01-VP2-VT-01652	Pump V2 Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
102	VI	DPS01-VP2-VT-01653	Pump V2 Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
103	TI	DPS01-CD1-TT-01700	Pump CD1 Thrust Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
104	TI	DPS01-CD1-TT-01701	Pump CD1 Radial Bearing Temperature	PLC-DPS01	AI			2			0-221	DEG F	
105	VI	DPS01-CD1-VT-01702	Pump CD1 Thrust Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
106	VI	DPS01-CD1-VT-01703	Pump CD1 Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
107	LS	DPS01-CCD2-LS-01750	Pump CD2 Oil Level	PLC-DPS01	DI			2			N/A	N/A	
108	LS	DPS01-CCD2-LS-01751	Pump CD2 Oil Level	PLC-DPS01	DI			2			N/A	N/A	
109	TI	DPS01-CCD2-TT-01752	Pump CD2 Temperature	PLC-DPS01	AI			2			0-221	DEG F	
110	TI	DPS01-CCD2-TT-01753	Pump CD2 Temperature	PLC-DPS01	AI			2			0-221	DEG F	
111	VI	DPS01-CCD2-VT-01754	Pump CD2 Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
112	VI	DPS01-CCD2-VT-01755	Pump CD2 Radial Bearing Vibration	PLC-DPS01	AI			2			0-1.8	IN/SEC RMS	
113	LI	DPS01-SCT-LT-01800	Suction Water Level	PLC-DPS01	AI			2			0-50	FT	
114	LI	DPS01-DSCH-LT-01801	Channel Discharge Basin Level	PLC-DPS01	AI			2			0-50	FT	
115	LI	DPS01-DSCH-LT-01802	Channel Discharge Basin Level	PLC-DPS01	AI			2			0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.
- 10) Diesel Generator remotely located NNW across N Broad St.



Pump "A"	- 12': 550 CFS, 600 HP
Pump "B"	- 12': 550 CFS, 600 HP
Pump "C"	- 14': 1000 CFS, 1200 HP
Pump "D"	- 14': 1000 CFS, 1200 HP
CD 1	- 30X63: 40 CFS, 40 HP (Not in use)
CD 2	- 42": 25 CFS, 60 HP
CD 3	- 42": 25 CFS, 60 HP

TOTAL CAPACITY = 3190 CFS

Suction Basin Level Transmitter LT (1) Location to be coordinated with Owner & Engineer. Location approximate. Suction channel located beneath parking. Access doors located in parking lot.



1 OF 2

SEWERAGE AND WATER BOARD OF NEW ORLEANS
DRAINAGE PUMPING STATION No. 2
 DATE: 10/7/97
 OPERATIONS DEPARTMENT
 DR: B. Moctian

Benchmark El.= 21.41 CD

04/06/2022 6:23:49 PM

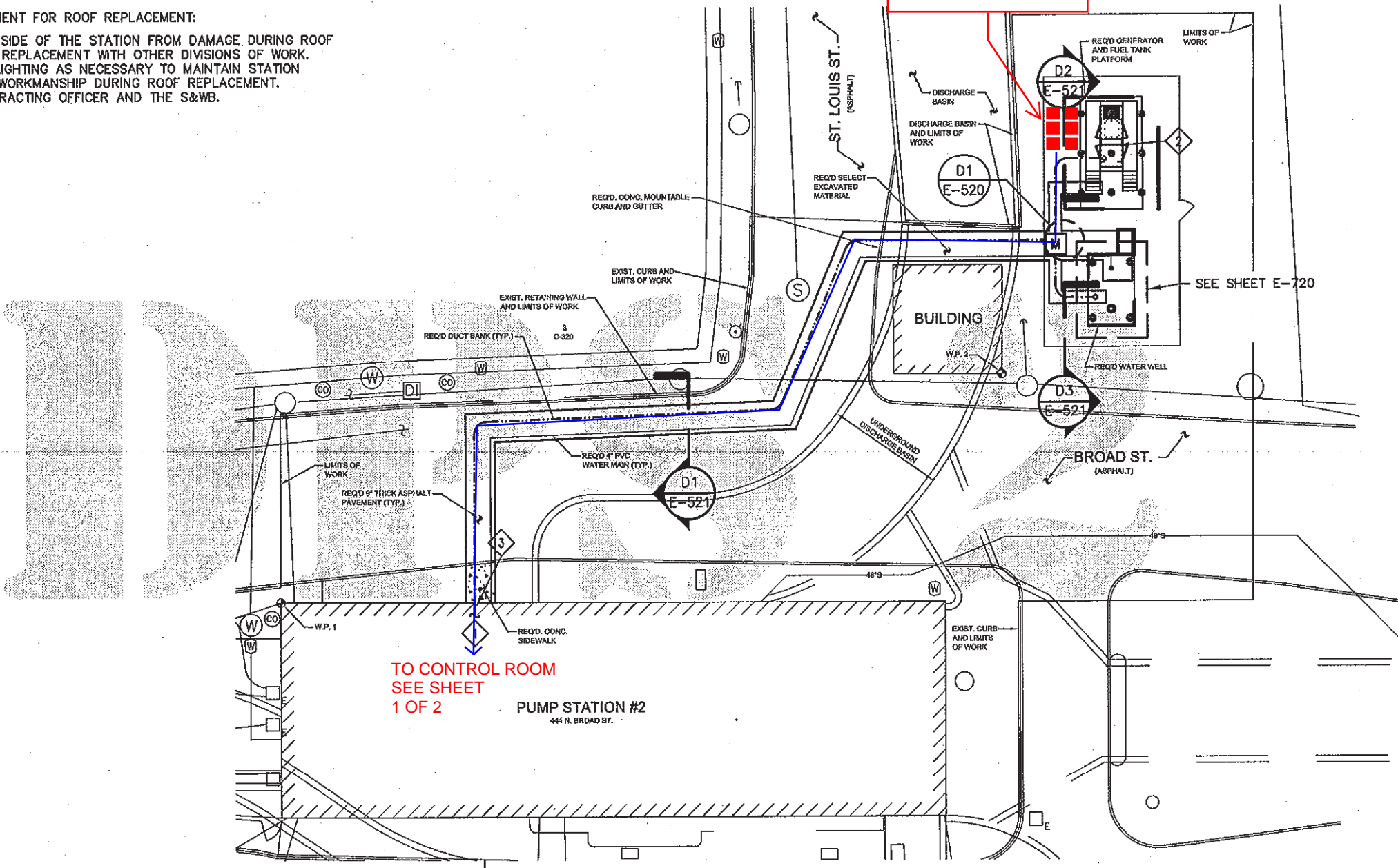
NOTES:

- ELECTRICAL DEMOLITION FOR STRUCTURAL REINFORCING OF STATION AND ROOF REPLACEMENT:
REMOVE LIGHT FIXTURES, CONDUITS, CABLES, AND CONDUCTORS (AS INDICATED ON PLANS) AND PROVIDE TEMPORARY CIRCUITS AS NECESSARY TO FACILITATE THE STRUCTURAL REINFORCEMENT OF THE STATION. SEE STRUCTURAL PLANS FOR SCOPE OF STRUCTURAL WORK.
MAINTAIN ELECTRICAL CONTINUITY OF CIRCUITS. THIS APPLIES TO POWER, LIGHTING, CONTROL, AND COMMUNICATIONS CIRCUITS.
- PROTECTION OF ELECTRICAL EQUIPMENT FOR ROOF REPLACEMENT:
PROTECT ELECTRICAL EQUIPMENT INSIDE OF THE STATION FROM DAMAGE DURING ROOF REPLACEMENT. COORDINATE ROOF REPLACEMENT WITH OTHER DIVISIONS OF WORK. PROVIDE TEMPORARY POWER AND LIGHTING AS NECESSARY TO MAINTAIN STATION OPERATIONS AND INSURE QUALITY WORKMANSHIP DURING ROOF REPLACEMENT. COORDINATE FULLY WITH THE CONTRACTING OFFICER AND THE S&WB.

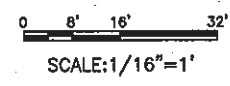
SPECIFIC NOTES:

- SEE SHEET E-121 FOR CONTINUATION.
- NEW HOUSE GENERATOR SET "HG2". SEE HOUSE GENERATOR PARAMETER SCHEDULE ON SHEET E-621.
- ALL NEW CONDUITS PENETRATING THE EXTERIOR WALL SHALL BE SEALED.

House Generator
 TT (2)
 VT (1)
 PT (2)
 JT (1)



ELECTRICAL SITE PLAN



NOTE: IF PRINT IS 11 X 17, REDUCE SCALE TO HALF

04/06/2022 6:23:58 PM



FOR CONSTRUCTION

**US Army Corps of Engineers
Hurricane Protection Office**

Date	Description	Appr.

DESIGNED BY: PSV
 CHECKED BY: JCH
 SUBMITTED BY: JCH
 PROJECT SCALE: 1" = 16'-0"
 PLOT DATE: 04/06/2022
 FILE NAME: H47139_1SET20

U.S. ARMY CORPS OF ENGINEERS
 HURRICANE PROTECTION OFFICE
 NEW ORLEANS, LOUISIANA

NEW ORLEANS SMALL BUSINESS
 A JOINT VENTURE, LLP
 5508 18TH ST., SUITE 200
 METAIRIE, LA 70002

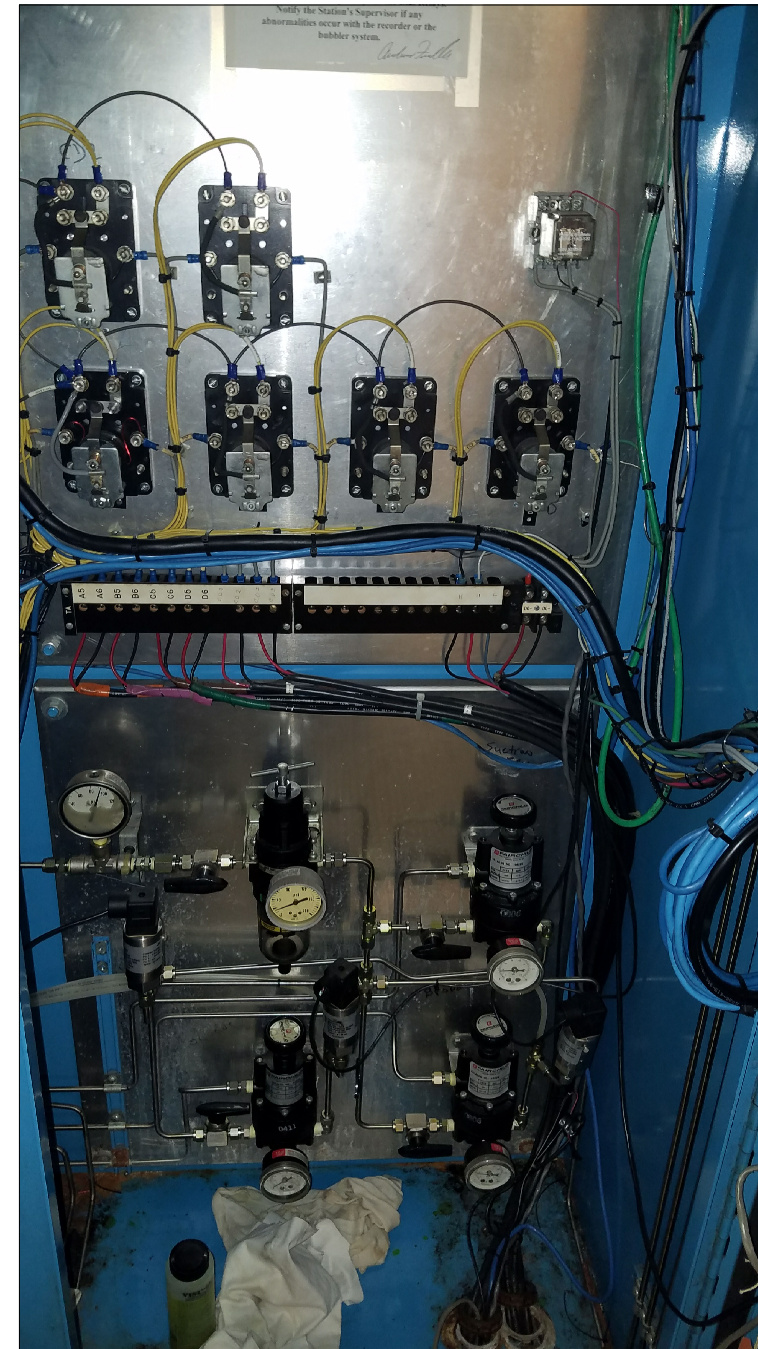
STORM PROOFING DRAINAGE PUMP STATION NOS 1, 2, 4, 12, 19, 3 & 1+10
 STORM PROOFING INTERIOR PUMP STATIONS SEWERAGE AND WATER BOARD OF NEW ORLEANS
 OSP-08

DRAINAGE PUMP STATION No. 2
 ELECTRICAL SITE PLAN

SHEET IDENTIFICATION
E-120



Existing PLC Cabinet - PLC rack located on interior of door.



NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS02-HPA-VT-02000	Pump A Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	TI	DPS02-HPA-TT-02001	Pump A Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					
3	VI	DPS02-HPA-VT-02002	Pump A NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPS02-HPA-VT-02003	Pump A DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	VI	DPS02-HPA-VT-02004	Pump A Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
6	LS	DPS02-HPA-LS-02005	Pump A Oil Level	Ashcroft		N/A	N/A	DI					
7	TI	DPS02-HPA-TT-02006	Pump A NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	TI	DPS02-HPA-TT-02007	Pump A DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
9	TI	DPS02-HPA-TT-02008	Pump A Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
10	SI	DPS02-HPA-ST-02009	Pump A RPM	Banner		0-2000	RPM	AI					
11	VI	DPS02-HPB-VT-02050	Pump B Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	TI	DPS02-HPB-TT-02051	Pump B Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
13	VI	DPS02-HPB-VT-02052	Pump B NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	VI	DPS02-HPB-VT-02053	Pump B DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
15	VI	DPS02-HPB-VT-02054	Pump B Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
16	LS	DPS02-HPB-LS-02055	Pump B Oil Level	Ashcroft		N/A	N/A	DI					
17	TI	DPS02-HPB-TT-02056	Pump B NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	TI	DPS02-HPB-TT-02057	Pump B DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
19	TI	DPS02-HPB-TT-02058	Pump B Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
20	SI	DPS02-HPB-ST-02059	Pump B RPM	Banner		0-2000	RPM	AI					
21	VI	DPS02-HPC-VT-02100	Pump C Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	TI	DPS02-HPC-TT-02101	Pump C Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
23	VI	DPS02-HPC-VT-02102	Pump C NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
24	VI	DPS02-HPC-VT-02103	Pump C DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
25	VI	DPS02-HPC-VT-02104	Pump C Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
26	LS	DPS02-HPC-LS-02105	Pump C Oil Level	Ashcroft		N/A	N/A	DI					
27	TI	DPS02-HPC-TT-02106	Pump C NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
28	TI	DPS02-HPC-TT-02107	Pump C DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
29	TI	DPS02-HPC-TT-02108	Pump C Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
30	SI	DPS02-HPC-ST-02109	Pump C RPM	Banner		0-2000	RPM	AI					
31	VI	DPS02-HPD-VT-02150	Pump D Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
32	TI	DPS02-HPD-TT-02151	Pump D Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
33	VI	DPS02-HPD-VT-02152	Pump D NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
34	VI	DPS02-HPD-VT-02153	Pump D DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
35	VI	DPS02-HPD-VT-02154	Pump D Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
36	LS	DPS02-HPD-LS-02155	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
37	TI	DPS02-HPD-TT-02156	Pump D NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
38	TI	DPS02-HPD-TT-02157	Pump D DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
39	TI	DPS02-HPD-TT-02158	Pump D Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
40	SI	DPS02-HPD-ST-02159	Pump D RPM	Banner		0-2000	RPM	AI					
41	LS	DPS02-CCD2-LS-02200	Pump CD2 Oil Level	Ashcroft		N/A	N/A	DI					
42	LS	DPS02-CCD2-LS-02201	Pump CD2 Oil Level	Ashcroft		N/A	N/A	DI					
43	TI	DPS02-CCD2-TT-02202	Pump CD2 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
44	TI	DPS02-CCD2-TT-02203	Pump CD2 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
45	VI	DPS02-CCD2-VT-02204	Pump CD2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
46	VI	DPS02-CCD2-VT-02205	Pump CD2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
47	LS	DPS02-CCD3-LS-02250	Pump CD3 Oil Level	Ashcroft		N/A	N/A	DI					
48	LS	DPS02-CCD3-LS-02251	Pump CD3 Oil Level	Ashcroft		N/A	N/A	DI					
49	TI	DPS02-CCD3-TT-02252	Pump CD3 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
50	TI	DPS02-CCD3-TT-02253	Pump CD3 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
51	VI	DPS02-CCD3-VT-02254	Pump CD3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
52	VI	DPS02-CCD3-VT-02255	Pump CD3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
53	TI	DPS02-VAP1-TT-02300	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
54	VI	DPS02-VAP1-VT-02301	Vacuum Pump 1 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
55	PI	DPS02-VAP1-PT-02302	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
56	TI	DPS02-VAP2-TT-02350	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
57	VI	DPS02-VAP2-VT-02351	Vacuum Pump 2 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
58	PI	DPS02-VAP2-PT-02352	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
59	JJ	DPS02-HG-JT-02400	House Generator Power	SEL		0-480	VOLTS	AI					
60	LI	DPS02-SCT-LT-02450	Suction Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
61	LI	DPS02-DSCH-LT-02451	Channel Discharge to Orleans Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
62	LI	DPS02-DSCH-LT-02452	Channel Discharge to Broad Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS02-HPA-VT-02000	Pump A Motor Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
2	TI	DPS02-HPA-TT-02001	Pump A Motor Temperature	PLC-DPS02	AI						0-221	DEG F	
3	VI	DPS02-HPA-VT-02002	Pump A NDE Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
4	VI	DPS02-HPA-VT-02003	Pump A DE Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
5	VI	DPS02-HPA-VT-02004	Pump A Thrust Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
6	LS	DPS02-HPA-LS-02005	Pump A Oil Level	PLC-DPS02	DI						N/A	N/A	
7	TI	DPS02-HPA-TT-02006	Pump A NDE Radial Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
8	TI	DPS02-HPA-TT-02007	Pump A DE Radial Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
9	TI	DPS02-HPA-TT-02008	Pump A Thrust Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
10	SI	DPS02-HPA-ST-02009	Pump A RPM	PLC-DPS02	AI						0-2000	RPM	
11	VI	DPS02-HPB-VT-02050	Pump B Motor Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
12	TI	DPS02-HPB-TT-02051	Pump B Motor Temperature	PLC-DPS02	AI						0-221	DEG F	
13	VI	DPS02-HPB-VT-02052	Pump B NDE Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
14	VI	DPS02-HPB-VT-02053	Pump B DE Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
15	VI	DPS02-HPB-VT-02054	Pump B Thrust Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
16	LS	DPS02-HPB-LS-02055	Pump B Oil Level	PLC-DPS02	DI						N/A	N/A	
17	TI	DPS02-HPB-TT-02056	Pump B NDE Radial Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
18	TI	DPS02-HPB-TT-02057	Pump B DE Radial Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
19	TI	DPS02-HPB-TT-02058	Pump B Thrust Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
20	SI	DPS02-HPB-ST-02059	Pump B RPM	PLC-DPS02	AI						0-2000	RPM	
21	VI	DPS02-HPC-VT-02100	Pump C Motor Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
22	TI	DPS02-HPC-TT-02101	Pump C Motor Temperature	PLC-DPS02	AI						0-221	DEG F	
23	VI	DPS02-HPC-VT-02102	Pump C NDE Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
24	VI	DPS02-HPC-VT-02103	Pump C DE Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
25	VI	DPS02-HPC-VT-02104	Pump C Thrust Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
26	LS	DPS02-HPC-LS-02105	Pump C Oil Level	PLC-DPS02	DI						N/A	N/A	
27	TI	DPS02-HPC-TT-02106	Pump C NDE Radial Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
28	TI	DPS02-HPC-TT-02107	Pump C DE Radial Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
29	TI	DPS02-HPC-TT-02108	Pump C Thrust Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
30	SI	DPS02-HPC-ST-02109	Pump C RPM	PLC-DPS02	AI						0-2000	RPM	
31	VI	DPS02-HPD-VT-02150	Pump D Motor Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
32	TI	DPS02-HPD-TT-02151	Pump D Motor Temperature	PLC-DPS02	AI						0-221	DEG F	
33	VI	DPS02-HPD-VT-02152	Pump D NDE Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
34	VI	DPS02-HPD-VT-02153	Pump D DE Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
35	VI	DPS02-HPD-VT-02154	Pump D Thrust Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
36	LS	DPS02-HPD-LS-02155	Pump D Oil Level	PLC-DPS02	DI						N/A	N/A	
37	TI	DPS02-HPD-TT-02156	Pump D NDE Radial Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
38	TI	DPS02-HPD-TT-02157	Pump D DE Radial Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
39	TI	DPS02-HPD-TT-02158	Pump D Thrust Bearing Temperature	PLC-DPS02	AI						0-221	DEG F	
40	SI	DPS02-HPD-ST-02159	Pump D RPM	PLC-DPS02	AI						0-2000	RPM	
41	LS	DPS02-CCD2-LS-02200	Pump CD2 Oil Level	PLC-DPS02	DI						N/A	N/A	
42	LS	DPS02-CCD2-LS-02201	Pump CD2 Oil Level	PLC-DPS02	DI						N/A	N/A	
43	TI	DPS02-CCD2-TT-02202	Pump CD2 Temperature	PLC-DPS02	AI						0-221	DEG F	
44	TI	DPS02-CCD2-TT-02203	Pump CD2 Temperature	PLC-DPS02	AI						0-221	DEG F	

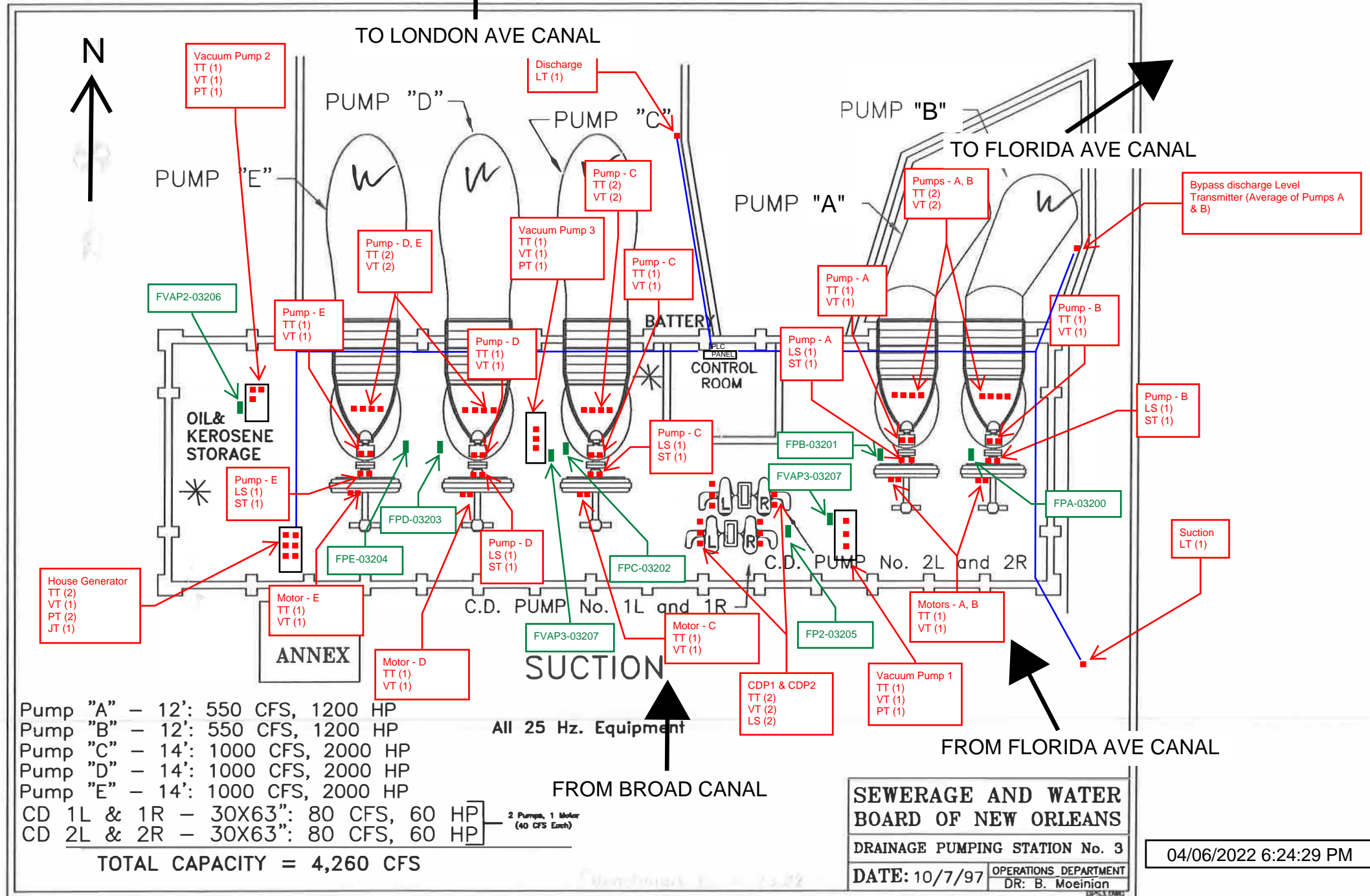
FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
45	VI	DPS02-CCD2-VT-02204	Pump CD2 Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
46	VI	DPS02-CCD2-VT-02205	Pump CD2 Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
47	LS	DPS02-CCD3-LS-02250	Pump CD3 Oil Level	PLC-DPS02	DI						N/A	N/A	
48	LS	DPS02-CCD3-LS-02251	Pump CD3 Oil Level	PLC-DPS02	DI						N/A	N/A	
49	TI	DPS02-CCD3-TT-02252	Pump CD3 Temperature	PLC-DPS02	AI						0-221	DEG F	
50	TI	DPS02-CCD3-TT-02253	Pump CD3 Temperature	PLC-DPS02	AI						0-221	DEG F	
51	VI	DPS02-CCD3-VT-02254	Pump CD3 Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
52	VI	DPS02-CCD3-VT-02255	Pump CD3 Radial Bearing Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
53	TI	DPS02-VAP1-TT-02300	Vacuum Pump 1 Temp	PLC-DPS02	AI						0-221	DEG F	
54	VI	DPS02-VAP1-VT-02301	Vacuum Pump 1 Vib	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
55	PI	DPS02-VAP1-PT-02302	Vacuum Pump 1 Pressure	PLC-DPS02	AI						-15- 0	PSI	
56	TI	DPS02-VAP2-TT-02350	Vacuum Pump 2 Temp	PLC-DPS02	AI						0-221	DEG F	
57	VI	DPS02-VAP2-VT-02351	Vacuum Pump 2 Vib	PLC-DPS02	AI						0-1.8	IN/SEC RMS	
58	PI	DPS02-VAP2-PT-02352	Vacuum Pump 2 Pressure	PLC-DPS02	AI						-15- 0	PSI	
59	JI	DPS02-HG-JT-02400	House Generator Power	PLC-DPS02	AI						0-480	VOLTS	
60	PI	DPS02-HG-PT-02401	House Generator Fuel Pressure	PLC-DPS02	AI						0-100	PSI	Signal derived from generator control panel
61	PI	DPS02-HG-PT-02402	House Generator Oil Pressure	PLC-DPS02	AI						0-100	PSI	Signal derived from generator control panel
62	TI	DPS02-HG-TT-02403	House Generator Oil Temperature	PLC-DPS02	AI						0-221	DEG F	Signal derived from generator control panel
63	VI	DPS02-HG-VT-02404	House Generator Vibration	PLC-DPS02	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel
64	TI	DPS02-HG-TT-02405	House Generator Temperature	PLC-DPS02	AI						0-221	DEG F	Signal derived from generator control panel
65	LI	DPS02-SCT-LT-02450	Suction Water Level	PLC-DPS02	AI						0-50	FT	
66	LI	DPS02-DSCH-LT-02451	Channel Discharge to Orleans Basin Level	PLC-DPS02	AI						0-50	FT	
67	LI	DPS02-DSCH-LT-02452	Channel Discharge to Broad Basin Level	PLC-DPS02	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Pump "A" - 12': 550 CFS, 1200 HP
 Pump "B" - 12': 550 CFS, 1200 HP
 Pump "C" - 14': 1000 CFS, 2000 HP
 Pump "D" - 14': 1000 CFS, 2000 HP
 Pump "E" - 14': 1000 CFS, 2000 HP
 CD 1L & 1R - 30X63": 80 CFS, 60 HP
 CD 2L & 2R - 30X63": 80 CFS, 60 HP

TOTAL CAPACITY = 4,260 CFS

2 Pumps, 1 Motor
(40 CFS Each)

All 25 Hz. Equipment

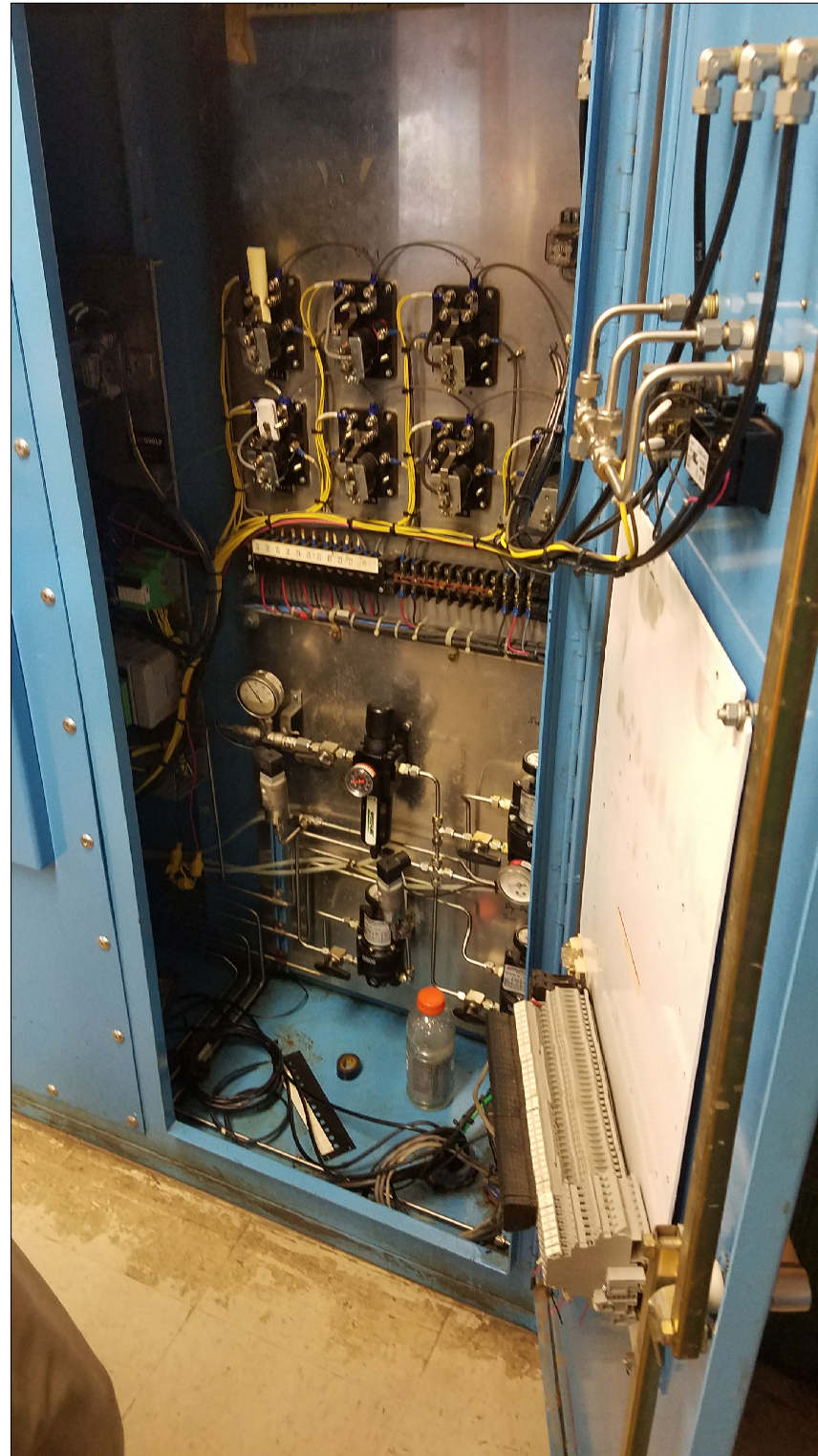
FROM BROAD CANAL

SEWERAGE AND WATER BOARD OF NEW ORLEANS

DRAINAGE PUMPING STATION No. 3

DATE: 10/7/97 OPERATIONS DEPARTMENT
DR: B. Moeinin

04/06/2022 6:24:29 PM



NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS03-HPA-VT-03000	Pump A NDE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS03-HPA-VT-03001	Pump A DE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	VI	DPS03-HPA-VT-03002	Pump A Thrust Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	LS	DPS03-HPA-LS-03003	Pump A Oil Level	Ashcroft		N/A	N/A	DI					
5	TI	DPS03-HPA-TT-03004	Pump A NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS03-HPA-TT-03005	Pump A DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS03-HPA-TT-03006	Pump A Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	SI	DPS03-HPA-ST-03007	Pump A RPM	Banner		0-2000	RPM	AI					
9	VI	DPS03-HPA-VT-03008	Pump A Motor Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
10	TI	DPS03-HPA-TT-03009	Pump A Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS03-HPB-VT-03050	Pump B NDE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS03-HPB-VT-03051	Pump B DE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	VI	DPS03-HPB-VT-03052	Pump B Thrust Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	LS	DPS03-HPB-LS-03053	Pump B Oil Level	Ashcroft		N/A	N/A	DI					
15	TI	DPS03-HPB-TT-03054	Pump B NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
16	TI	DPS03-HPB-TT-03055	Pump B DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS03-HPB-TT-03056	Pump B Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	SI	DPS03-HPB-ST-03057	Pump B RPM	Banner		0-2000	RPM	AI					
19	VI	DPS03-HPB-VT-03058	Pump B Motor Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
20	TI	DPS03-HPB-TT-03059	Pump B Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
21	VI	DPS03-HPC-VT-03100	Pump C NDE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	VI	DPS03-HPC-VT-03101	Pump C DE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
23	VI	DPS03-HPC-VT-03102	Pump C Thrust Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
24	LS	DPS03-HPC-LS-03103	Pump C Oil Level	Ashcroft		N/A	N/A	DI					
25	TI	DPS03-HPC-TT-03104	Pump C NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
26	TI	DPS03-HPC-TT-03105	Pump C DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
27	TI	DPS03-HPC-TT-03106	Pump C Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
28	SI	DPS03-HPC-ST-03107	Pump C RPM	Banner		0-2000	RPM	AI					
29	VI	DPS03-HPC-VT-03108	Pump C Motor Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
30	TI	DPS03-HPC-TT-03109	Pump C Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
31	VI	DPS03-HPD-VT-03150	Pump D NDE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
32	VI	DPS03-HPD-VT-03151	Pump D DE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
33	VI	DPS03-HPD-VT-03152	Pump D Thrust Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
34	LS	DPS03-HPD-LS-03153	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
35	TI	DPS03-HPD-TT-03154	Pump D NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
36	TI	DPS03-HPD-TT-03155	Pump D DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
37	TI	DPS03-HPD-TT-03156	Pump D Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
38	SI	DPS03-HPD-ST-03157	Pump D RPM	Banner		0-2000	RPM	AI					
39	VI	DPS03-HPD-VT-03158	Pump D Motor Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
40	TI	DPS03-HPD-TT-03159	Pump D Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
41	VI	DPS03-HPE-VT-03200	Pump E NDE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
42	VI	DPS03-HPE-VT-03201	Pump E DE Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
43	VI	DPS03-HPE-VT-03202	Pump E Thrust Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
44	LS	DPS03-HPE-LS-03203	Pump E Oil Level	Ashcroft		N/A	N/A	DI					
45	TI	DPS03-HPE-TT-03204	Pump E NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

46	TI	DPS03-HPE-TT-03205	Pump E DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
47	TI	DPS03-HPE-TT-03206	Pump E Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
48	SI	DPS03-HPE-ST-03207	Pump E RPM	Banner		0-2000	RPM	AI					
49	VI	DPS03-HPE-VT-03208	Pump E Motor Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
50	TI	DPS03-HPE-TT-03209	Pump E Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
51	LS	DPS03-CCD1-LS-03250	Pump CD1 Oil Level	Ashcroft		N/A	N/A	DI					
52	LS	DPS03-CCD1-LS-03251	Pump CD1 Oil Level	Ashcroft		N/A	N/A	DI					
53	TI	DPS03-CCD1-TT-03252	Pump CD1 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
54	TI	DPS03-CCD1-TT-03253	Pump CD1 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
55	VI	DPS03-CCD1-VT-03254	Pump CD1 Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
56	VI	DPS03-CCD1-VT-03255	Pump CD1 Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
57	LS	DPS03-CCD2-LS-03300	Pump CD2 Oil Level	Ashcroft		N/A	N/A	DI					
58	LS	DPS03-CCD2-LS-03301	Pump CD2 Oil Level	Ashcroft		N/A	N/A	DI					
59	TI	DPS03-CCD2-TT-03302	Pump CD2 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
60	TI	DPS03-CCD2-TT-03303	Pump CD2 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
61	VI	DPS03-CCD2-VT-03304	Pump CD2 Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
62	VI	DPS03-CCD2-VT-03305	Pump CD2 Radial Bearing Vibration	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
63	TI	DPS03-VAP1-TT-03350	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
64	VI	DPS03-VAP1-VT-03351	Vacuum Pump 1 Vib	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
65	PI	DPS03-VAP1-PT-03352	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
66	TI	DPS03-VAP2-TT-03400	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
67	VI	DPS03-VAP2-VT-03401	Vacuum Pump 2 Vib	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
68	PI	DPS03-VAP2-PT-03402	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
69	TI	DPS03-VAP3-TT-03450	Vacuum Pump 3 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
70	VI	DPS03-VAP3-VT-03451	Vacuum Pump 3 Vib	Banner	QM30VT2-SS-	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
71	PI	DPS03-VAP3-PT-03452	Vacuum Pump 3 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
72	JJ	DPS03-HG-JT-03500	House Generator Power	SEL		0-480	VOLTS	AI					No HMI
73	LI	DPS03-SCT-LT-03550	Suction Water Level	Vega/Flowline	PSC21 OR	0-50	FT	AI					
74	LI	DPS03-DSCH-LT-03551	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR	0-50	FT	AI					
75	LI	DPS03-DSCH-LT-03552	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR	0-50	FT	AI					

FACILITY PLC INPUT-OUTPUT LIST

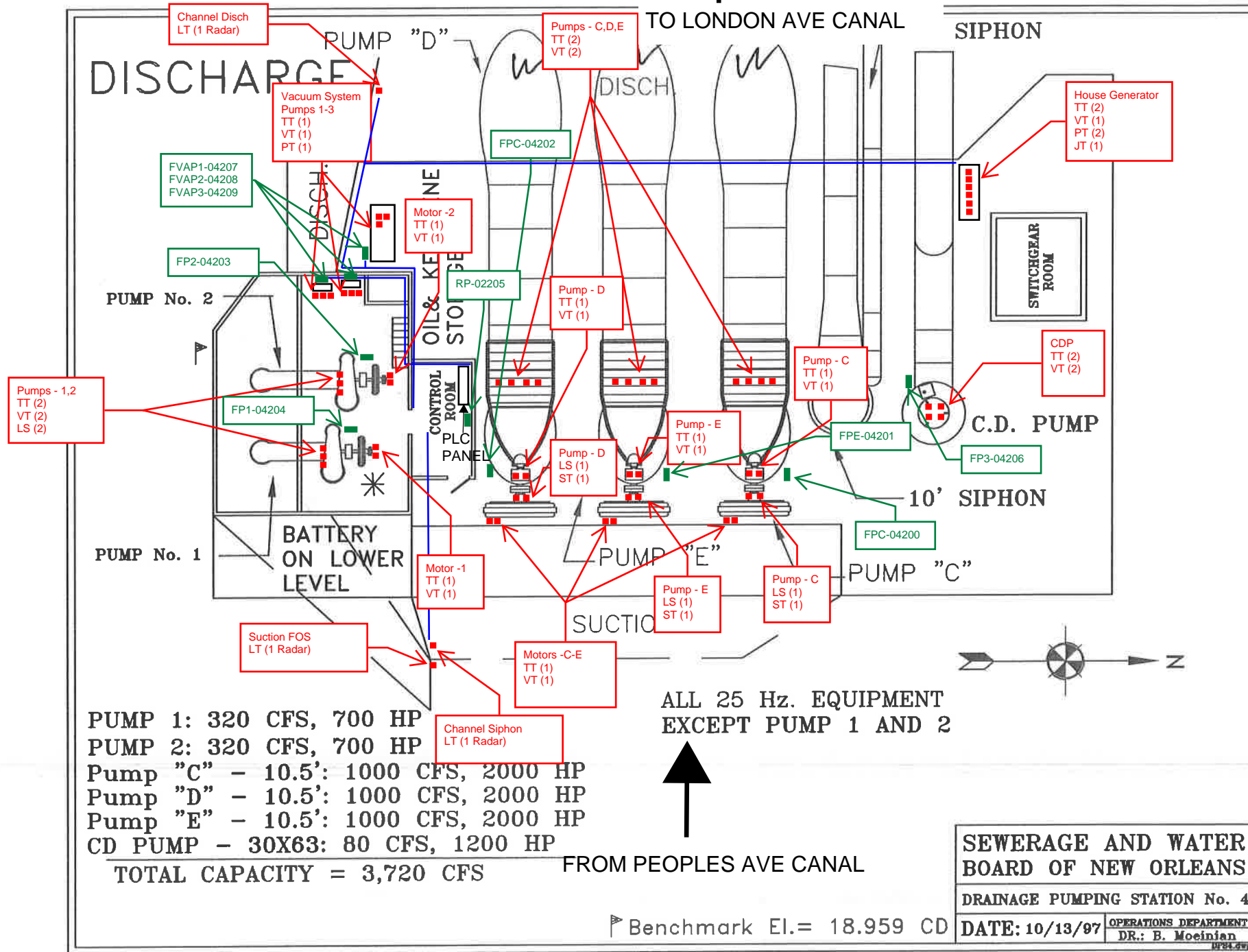
SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS03-HPA-VT-03000	Pump A NDE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
2	VI	DPS03-HPA-VT-03001	Pump A DE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
3	VI	DPS03-HPA-VT-03002	Pump A Thrust Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
4	LS	DPS03-HPA-LS-03003	Pump A Oil Level	PLC-DPS03	DI						N/A	N/A	
5	TI	DPS03-HPA-TT-03004	Pump A NDE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
6	TI	DPS03-HPA-TT-03005	Pump A DE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
7	TI	DPS03-HPA-TT-03006	Pump A Thrust Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
8	SI	DPS03-HPA-ST-03007	Pump A RPM	PLC-DPS03	AI						0-2000	RPM	
9	VI	DPS03-HPA-VT-03008	Pump A Motor Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
10	TI	DPS03-HPA-TT-03009	Pump A Motor Temperature	PLC-DPS03	AI						0-221	DEG F	
11	VI	DPS03-HPB-VT-03050	Pump B NDE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
12	VI	DPS03-HPB-VT-03051	Pump B DE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
13	VI	DPS03-HPB-VT-03052	Pump B Thrust Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
14	LS	DPS03-HPB-LS-03053	Pump B Oil Level	PLC-DPS03	DI						N/A	N/A	
15	TI	DPS03-HPB-TT-03054	Pump B NDE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
16	TI	DPS03-HPB-TT-03055	Pump B DE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
17	TI	DPS03-HPB-TT-03056	Pump B Thrust Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
18	SI	DPS03-HPB-ST-03057	Pump B RPM	PLC-DPS03	AI						0-2000	RPM	
19	VI	DPS03-HPB-VT-03058	Pump B Motor Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
20	TI	DPS03-HPB-TT-03059	Pump B Motor Temperature	PLC-DPS03	AI						0-221	DEG F	
21	VI	DPS03-HPC-VT-03100	Pump C NDE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
22	VI	DPS03-HPC-VT-03101	Pump C DE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
23	VI	DPS03-HPC-VT-03102	Pump C Thrust Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
24	LS	DPS03-HPC-LS-03103	Pump C Oil Level	PLC-DPS03	DI						N/A	N/A	
25	TI	DPS03-HPC-TT-03104	Pump C NDE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
26	TI	DPS03-HPC-TT-03105	Pump C DE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
27	TI	DPS03-HPC-TT-03106	Pump C Thrust Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
28	SI	DPS03-HPC-ST-03107	Pump C RPM	PLC-DPS03	AI						0-2000	RPM	
29	VI	DPS03-HPC-VT-03108	Pump C Motor Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
30	TI	DPS03-HPC-TT-03109	Pump C Motor Temperature	PLC-DPS03	AI						0-221	DEG F	
31	VI	DPS03-HPD-VT-03150	Pump D NDE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
32	VI	DPS03-HPD-VT-03151	Pump D DE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
33	VI	DPS03-HPD-VT-03152	Pump D Thrust Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
34	LS	DPS03-HPD-LS-03153	Pump D Oil Level	PLC-DPS03	DI						N/A	N/A	
35	TI	DPS03-HPD-TT-03154	Pump D NDE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
36	TI	DPS03-HPD-TT-03155	Pump D DE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
37	TI	DPS03-HPD-TT-03156	Pump D Thrust Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
38	SI	DPS03-HPD-ST-03157	Pump D RPM	PLC-DPS03	AI						0-2000	RPM	
39	VI	DPS03-HPD-VT-03158	Pump D Motor Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
40	TI	DPS03-HPD-TT-03159	Pump D Motor Temperature	PLC-DPS03	AI						0-221	DEG F	
41	VI	DPS03-HPE-VT-03200	Pump E NDE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
42	VI	DPS03-HPE-VT-03201	Pump E DE Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
43	VI	DPS03-HPE-VT-03202	Pump E Thrust Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
44	LS	DPS03-HPE-LS-03203	Pump E Oil Level	PLC-DPS03	DI						N/A	N/A	

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
45	TI	DPS03-HPE-TT-03204	Pump E NDE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
46	TI	DPS03-HPE-TT-03205	Pump E DE Radial Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
47	TI	DPS03-HPE-TT-03206	Pump E Thrust Bearing Temperature	PLC-DPS03	AI						0-221	DEG F	
48	SI	DPS03-HPE-ST-03207	Pump E RPM	PLC-DPS03	DI						0-2000	RPM	
49	VI	DPS03-HPE-VT-03208	Pump E Motor Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
50	TI	DPS03-HPE-TT-03209	Pump E Motor Temperature	PLC-DPS03	AI						0-221	DEG F	
51	LS	DPS03-CCD1-LS-03250	Pump CD1 Oil Level	PLC-DPS03	DI						N/A	N/A	
52	LS	DPS03-CCD1-LS-03251	Pump CD1 Oil Level	PLC-DPS03	DI						N/A	N/A	
53	TI	DPS03-CCD1-TT-03252	Pump CD1 Temperature	PLC-DPS03	AI						0-221	DEG F	
54	TI	DPS03-CCD1-TT-03253	Pump CD1 Temperature	PLC-DPS03	AI						0-221	DEG F	
55	VI	DPS03-CCD1-VT-03254	Pump CD1 Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
56	VI	DPS03-CCD1-VT-03255	Pump CD1 Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
57	LS	DPS03-CCD2-LS-03300	Pump CD2 Oil Level	PLC-DPS03	DI						N/A	N/A	
58	LS	DPS03-CCD2-LS-03301	Pump CD2 Oil Level	PLC-DPS03	DI						N/A	N/A	
59	TI	DPS03-CCD2-TT-03302	Pump CD2 Temperature	PLC-DPS03	AI						0-221	DEG F	
60	TI	DPS03-CCD2-TT-03303	Pump CD2 Temperature	PLC-DPS03	AI						0-221	DEG F	
61	VI	DPS03-CCD2-VT-03304	Pump CD2 Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
62	VI	DPS03-CCD2-VT-03305	Pump CD2 Radial Bearing Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
63	TI	DPS03-VAP1-TT-03350	Vacuum Pump 1 Temp	PLC-DPS03	AI						0-221	DEG F	
64	VI	DPS03-VAP1-VT-03351	Vacuum Pump 1 Vib	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
65	PI	DPS03-VAP1-PT-03352	Vacuum Pump 1 Pressure	PLC-DPS03	AI						-15-0	PSI	
66	TI	DPS03-VAP2-TT-03400	Vacuum Pump 2 Temp	PLC-DPS03	AI						0-221	DEG F	
67	VI	DPS03-VAP2-VT-03401	Vacuum Pump 2 Vib	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
68	PI	DPS03-VAP2-PT-03402	Vacuum Pump 2 Pressure	PLC-DPS03	AI						-15-0	PSI	
69	TI	DPS03-VAP3-TT-03450	Vacuum Pump 3 Temp	PLC-DPS03	AI						0-221	DEG F	
70	VI	DPS03-VAP3-VT-03451	Vacuum Pump 3 Vib	PLC-DPS03	AI						0-1.8	IN/SEC RMS	
71	PI	DPS03-VAP3-PT-03452	Vacuum Pump 3 Pressure	PLC-DPS03	AI						-15-0	PSI	
72	II	DPS03-HG-JT-03500	House Generator Power	PLC-DPS03	AI						0-480	VOLTS	
73	PI	DPS03-HG-PT-03501	House Generator Fuel Pressure	PLC-DPS03	AI						0-100	PSI	Signal derived from generator control panel
74	PI	DPS03-HG-PT-03502	House Generator Oil Pressure	PLC-DPS03	AI						0-100	PSI	Signal derived from generator control panel
75	TI	DPS03-HG-TT-03503	House Generator Oil Temperature	PLC-DPS03	AI						0-221	DEG F	Signal derived from generator control panel
76	VI	DPS03-HG-VT-03504	House Generator Vibration	PLC-DPS03	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel
77	TI	DPS03-HG-TT-03505	Generator Temperature	PLC-DPS03	AI						0-221	DEG F	Signal derived from generator control panel
78	LI	DPS03-SCT-LT-03550	Suction Water Level	PLC-DPS03	AI						0-50	FT	
79	LI	DPS03-DSCH-LT-03551	Channel Discharge Basin Level	PLC-DPS03	AI						0-50	FT	
80	LI	DPS03-DSCH-LT-03552	Channel Discharge Basin Level	PLC-DPS03	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.

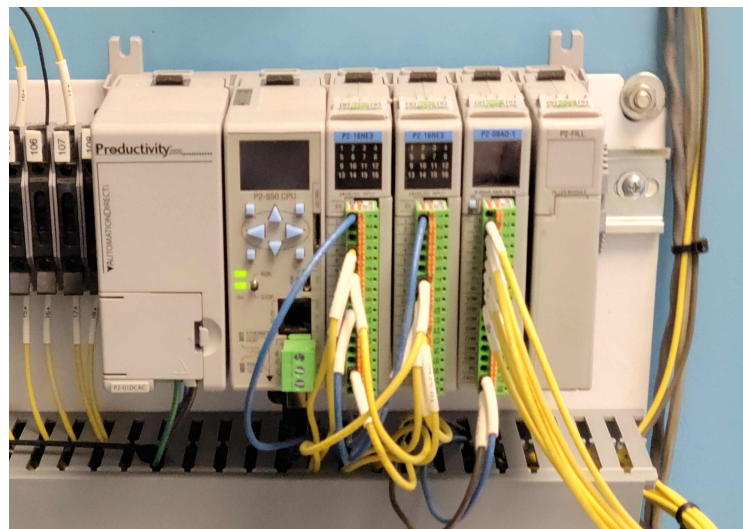




Existing PLC

NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.



SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS04-CP1-VT-04000	Pump 1 Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS04-CP1-VT-04001	Pump 1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	LS	DPS04-CP1-LS-04004	Pump 1 Oil Level	Ashcroft		N/A	N/A	DI					
4	TI	DPS04-CP1-TT-04005	Pump 1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
5	TI	DPS04-CP1-TT-04013	Pump 1 Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	VI	DPS04-CP2-VT-04050	Pump 2 Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
7	VI	DPS04-CP2-VT-04051	Pump 2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	LS	DPS04-CP2-LS-04054	Pump 2 Oil Level	Ashcroft		N/A	N/A	DI					
9	TI	DPS04-CP2-TT-04055	Pump 2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
10	TI	DPS04-CP2-TT-04063	Pump 2 Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS04-HPC-VT-04100	Pump C Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS04-HPC-VT-04101	Pump C NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	VI	DPS04-HPC-VT-04102	Pump C DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	VI	DPS04-HPC-VT-04103	Pump C Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
15	LS	DPS04-HPC-LS-04104	Pump C Oil Level	Ashcroft		N/A	N/A	DI					
16	TI	DPS04-HPC-TT-04105	Pump C NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS04-HPC-TT-04106	Pump C DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	TI	DPS04-HPC-TT-04107	Pump C Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
19	SI	DPS04-HPC-ST-04108	Pump C RPM	Banner		0-2000	RPM	AI					
20	TI	DPS04-HPC-TT-04109	Pump C Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
21	VI	DPS04-HPD-VT-04150	Pump D Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	VI	DPS04-HPD-VT-04151	Pump D NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
23	VI	DPS04-HPD-VT-04152	Pump D DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
24	VI	DPS04-HPD-VT-04153	Pump D Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
25	LS	DPS04-HPD-LS-04154	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
26	TI	DPS04-HPD-TT-04155	Pump D NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
27	TI	DPS04-HPD-TT-04156	Pump D DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
28	TI	DPS04-HPD-TT-04157	Pump D Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
29	SI	DPS04-HPD-ST-04158	Pump D RPM	Banner		0-2000	RPM	AI					
30	TI	DPS04-HPD-TT-04159	Pump D Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
31	VI	DPS04-HPE-VT-04200	Pump E Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
32	VI	DPS04-HPE-VT-04201	Pump E NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
33	VI	DPS04-HPE-VT-04202	Pump E DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
34	VI	DPS04-HPE-VT-04203	Pump E Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
35	LS	DPS04-HPE-LS-04204	Pump E Oil Level	Ashcroft		N/A	N/A	DI					
36	TI	DPS04-HPE-TT-04205	Pump E NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
37	TI	DPS04-HPE-TT-04206	Pump E DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
38	TI	DPS04-HPE-TT-04207	Pump E Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
39	SI	DPS04-HPE-ST-04208	Pump E RPM	Banner		0-2000	RPM	AI					
40	TI	DPS04-HPE-TT-04209	Pump E Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
41	TI	DPS04-VAP1-TT-04250	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
42	VI	DPS04-VAP1-VT-04251	Vacuum Pump 1 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
43	PI	DPS04-VAP1-PT-04252	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
44	TI	DPS04-VAP2-TT-04300	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
45	VI	DPS04-VAP2-VT-04301	Vacuum Pump 2 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
46	PI	DPS04-VAP2-PT-04302	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
47	TI	DPS04-VAP3-TT-04350	Vacuum Pump 3 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
48	VI	DPS04-VAP3-VT-04351	Vacuum Pump 3 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
49	PI	DPS04-VAP3-PT-04352	Vacuum Pump 3 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
50	Jl	DPS04-HG-JT-04400	House Generator Power	SEL		0-480	VOLTS	AI					
51	TI	DPS04-CCD-TT-04450	Pump CD Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
52	TI	DPS04-CCD-TT-04451	Pump CD Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
53	VI	DPS04-CCD-VT-04452	Pump CD Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
54	VI	DPS04-CCD-VT-04453	Pump CD Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
55	LS	DPS04-CCD-LS-04454	Pump CD Oil Level	Ashcroft		N/A	N/A	DI					
56	LI	DPS04-SCT1-LT-04500	FOS Suction Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
57	LI	DPS04-SCT2-LT-04500	Suction Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
58	LI	DPS04-DSC-LT-04501	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS
NDR ADDITIONAL INSTRUMENTATIONREVISION: IFB
Rev. DATE: 4/7/2022PREPARED BY: JMJ
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS04-CP1-VT-04000	Pump 1 Motor Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
2	VI	DPS04-CP1-VT-04001	Pump 1 Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
3	LS	DPS04-CP1-LS-04004	Pump 1 Oil Level	PLC-DPS04	DI						N/A	N/A	
4	TI	DPS04-CP1-TT-04005	Pump 1 Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
5	TI	DPS04-CP1-TT-04013	Pump 1 Motor Temperature	PLC-DPS04	AI						0-221	DEG F	
6	VI	DPS04-CP2-VT-04050	Pump 2 Motor Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
7	VI	DPS04-CP2-VT-04051	Pump 2 Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
8	LS	DPS04-CP2-LS-04054	Pump 2 Oil Level	PLC-DPS04	DI						N/A	N/A	
9	TI	DPS04-CP2-TT-04055	Pump 2 Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
10	TI	DPS04-CP2-TT-04063	Pump 2 Motor Temperature	PLC-DPS04	AI						0-221	DEG F	
11	VI	DPS04-HPC-VT-04100	Pump C Motor Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
12	VI	DPS04-HPC-VT-04101	Pump C NDE Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
13	VI	DPS04-HPC-VT-04102	Pump C DE Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
14	VI	DPS04-HPC-VT-04103	Pump C Thrust Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
15	LS	DPS04-HPC-LS-04104	Pump C Oil Level	PLC-DPS04	DI						N/A	N/A	
16	TI	DPS04-HPC-TT-04105	Pump C NDE Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
17	TI	DPS04-HPC-TT-04106	Pump C DE Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
18	TI	DPS04-HPC-TT-04107	Pump C Thrust Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
19	SI	DPS04-HPC-ST-04108	Pump C RPM	PLC-DPS04	AI						0-2000	RPM	
20	TI	DPS04-HPC-TT-04109	Pump C Motor Temperature	PLC-DPS04	AI						0-221	DEG F	
21	VI	DPS04-HPD-VT-04150	Pump D Motor Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
22	VI	DPS04-HPD-VT-04151	Pump D NDE Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
23	VI	DPS04-HPD-VT-04152	Pump D DE Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
24	VI	DPS04-HPD-VT-04153	Pump D Thrust Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
25	LS	DPS04-HPD-LS-04154	Pump D Oil Level	PLC-DPS04	DI						N/A	N/A	
26	TI	DPS04-HPD-TT-04155	Pump D NDE Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
27	TI	DPS04-HPD-TT-04156	Pump D DE Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
28	TI	DPS04-HPD-TT-04157	Pump D Thrust Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
29	SI	DPS04-HPD-ST-04158	Pump D RPM	PLC-DPS04	AI						0-2000	RPM	
30	TI	DPS04-HPD-TT-04159	Pump D Motor Temperature	PLC-DPS04	AI						0-221	DEG F	
31	VI	DPS04-HPE-VT-04200	Pump E Motor Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
32	VI	DPS04-HPE-VT-04201	Pump E NDE Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
33	VI	DPS04-HPE-VT-04202	Pump E DE Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
34	VI	DPS04-HPE-VT-04203	Pump E Thrust Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
35	LS	DPS04-HPE-LS-04204	Pump E Oil Level	PLC-DPS04	DI						N/A	N/A	
36	TI	DPS04-HPE-TT-04205	Pump E NDE Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
37	TI	DPS04-HPE-TT-04206	Pump E DE Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
38	TI	DPS04-HPE-TT-04207	Pump E Thrust Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
39	SI	DPS04-HPE-ST-04208	Pump E RPM	PLC-DPS04	AI						0-2000	RPM	
40	TI	DPS04-HPE-TT-04209	Pump E Motor Temperature	PLC-DPS04	AI						0-221	DEG F	
41	TI	DPS04-VAP1-TT-04250	Vacuum Pump 1 Temp	PLC-DPS04	AI						0-221	DEG F	
42	VI	DPS04-VAP1-VT-04251	Vacuum Pump 1 Vib	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
43	PI	DPS04-VAP1-PT-04252	Vacuum Pump 1 Pressure	PLC-DPS04	AI						-15-0	PSI	
44	TI	DPS04-VAP2-TT-04300	Vacuum Pump 2 Temp	PLC-DPS04	AI						0-221	DEG F	

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR ADDITIONAL INSTRUMENTATION

REVISION: IFB

Rev. DATE: 4/7/2022

PREPARED BY: JMJ

CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

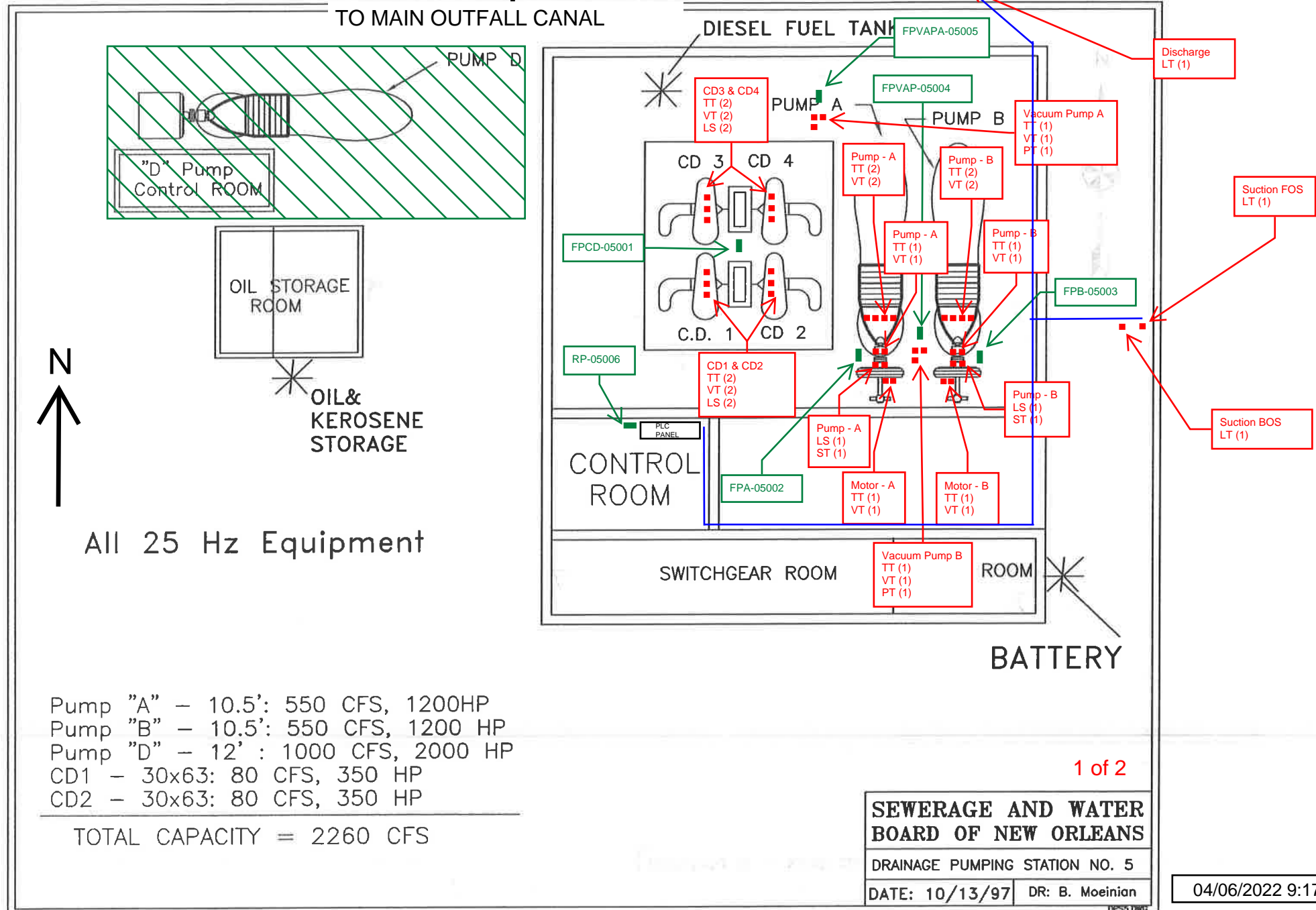
SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
45	VI	DPS04-VAP2-VT-04301	Vacuum Pump 2 Vib	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
46	PI	DPS04-VAP2-PT-04302	Vacuum Pump 2 Pressure	PLC-DPS04	AI						-15-0	PSI	
47	TI	DPS04-VAP3-TT-04350	Vacuum Pump 3 Temp	PLC-DPS04	AI						0-221	DEG F	
48	VI	DPS04-VAP3-VT-04351	Vacuum Pump 3 Vib	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
49	PI	DPS04-VAP3-PT-04352	Vacuum Pump 3 Pressure	PLC-DPS04	AI						-15-0	PSI	
50	JI	DPS04-GEN-JT-04400	House Generator Power	PLC-DPS04	AI						0-480	VOLTS	
51	PI	DPS04-GEN-PT-04401	House Generator Fuel Pressure	PLC-DPS04	AI						0-100	PSI	Signal derived from generator control panel.
52	PI	DPS04-GEN-PT-04402	House Generator Oil Pressure	PLC-DPS04	AI						0-100	PSI	Signal derived from generator control panel.
53	TI	DPS04-GEN-TT-04403	House Generator Oil Temperature	PLC-DPS04	AI						0-221	DEG F	Signal derived from generator control panel.
54	VI	DPS04-GEN-VT-04404	House Generator Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
55	TI	DPS04-GEN-TT-04405	House Generator Temperature	PLC-DPS04	AI						0-221	DEG F	Signal derived from generator control panel.
56	TI	DPS04-CCD-TT-04450	Pump CD Thrust Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
57	TI	DPS04-CCD-TT-04451	Pump CD Radial Bearing Temperature	PLC-DPS04	AI						0-221	DEG F	
58	VI	DPS04-CCD-VT-04452	Pump CD Thrust Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
59	VI	DPS04-CCD-VT-04453	Pump CD Radial Bearing Vibration	PLC-DPS04	AI						0-1.8	IN/SEC RMS	
60	LS	DPS04-CCD-LS-04454	Pump CD Oil Level	PLC-DPS04	DI						N/A	N/A	
61	LI	DPS04-SCT1-LT-04500	FOS Suction Water Level	PLC-DPS04	AI						0-50	FT	
62	LI	DPS04-SCT2-LT-04500	Suction Water Level	PLC-DPS04	AI						0-50	FT	
63	LI	DPS04-DSC-LT-04501	Channel Discharge Basin Level	PLC-DPS04	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.



- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.
- 10) Constant Duty Pump 3 is also tagged as 2R.
- 11) Pump D has been fully DEMOed and is not part of this project.



Pump "A" - 10.5': 550 CFS, 1200HP
 Pump "B" - 10.5': 550 CFS, 1200 HP
 Pump "D" - 12' : 1000 CFS, 2000 HP
 CD1 - 30x63: 80 CFS, 350 HP
 CD2 - 30x63: 80 CFS, 350 HP

TOTAL CAPACITY = 2260 CFS

1 of 2

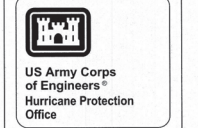
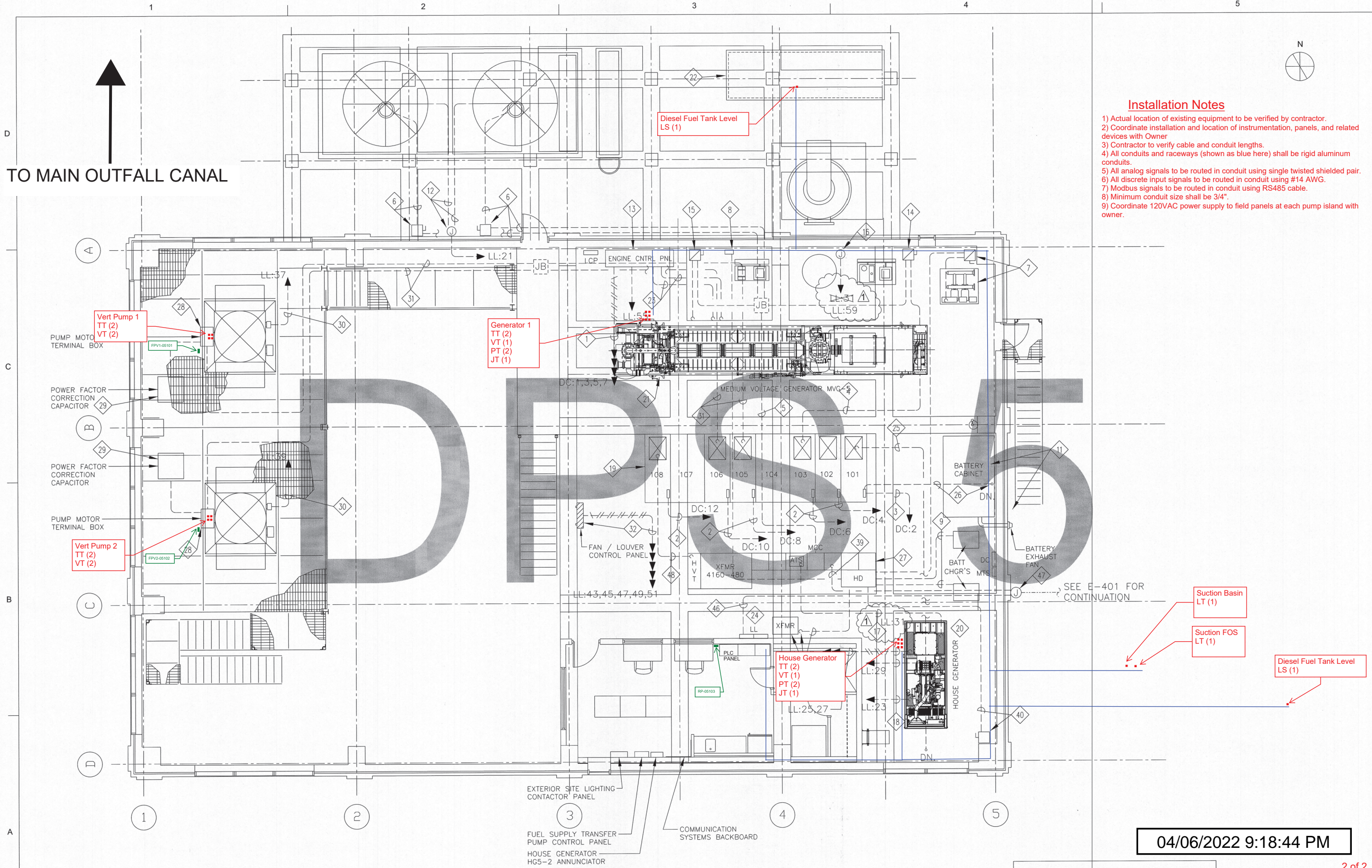
SEWERAGE AND WATER BOARD OF NEW ORLEANS

DRAINAGE PUMPING STATION NO. 5

DATE: 10/13/97 DR: B. Moeinian

04/06/2022 9:17:39 PM

C:\USERS\OWNER\DESKTOP\CYCLE\OSP-5 AS-BUILT\WORKING DGN'S - COP\J\OGN\WEP_2011-01_39 FOR CONSTRUCTION DGN'S\COE-ANSI-D 1gry1z0

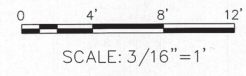


MARK	DATE	APPR.	DESCRIPTION

DESIGNED BY: U.S. ARMY CORPS OF ENGINEERS HURRICANE PROTECTION OFFICE NEW ORLEANS, LOUISIANA	DATE: 02/09/2011	SOLICITATION NO.: OSP005-11-H-0001	CONTRACT NO.: WB12PB-07-0-0089
DRAWN BY: ALN	CHECKED BY: RN	SUBMITTED BY: N.C.S.B.E.	FILE NUMBER: H-4-7054
NEW ORLEANS SMALL BUSINESS ENGINEERING, LLP 3608 18TH ST., SUITE 200 METairie, LA 70002	DESIGNED BY: ALN	DATE: 02/09/2011	FILE NAME: H447054_1B1E12P5(REVISED AS BUILT)

TWO 300 CFS PUMPS WITH GENERATOR AT
DRAINAGE PUMP STATION No. 5 (OSP-5)
STORM PROOFING INTERIOR PUMP STATIONS
ORLEANS PARISH, LA
NEW PUMP BUILDING
SECOND FLOOR
POWER PLAN

NEW PUMP BUILDING - SECOND FLOOR - POWER PLAN



SEE SHEET E-127 FOR NOTES
PERTAINING TO THIS SHEET

REVISED AS BUILT

FOR CONSTRUCTION

04/06/2022 9:18:44 PM

SHEET
IDENTIFICATION
E-125



NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Connect existing PLC through a serial link to the new DIN rail mounted base.
4. New base will be an 7 module base (P2-7B) to accommodate the new analog and discrete signals.
5. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as possible. Nameplate shall be standard 1" by 3.5"
6. Install wireless receiver enclosure and connect to existing PLC via new communication module.
7. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
8. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS05-HPA-VT-05000	Pump A NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS05-HPA-VT-05001	Pump A DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	VI	DPS05-HPA-VT-05002	Pump A Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	LS	DPS05-HPA-LS-05003	Pump A Oil Level	Ashcroft		N/A	N/A	DI					
5	TI	DPS05-HPA-TT-05004	Pump A NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS05-HPA-TT-05005	Pump A DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS05-HPA-TT-05006	Pump A Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	SI	DPS05-HPA-ST-05007	Pump A RPM	Banner		0-2000	RPM	AI					
9	VI	DPS05-HPA-VT-05008	Pump A Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
10	TI	DPS05-HPA-TT-05009	Pump A Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS05-HPB-VT-05050	Pump B NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS05-HPB-VT-05051	Pump B DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	VI	DPS05-HPB-VT-05052	Pump B Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	LS	DPS05-HPB-LS-05053	Pump B Oil Level	Ashcroft		N/A	N/A	DI					
15	TI	DPS05-HPB-TT-05054	Pump B NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
16	TI	DPS05-HPB-TT-05055	Pump B DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS05-HPB-TT-05056	Pump B Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	SI	DPS05-HPB-ST-05057	Pump B RPM	Banner		0-2000	RPM	AI					
19	VI	DPS05-HPB-VT-05058	Pump B Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
20	TI	DPS05-HPB-TT-05059	Pump B Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
21	TI	DPS05-VAPA-TT-05100	Vacuum Pump A Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
22	VI	DPS05-VAPA-VT-05101	Vacuum Pump A Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
23	PI	DPS05-VAPA-PT-05102	Vacuum Pump A Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
24	TI	DPS05-VAPB-TT-05150	Vacuum Pump B Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
25	VI	DPS05-VAPB-VT-05151	Vacuum Pump B Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
26	PI	DPS05-VAPB-PT-05152	Vacuum Pump B Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
27	JL	DPS05-GEN-JT-05200	Generator Power	SEL		0-1460	VOLTS	AI					
33	LS	DPS05-TNK1-LS-05250	Diesel Tank Level	Ashcroft		N/A	N/A	DI					
34	LS	DPS05-TNK2-LS-05251	Diesel Tank Level	Ashcroft		N/A	N/A	DI					
35	JL	DPS05-HG-JT-05300	House Generator Power	SEL		0-480	VOLTS	AI					
41	TI	DPS05-VP1-TT-05350	Pump V1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
42	TI	DPS05-VP1-TT-05351	Pump V1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
43	VI	DPS05-VP1-VT-05352	Pump V1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
44	VI	DPS05-VP1-VT-05353	Pump V1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
45	TI	DPS05-VP2-TT-05400	Pump V2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
46	TI	DPS05-VP2-TT-05401	Pump V2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
47	VI	DPS05-VP2-VT-05402	Pump V2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
48	VI	DPS05-VP2-VT-05403	Pump V2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
49	TI	DPS05-CD1-TT-05450	Pump CD1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
50	VI	DPS05-CD1-VT-05451	Pump CD1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
51	LS	DPS05-CD1-LS-05452	Pump CD1 Oil Level	Ashcroft		N/A	N/A	DI					
52	TI	DPS05-CD2-TT-05500	Pump CD2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
53	VI	DPS05-CD2-VT-05501	Pump CD2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
54	LS	DPS05-CD2-LS-05502	Pump CD2 Oil Level	Ashcroft		N/A	N/A	DI					
55	TI	DPS05-CD3-TT-05550	Pump CD3 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-2000	DEG F	AI					May be combined with vibration sensor
56	VI	DPS05-CD3-VT-05551	Pump CD3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
57	LS	DPS05-CD3-LS-05552	Pump CD3 Oil Level	Ashcroft		N/A	N/A	DI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

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FACILITY INSTRUMENT INDEX

58	TI	DPS05-CD4-TT-05600	Pump CD4 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI						May be combined with vibration sensor
59	VI	DPS05-CD4-VT-05601	Pump CD4 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI						May be combined with temperature sensor
60	LS	DPS05-CD4-LS-05602	Pump CD4 Oil Level	Ashcroft		N/A	N/A	DI						
61	LI	DPS05-SCT1-LT-05650	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI						
62	LI	DPS05-SCT2-LT-05651	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI						
63	LI	DPS05-SCT3-LT-05650	FOS Suction Water Level 3	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI						
64	LI	DPS05-SCT4-LT-05651	Suction Water Basin Level 4	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI						
65	LI	DPS05-DSC-LT-05652	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI						

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

RREVISION: IFB
Rev. DATE: 4/7/2022

PREPARED BY: JMJ
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

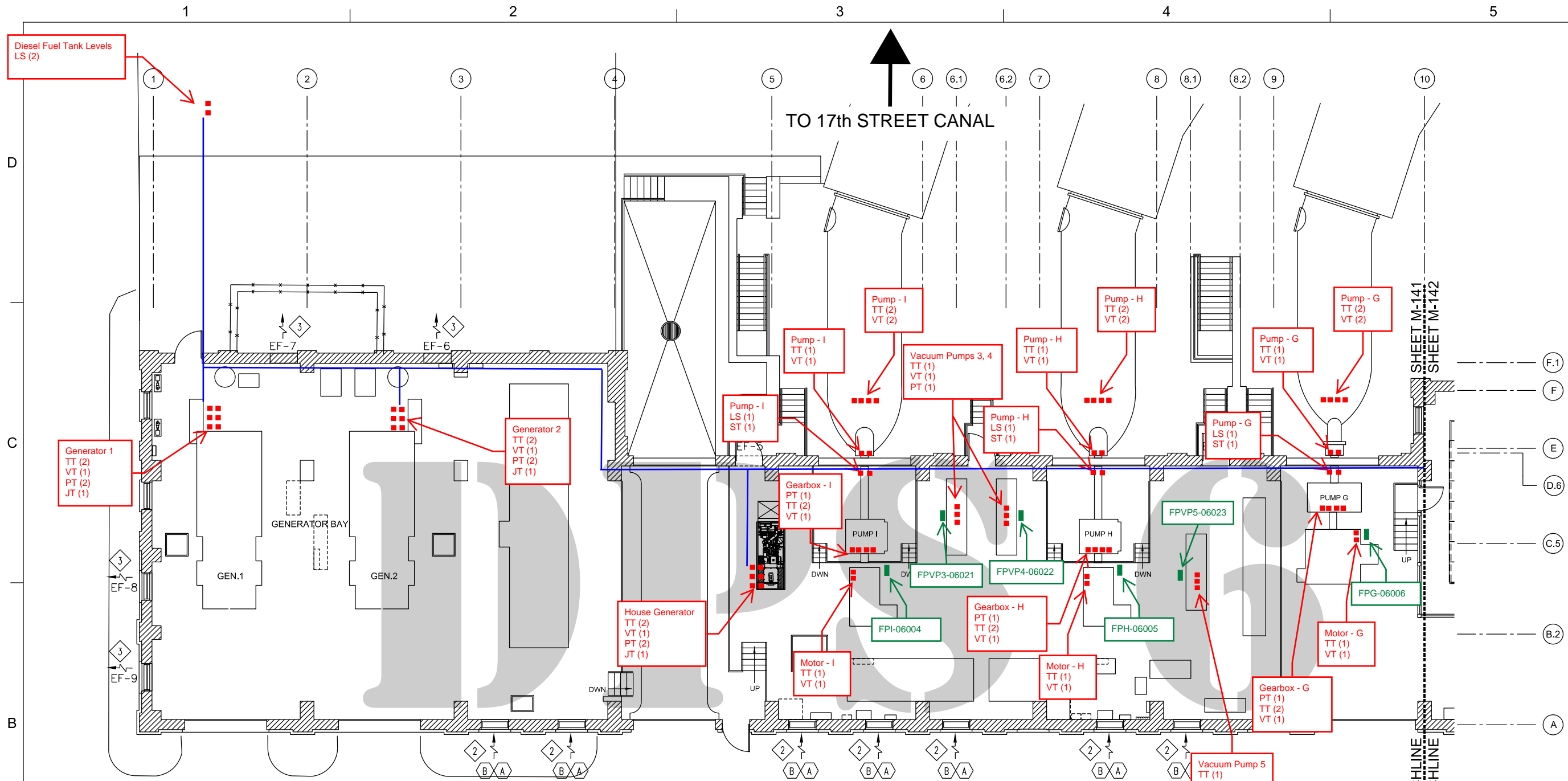
SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS05-HPA-VT-05000	Pump A NDE Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
2	VI	DPS05-HPA-VT-05001	Pump A DE Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
3	VI	DPS05-HPA-VT-05002	Pump A Thrust Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
4	LS	DPS05-HPA-LS-05003	Pump A Oil Level	PLC-DPS05	DI						N/A	N/A	
5	TI	DPS05-HPA-TT-05004	Pump A NDE Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	
6	TI	DPS05-HPA-TT-05005	Pump A DE Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	
7	TI	DPS05-HPA-TT-05006	Pump A Thrust Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	
8	SI	DPS05-HPA-ST-05007	Pump A RPM	PLC-DPS05	AI						0-2000	RPM	
9	VI	DPS05-HPA-VT-05008	Pump A Motor Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
10	TI	DPS05-HPA-TT-05009	Pump A Motor Temperature	PLC-DPS05	AI						0-221	DEG F	
11	VI	DPS05-HPB-VT-05050	Pump B NDE Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
12	VI	DPS05-HPB-VT-05051	Pump B DE Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
13	VI	DPS05-HPB-VT-05052	Pump B Thrust Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
14	LS	DPS05-HPB-LS-05053	Pump B Oil Level	PLC-DPS05	DI						N/A	N/A	
15	TI	DPS05-HPB-TT-05054	Pump B NDE Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	
16	TI	DPS05-HPB-TT-05055	Pump B DE Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	
17	TI	DPS05-HPB-TT-05056	Pump B Thrust Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	
18	SI	DPS05-HPB-ST-05057	Pump B RPM	PLC-DPS05	AI						0-2000	RPM	
19	VI	DPS05-HPB-VT-05058	Pump B Motor Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
20	TI	DPS05-HPB-TT-05059	Pump B Motor Temperature	PLC-DPS05	AI						0-221	DEG F	
21	TI	DPS05-VAPA-TT-05100	Vacuum A Pump Temp	PLC-DPS05	AI						0-221	DEG F	
22	VI	DPS05-VAPA-VT-05101	Vacuum A Pump Vib	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
23	PI	DPS05-VAPA-PT-05102	Vacuum A Pump Pressure	PLC-DPS05	AI						-15-0	PSI	
24	TI	DPS05-VAPB-TT-05150	Vacuum B Pump Temp	PLC-DPS05	AI						0-221	DEG F	
25	VI	DPS05-VAPB-VT-05151	Vacuum B Pump Vib	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
26	PI	DPS05-VAPB-PT-05152	Vacuum B Pump Pressure	PLC-DPS05	AI						-15-0	PSI	
27	JI	DPS05-GEN-JT-05200	Generator Power	PLC-DPS05	AI						0-480	VOLTS	
28	PI	DPS05-GEN-PT-05201	Generator Fuel Pressure	PLC-DPS05	AI						0-100	PSI	Signal derived from generator control panel.
29	PI	DPS05-GEN-PT-05202	Generator Oil Pressure	PLC-DPS05	AI						0-100	PSI	Signal derived from generator control panel.
30	TI	DPS05-GEN-TT-05203	Generator Oil Temperature	PLC-DPS05	AI						0-221	DEG F	Signal derived from generator control panel.
31	VI	DPS05-GEN-VT-05204	Generator Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
32	TI	DPS05-GEN-TT-05205	Generator Temperature	PLC-DPS05	AI						0-221	DEG F	Signal derived from generator control panel.
33	LS	DPS05-TNK1-LS-05250	Diesel Tank Level	PLC-DPS05	DI						N/A	N/A	
34	LS	DPS05-TNK2-LS-05251	Diesel Tank Level	PLC-DPS05	DI						N/A	N/A	
35	JI	DPS05-HG-JT-05300	House Generator Power	PLC-DPS05	AI						0-4160	VOLTS	
36	PI	DPS05-HG-PT-05301	House Generator Fuel Pressure	PLC-DPS05	AI						0-100	PSI	Signal derived from generator control panel.
37	PI	DPS05-HG-PT-05302	House Generator Oil Pressure	PLC-DPS05	AI						0-100	PSI	Signal derived from generator control panel.
38	TI	DPS05-HG-TT-05303	House Generator Oil Temperature	PLC-DPS05	AI						0-221	DEG F	Signal derived from generator control panel.
39	VI	DPS05-HG-VT-05304	House Generator Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
40	TI	DPS05-HG-TT-05305	House Generator Temperature	PLC-DPS05	AI						0-221	DEG F	Signal derived from generator control panel.
41	TI	DPS05-VP1-TT-05350	Pump V1 Thrust Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	
42	TI	DPS05-VP1-TT-05351	Pump V1 Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	
43	VI	DPS05-VP1-VT-05352	Pump V1 Thrust Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
44	VI	DPS05-VP1-VT-05353	Pump V1 Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS	
45	TI	DPS05-VP2-TT-05400	Pump V2 Thrust Bearing Temperature	PLC-DPS05	AI						0-221	DEG F	

PREPARED BY: JMJ

CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

46	TI	DPS05-VP2-TT-05401	Pump V2 Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F
47	VI	DPS05-VP2-VT-05402	Pump V2 Thrust Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS
48	VI	DPS05-VP2-VT-05403	Pump V2 Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS
49	TI	DPS05-CD1-TT-05450	Pump CD1 Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F
50	VI	DPS05-CD1-VT-05451	Pump CD1 Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS
51	LS	DPS05-CD1-LS-05452	Pump CD1 Oil Level	PLC-DPS05	DI						N/A	N/A
52	TI	DPS05-CD2-TT-05500	Pump CD2 Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F
53	VI	DPS05-CD2-VT-05501	Pump CD2 Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS
54	LS	DPS05-CD2-LS-05502	Pump CD2 Oil Level	PLC-DPS05	DI						N/A	N/A
55	TI	DPS05-CD3-TT-05550	Pump CD3 Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F
56	VI	DPS05-CD3-VT-05551	Pump CD3 Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS
57	LS	DPS05-CD3-LS-05552	Pump CD3 Oil Level	PLC-DPS05	DI						N/A	N/A
58	TI	DPS05-CD4-TT-05600	Pump CD4 Radial Bearing Temperature	PLC-DPS05	AI						0-221	DEG F
59	VI	DPS05-CD4-VT-05601	Pump CD4 Radial Bearing Vibration	PLC-DPS05	AI						0-1.8	IN/SEC RMS
60	LS	DPS05-CD4-LS-05602	Pump CD4 Oil Level	PLC-DPS05	DI						N/A	N/A
61	LI	DPS05-SCT1-LT-05650	FOS Suction Water Level 1	PLC-DPS05	AI						0-50	FT
62	LI	DPS05-SCT2-LT-05651	BOS Suction Water Level 2	PLC-DPS05	AI						0-50	FT
63	LI	DPS05-SCT3-LT-05650	FOS Suction Water Level 3	PLC-DPS05	AI						0-50	FT
64	LI	DPS05-SCT4-LT-05651	Suction Water Basin Level 4	PLC-DPS05	AI						0-50	FT
65	LI	DPS05-DSC-LT-05652	Channel Discharge Basin Level	PLC-DPS05	AI						0-50	FT



**GROUND FLOOR AREA 1 MECHANICAL PLAN
PUMP BUILDING**

0 4' 8' 16'
SCALE: 1/8" = 1'

FROM 17th STREET CANAL



NOTE: THIS DRAWING HAS BEEN REDUCED TO HALF SIZE.

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Date	Description	Mark	Appr.

DATE:	4/26/10
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS
DESIGNED BY:	WBS

U.S. ARMY CORPS OF ENGINEERS
HURRICANE PROTECTION OFFICE
NEW ORLEANS, LOUISIANA
NEW ORLEANS SMALL BUSINESS
ENGINEERING, LLP
A JOINT VENTURE, LLP
3608 18TH ST., SUITE 200
METAIRIE, LA 70002

STORM PROOFING DRAINAGE PUMP STATION NOS
3, 6 & 20 (OSP-06)
STORM PROOFING OF GENERATOR BUILDING AT PUMP
STATION NO. 20
SEWERAGE AND WATER BOARD OF NEW ORLEANS
GROUND FL. AREA 1 MECHANICAL PLAN
PUMP BUILDING

1

2

3

4

5



US Army Corps
of Engineers
Hurricane Protection
Office

Installation Notes

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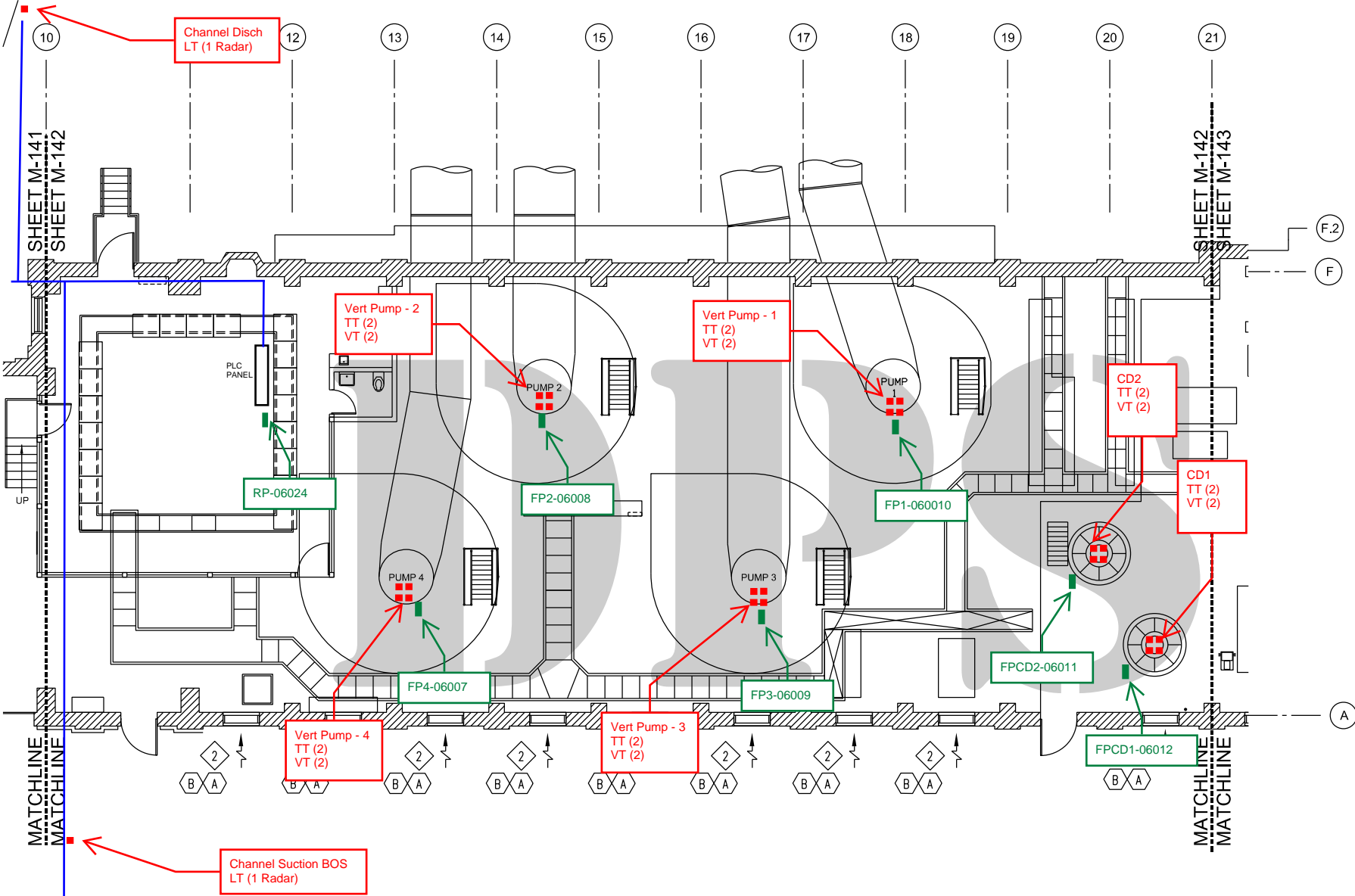


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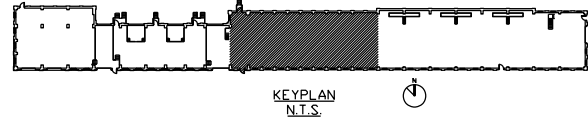
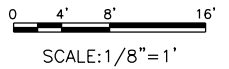
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B

A



GROUND FLOOR AREA 2 MECHANICAL PLAN PUMP BUILDING



NOTE: THIS DRAWING HAS BEEN REDUCED TO HALF SIZE.



Date	Description	Mark	Appr.

DATE:	4/26/10
DESIGNATION NOS:	
CONTRACT NO.:	W912P9-07-D-059
FILE NUMBER:	H-4-7098
DESIGNED BY:	
CREW BY:	
SUBMITTED BY:	
NSBBE	
PLOT SCALE:	1"=1'
PLOT DATE:	4/26/10
FILE NAME:	W912P9-09-002-000-L142
ANSTD	

U.S. ARMY CORPS OF ENGINEERS HURRICANE PROTECTION OFFICE NEW ORLEANS, LOUISIANA
NEW ORLEANS SMALL BUSINESS ENGINEERING, LLP A JOINT VENTURE, LLP 3608-19TH ST., SUITE 200 METAIRIE, LA 70002

STORM PROOFING DRAINAGE PUMP STATION NOS
3, 6 & 20 (OSP-06)
STORM PROOFING OF GENERATOR BUILDING AT PUMP
STATION NO. 20
SEWERAGE AND WATER BOARD OF NEW ORLEANS
GROUND FL. AREA 2 MECHANICAL PLAN
PUMP BUILDING

SHEET IDENTIFICATION
M-142

CAD FILE NAME:

1

2

3

4

5



Installation Notes

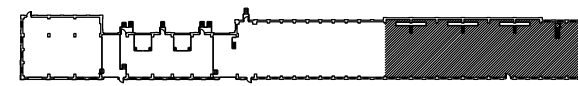
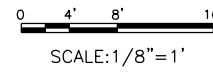
- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
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- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
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- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.

TO 17th STREET CANAL

FROM 17th STREET CANAL

GROUND FLOOR AREA 3 MECHANICAL PLAN PUMP BUILDING



KEYPLAN
N.T.S.

NOTE: THIS DRAWING HAS BEEN REDUCED TO HALF SIZE.



3 OF 3

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Appr.	Date	Description

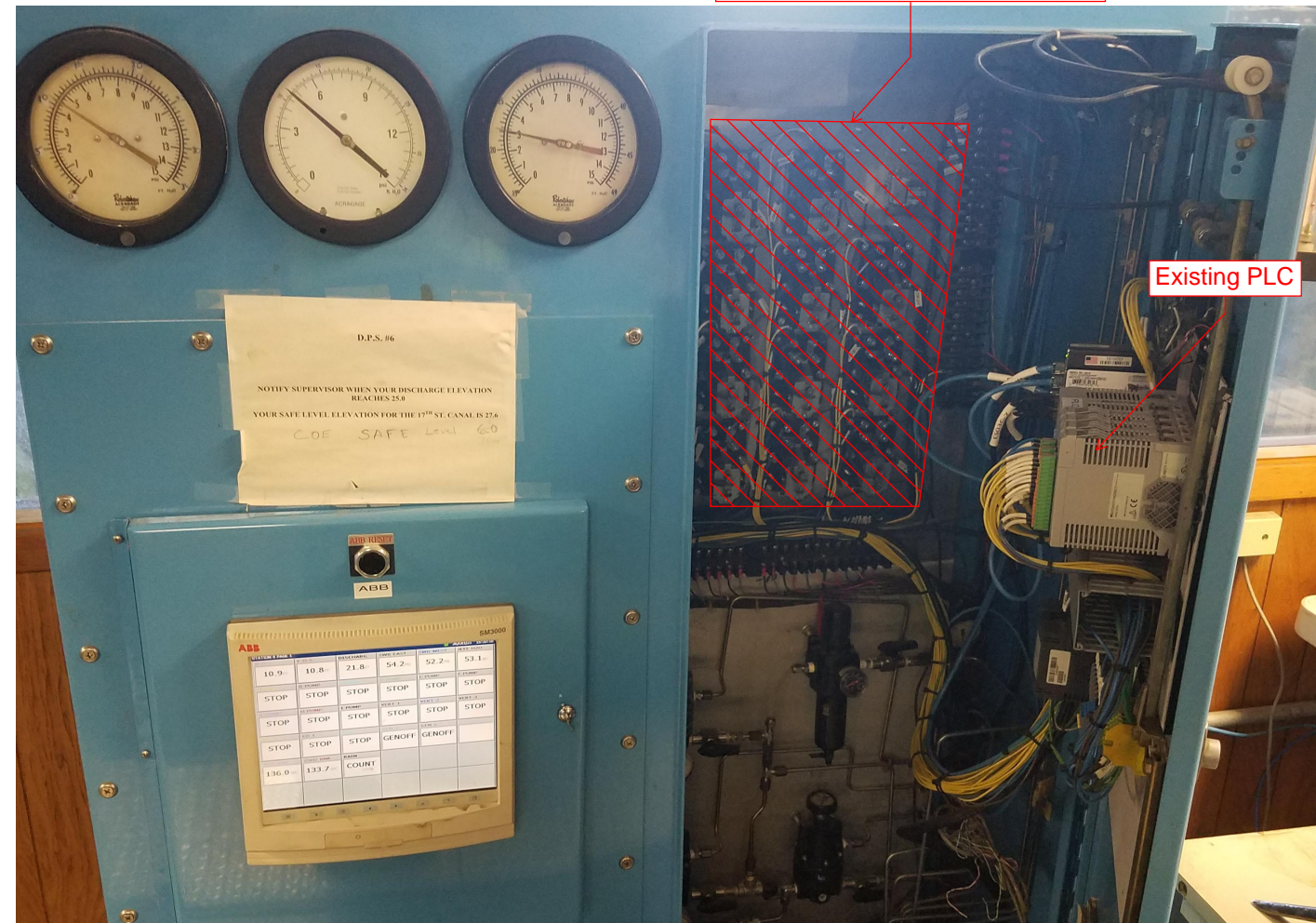
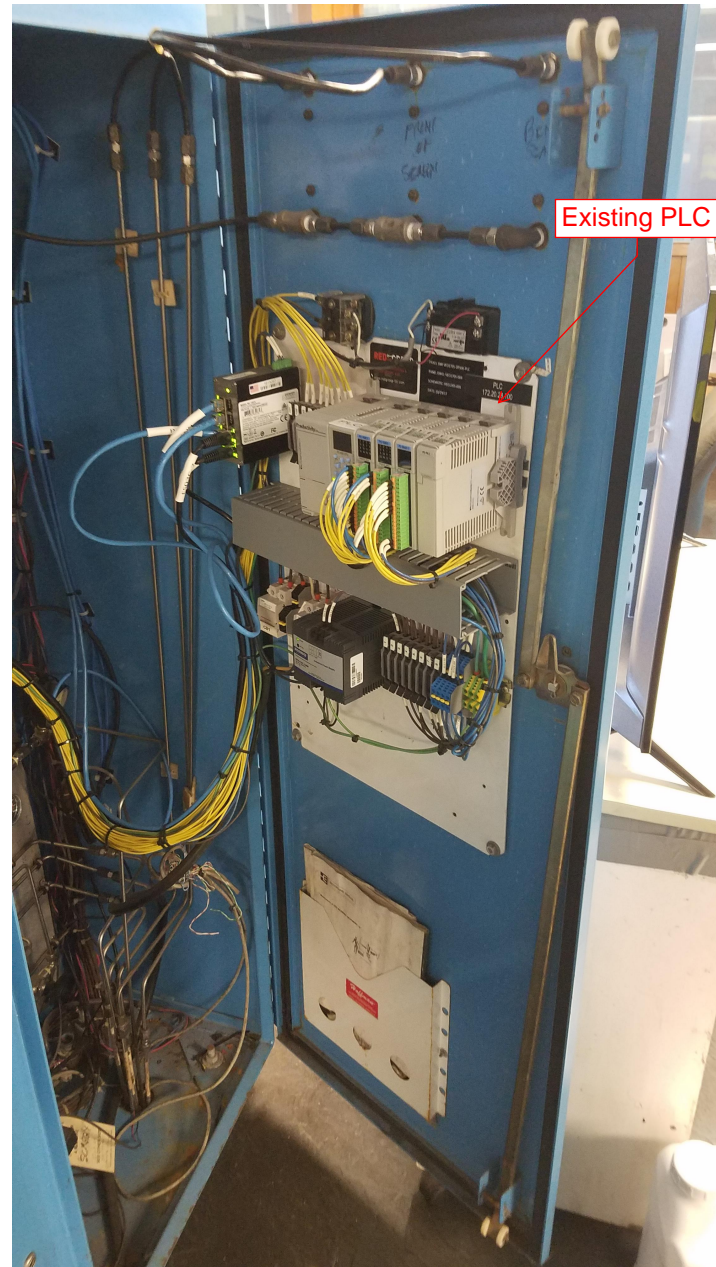
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DESIGNED BY:	WBS
CHECKED BY:	HUN
DESIGNED BY:	WBS
DATE:	4/26/20
SCALE:	1"=1'
FILE NAME:	W912P9600-002-0004_M143

U.S. ARMY CORPS OF ENGINEERS
HURRICANE PROTECTION OFFICE
NEW ORLEANS, LOUISIANA
NEW ORLEANS SMALL BUSINESS
ENGINEERING, LLP
A JOINT VENTURE, LLP
3608 18TH ST., SUITE 200
METAIRIE, LA 70002

STORM PROOFING DRAINAGE PUMP STATION NOS
3, 6 & 20 (OSP-06)
STORM PROOFING OF GENERATOR BUILDING AT PUMP
STATION NO. 20
SEWERAGE AND WATER BOARD OF NEW ORLEANS
GROUND FL. AREA 3 MECHANICAL PLAN
PUMP BUILDING

SHEET IDENTIFICATION
M-143

CAD FILE NAME:



NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS06-HPA-VT-06000	Pump A Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS06-HPA-VT-06001	Pump A NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	VI	DPS06-HPA-VT-06002	Pump A DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPS06-HPA-VT-06003	Pump A Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	LS	DPS06-HPA-LS-06004	Pump A Oil Level	Ashcroft		N/A	N/A	DI					
6	TI	DPS06-HPA-TT-06005	Pump A NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS06-HPA-TT-06006	Pump A DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	TI	DPS06-HPA-TT-06007	Pump A Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
9	SI	DPS06-HPA-ST-06008	Pump A RPM	Banner		0-2000	RPM	AI					
10	TI	DPS06-HPA-TT-06009	Pump A Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS06-HPB-VT-06025	Pump B Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS06-HPB-VT-06026	Pump B NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	VI	DPS06-HPB-VT-06027	Pump B DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	VI	DPS06-HPB-VT-06028	Pump B Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
15	LS	DPS06-HPB-LS-06029	Pump B Oil Level	Ashcroft		N/A	N/A	DI					
16	TI	DPS06-HPB-TT-06030	Pump B NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS06-HPB-TT-06031	Pump B DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	TI	DPS06-HPB-TT-06032	Pump B Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
19	SI	DPS06-HPB-ST-06033	Pump B RPM	Banner		0-2000	RPM	AI					
20	TI	DPS06-HPB-TT-06034	Pump B Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
21	VI	DPS06-HPC-VT-06050	Pump C Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	VI	DPS06-HPC-VT-06051	Pump C NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
23	VI	DPS06-HPC-VT-06052	Pump C DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
24	VI	DPS06-HPC-VT-06053	Pump C Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
25	LS	DPS06-HPC-LS-06054	Pump C Oil Level	Ashcroft		N/A	N/A	DI					
26	TI	DPS06-HPC-TT-06055	Pump C NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
27	TI	DPS06-HPC-TT-06056	Pump C DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
28	TI	DPS06-HPC-TT-06057	Pump C Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
29	SI	DPS06-HPC-ST-06058	Pump C RPM	Banner		0-2000	RPM	AI					
30	TI	DPS06-HPC-TT-06059	Pump C Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
31	VI	DPS06-HPD-VT-06075	Pump D Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
32	VI	DPS06-HPD-VT-06076	Pump D NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
33	VI	DPS06-HPD-VT-06077	Pump D DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
34	VI	DPS06-HPD-VT-06078	Pump D Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
35	LS	DPS06-HPD-LS-06079	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
36	TI	DPS06-HPD-TT-06080	Pump D NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
37	TI	DPS06-HPD-TT-06081	Pump D DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
38	TI	DPS06-HPD-TT-06082	Pump D Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
39	SI	DPS06-HPD-ST-06083	Pump D RPM	Banner		0-2000	RPM	AI					
40	TI	DPS06-HPD-TT-06084	Pump D Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
41	VI	DPS06-HPE-VT-06100	Pump E Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
42	VI	DPS06-HPE-VT-06101	Pump E NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
43	VI	DPS06-HPE-VT-06102	Pump E DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
44	VI	DPS06-HPE-VT-06103	Pump E Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
45	LS	DPS06-HPE-LS-06104	Pump E Oil Level	Ashcroft		N/A	N/A	DI					
46	TI	DPS06-HPE-TT-06105	Pump E NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
47	TI	DPS06-HPE-TT-06106	Pump E DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor

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48	TI	DPS06-HPE-TT-06107	Pump E Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
49	SI	DPS06-HPE-ST-06108	Pump E RPM	Banner		0-2000	RPM	AI					
50	TI	DPS06-HPE-TT-06109	Pump E Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
51	VI	DPS06-HPF-VT-06125	Pump F Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
52	VI	DPS06-HPF-VT-06126	Pump F NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
53	VI	DPS06-HPF-VT-06127	Pump F DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
54	VI	DPS06-HPF-VT-06128	Pump F Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
55	LS	DPS06-HPF-LS-06129	Pump F Oil Level	Ashcroft		N/A	N/A	DI					
56	TI	DPS06-HPF-TT-06130	Pump F NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
57	TI	DPS06-HPF-TT-06131	Pump F DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
58	TI	DPS06-HPF-TT-06132	Pump F Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
59	SI	DPS06-HPF-ST-06133	Pump F RPM	Banner		0-2000	RPM	AI					
60	TI	DPS06-HPF-TT-06134	Pump F Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
61	VI	DPS06-HPG-VT-06150	Pump G Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
62	VI	DPS06-HPG-VT-06151	Pump G NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
63	VI	DPS06-HPG-VT-06152	Pump G DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
64	VI	DPS06-HPG-VT-06153	Pump G Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
65	LS	DPS06-HPG-LS-06154	Pump G Oil Level	Ashcroft		N/A	N/A	DI					
66	TI	DPS06-HPG-TT-06155	Pump G NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
67	TI	DPS06-HPG-TT-06156	Pump G DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
68	TI	DPS06-HPG-TT-06157	Pump G Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
69	SI	DPS06-HPG-ST-06158	Pump G RPM	Banner		0-2000	RPM	AI					
70	TI	DPS06-HPG-TT-06159	Pump G Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
71	PI	DPS06-HPG-PT-06160	Pump G Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
72	TI	DPS06-HPG-TT-06161	Pump G Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
73	VI	DPS06-HPG-VT-06162	Pump G Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
74	TI	DPS06-HPG-TT-06163	Pump G Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
75	VI	DPS06-HPH-VT-06175	Pump H Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
76	VI	DPS06-HPH-VT-06176	Pump H NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
77	VI	DPS06-HPH-VT-06177	Pump H DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
78	VI	DPS06-HPH-VT-06178	Pump H Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
79	LS	DPS06-HPH-LS-06179	Pump H Oil Level	Ashcroft		N/A	N/A	DI					
80	TI	DPS06-HPH-TT-06180	Pump H NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
81	TI	DPS06-HPH-TT-06181	Pump H DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
82	TI	DPS06-HPH-TT-06182	Pump H Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
83	SI	DPS06-HPH-ST-06183	Pump H RPM	Banner		0-2000	RPM	AI					
84	TI	DPS06-HPH-TT-06184	Pump H Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
85	PI	DPS06-HPH-PT-06185	Pump H Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
86	TI	DPS06-HPH-TT-06186	Pump H Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
87	VI	DPS06-HPH-VT-06187	Pump H Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
88	TI	DPS06-HPH-TT-06188	Pump H Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
89	VI	DPS06-HPI-VT-06200	Pump I Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
90	VI	DPS06-HPI-VT-06201	Pump I NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
91	VI	DPS06-HPI-VT-06202	Pump I DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
92	VI	DPS06-HPI-VT-06203	Pump I Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
93	LS	DPS06-HPI-LS-06204	Pump I Oil Level	Ashcroft		N/A	N/A	DI					
94	TI	DPS06-HPI-TT-06205	Pump I NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
95	TI	DPS06-HPI-TT-06206	Pump I DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
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96	TI	DPS06-HPI-TT-06207	Pump I Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
97	SI	DPS06-HPI-ST-06208	Pump I RPM	Banner		0-2000	RPM	AI					
98	TI	DPS06-HPI-TT-06209	Pump I Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
99	PI	DPS06-HPI-PT-06210	Pump I Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
100	TI	DPS06-HPI-TT-06211	Pump I Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
101	VI	DPS06-HPI-VT-06212	Pump I Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
102	TI	DPS06-HPI-TT-06213	Pump I Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
103	TI	DPS06-VP1-TT-06225	Pump V1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
104	TI	DPS06-VP1-TT-06226	Pump V1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
105	VI	DPS06-VP1-VT-06227	Pump V1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
106	VI	DPS06-VP1-VT-06228	Pump V1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
107	TI	DPS06-VP2-TT-06250	Pump V2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
108	TI	DPS06-VP2-TT-06251	Pump V2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
109	VI	DPS06-VP2-VT-06252	Pump V2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
110	VI	DPS06-VP2-VT-06253	Pump V2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
111	TI	DPS06-VP3-TT-06275	Pump V3 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
112	TI	DPS06-VP3-TT-06276	Pump V3 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
113	VI	DPS06-VP3-VT-06277	Pump V3 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
114	VI	DPS06-VP3-VT-06278	Pump V3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
115	TI	DPS06-VP4-TT-06300	Pump V4 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
116	TI	DPS06-VP4-TT-06301	Pump V4 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
117	VI	DPS06-VP4-VT-06302	Pump V4 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
118	VI	DPS06-VP4-VT-06303	Pump V4 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
119	TI	DPS06-CD1-TT-06325	Pump CD1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
120	TI	DPS06-CD1-TT-06326	Pump CD1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
121	VI	DPS06-CD1-VT-06327	Pump CD1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
122	VI	DPS06-CD1-VT-06328	Pump CD1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
123	TI	DPS06-CD2-TT-06350	Pump CD1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
124	TI	DPS06-CD2-TT-06351	Pump CD1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
125	VI	DPS06-CD2-VT-06352	Pump CD1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
126	VI	DPS06-CD2-VT-06353	Pump CD1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
127	J1	DPS06-GEN1-JT-06375	Generator 1 Power	SEL		0-4160	VOLTS	AI					Device located in electrical gear
128	J1	DPS06-GEN2-JT-06400	Generator 2 Power	SEL		0-4160	VOLTS	AI					Device located in electrical gear
129	J1	DPS06-HGEN-JT-06425	House Generator Power	SEL		0-100	VOLTS	AI					Device located in electrical gear
130	TI	DPS06-VAP1-TT-06450	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
131	VI	DPS06-VAP1-VT-06451	Vacuum Pump 1 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
132	PI	DPS06-VAP1-PT-06452	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
133	TI	DPS06-VAP2-TT-06475	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
134	VI	DPS06-VAP2-VT-06476	Vacuum Pump 2 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
135	PI	DPS06-VAP2-PT-06477	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
136	TI	DPS06-VAP3-TT-06500	Vacuum Pump 3 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
137	VI	DPS06-VAP3-VT-06501	Vacuum Pump 3 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
138	PI	DPS06-VAP3-PT-06502	Vacuum Pump 3 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
139	TI	DPS06-VAP4-TT-06525	Vacuum Pump 4 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
140	VI	DPS06-VAP4-VT-06526	Vacuum Pump 4 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
141	PI	DPS06-VAP4-PT-06527	Vacuum Pump 4 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
142	TI	DPS06-VAP5-TT-06550	Vacuum Pump 5 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
143	VI	DPS06-VAP5-VT-06551	Vacuum Pump 5 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
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144	PI	DPS06-VAP5-PT-06552	Vacuum Pump 5 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
145	LS	DPS06-TNK1-LS-06575	Diesel Tank 1 Level	Ashcroft		N/A	N/A	DI					
146	LS	DPS06-TNK2-LS-06600	Diesel Tank 2 Level	Ashcroft		N/A	N/A	DI					
147	LI	DPS06-SCT-LT-06650	Suction Water Level FOS	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
148	LI	DPS06-SCT-LT-06651	Suction Water Level BOS	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
149	LI	DPS06-DSCH-LT-06652	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS06-HPA-VT-06000	Pump A Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
2	VI	DPS06-HPA-VT-06001	Pump A NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
3	VI	DPS06-HPA-VT-06002	Pump A DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
4	VI	DPS06-HPA-VT-06003	Pump A Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
5	LS	DPS06-HPA-LS-06004	Pump A Oil Level	PLC-DPS06	DI						N/A	N/A	
6	TI	DPS06-HPA-TT-06005	Pump A NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
7	TI	DPS06-HPA-TT-06006	Pump A DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
8	TI	DPS06-HPA-TT-06007	Pump A Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
9	SI	DPS06-HPA-ST-06008	Pump A RPM	PLC-DPS06	AI						0-2000	RPM	
10	TI	DPS06-HPA-TT-06009	Pump A Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
11	VI	DPS06-HPB-VT-06025	Pump B Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
12	VI	DPS06-HPB-VT-06026	Pump B NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
13	VI	DPS06-HPB-VT-06027	Pump B DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
14	VI	DPS06-HPB-VT-06028	Pump B Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
15	LS	DPS06-HPB-LS-06029	Pump B Oil Level	PLC-DPS06	DI						N/A	N/A	
16	TI	DPS06-HPB-TT-06030	Pump B NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
17	TI	DPS06-HPB-TT-06031	Pump B DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
18	TI	DPS06-HPB-TT-06032	Pump B Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
19	SI	DPS06-HPB-ST-06033	Pump B RPM	PLC-DPS06	AI						0-2000	RPM	
20	TI	DPS06-HPB-TT-06034	Pump B Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
21	VI	DPS06-HPC-VT-06050	Pump C Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
22	VI	DPS06-HPC-VT-06051	Pump C NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
23	VI	DPS06-HPC-VT-06052	Pump C DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
24	VI	DPS06-HPC-VT-06053	Pump C Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
25	LS	DPS06-HPC-LS-06054	Pump C Oil Level	PLC-DPS06	DI						N/A	N/A	
26	TI	DPS06-HPC-TT-06055	Pump C NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
27	TI	DPS06-HPC-TT-06056	Pump C DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
28	TI	DPS06-HPC-TT-06057	Pump C Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
29	SI	DPS06-HPC-ST-06058	Pump C RPM	PLC-DPS06	AI						0-2000	RPM	
30	TI	DPS06-HPC-TT-06059	Pump C Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
31	VI	DPS06-HPD-VT-06075	Pump D Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
32	VI	DPS06-HPD-VT-06076	Pump D NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
33	VI	DPS06-HPD-VT-06077	Pump D DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
34	VI	DPS06-HPD-VT-06078	Pump D Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
35	LS	DPS06-HPD-LS-06079	Pump D Oil Level	PLC-DPS06	DI						N/A	N/A	
36	TI	DPS06-HPD-TT-06080	Pump D NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
37	TI	DPS06-HPD-TT-06081	Pump D DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
38	TI	DPS06-HPD-TT-06082	Pump D Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
39	SI	DPS06-HPD-ST-06083	Pump D RPM	PLC-DPS06	AI						0-2000	RPM	
40	TI	DPS06-HPD-TT-06084	Pump D Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
41	VI	DPS06-HPE-VT-06100	Pump E Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
42	VI	DPS06-HPE-VT-06101	Pump E NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
43	VI	DPS06-HPE-VT-06102	Pump E DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
44	VI	DPS06-HPE-VT-06103	Pump E Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
45	LS	DPS06-HPE-LS-06104	Pump E Oil Level	PLC-DPS06	DI						N/A	N/A	

FACILITY PLC INPUT-OUTPUT LIST

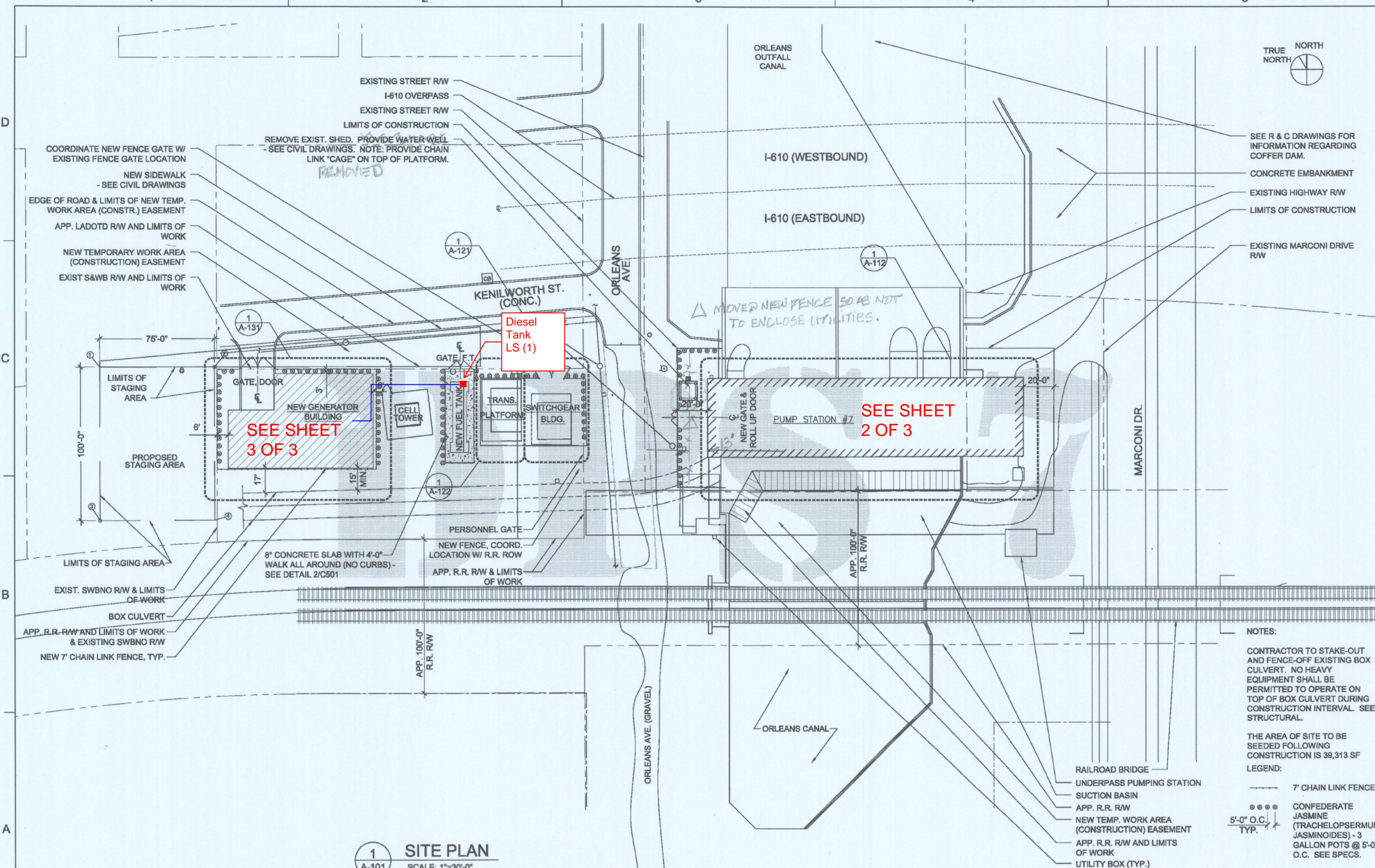
SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
46	TI	DPS06-HPE-TT-06105	Pump E NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
47	TI	DPS06-HPE-TT-06106	Pump E DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
48	TI	DPS06-HPE-TT-06107	Pump E Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
49	SI	DPS06-HPE-ST-06108	Pump E RPM	PLC-DPS06	AI						0-2000	RPM	
50	TI	DPS06-HPE-TT-06109	Pump E Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
51	VI	DPS06-HPF-VT-06125	Pump F Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
52	VI	DPS06-HPF-VT-06126	Pump F NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
53	VI	DPS06-HPF-VT-06127	Pump F DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
54	VI	DPS06-HPF-VT-06128	Pump F Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
55	LS	DPS06-HPF-LS-06129	Pump F Oil Level	PLC-DPS06	DI						N/A	N/A	
56	TI	DPS06-HPF-TT-06130	Pump F NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
57	TI	DPS06-HPF-TT-06131	Pump F DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
58	TI	DPS06-HPF-TT-06132	Pump F Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
59	SI	DPS06-HPF-ST-06133	Pump F RPM	PLC-DPS06	AI						0-2000	RPM	
60	TI	DPS06-HPF-TT-06134	Pump F Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
61	VI	DPS06-HPG-VT-06150	Pump G Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
62	VI	DPS06-HPG-VT-06151	Pump G NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
63	VI	DPS06-HPG-VT-06152	Pump G DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
64	VI	DPS06-HPG-VT-06153	Pump G Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
65	LS	DPS06-HPG-LS-06154	Pump G Oil Level	PLC-DPS06	DI						N/A	N/A	
66	TI	DPS06-HPG-TT-06155	Pump G NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
67	TI	DPS06-HPG-TT-06156	Pump G DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
68	TI	DPS06-HPG-TT-06157	Pump G Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
69	SI	DPS06-HPG-ST-06158	Pump G RPM	PLC-DPS06	AI						0-2000	RPM	
70	TI	DPS06-HPG-TT-06159	Pump G Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
71	PI	DPS06-HPG-PT-06160	Pump G Gearbox Oil Pressure	PLC-DPS06	AI						0-100	PSI	
72	TI	DPS06-HPG-TT-06161	Pump G Gearbox Oil Temperature	PLC-DPS06	AI						0-221	DEG F	
73	VI	DPS06-HPG-VT-06162	Pump G Gearbox Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
74	TI	DPS06-HPG-TT-06163	Pump G Gearbox Temperature	PLC-DPS06	AI						0-221	DEG F	
75	VI	DPS06-HPH-VT-06175	Pump H Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
76	VI	DPS06-HPH-VT-06176	Pump H NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
77	VI	DPS06-HPH-VT-06177	Pump H DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
78	VI	DPS06-HPH-VT-06178	Pump H Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
79	LS	DPS06-HPH-LS-06179	Pump H Oil Level	PLC-DPS06	DI						N/A	N/A	
80	TI	DPS06-HPH-TT-06180	Pump H NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
81	TI	DPS06-HPH-TT-06181	Pump H DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
82	TI	DPS06-HPH-TT-06182	Pump H Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
83	SI	DPS06-HPH-ST-06183	Pump H RPM	PLC-DPS06	AI						0-2000	RPM	
84	TI	DPS06-HPH-TT-06184	Pump H Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
85	PI	DPS06-HPH-PT-06185	Pump H Gearbox Oil Pressure	PLC-DPS06	AI						0-100	PSI	
86	TI	DPS06-HPH-TT-06186	Pump H Gearbox Oil Temperature	PLC-DPS06	AI						0-221	DEG F	
87	VI	DPS06-HPH-VT-06187	Pump H Gearbox Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
88	TI	DPS06-HPH-TT-06188	Pump H Gearbox Temperature	PLC-DPS06	AI						0-221	DEG F	
89	VI	DPS06-HPI-VT-06200	Pump I Motor Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
90	VI	DPS06-HPI-VT-06201	Pump I NDE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
91	VI	DPS06-HPI-VT-06202	Pump I DE Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
92	VI	DPS06-HPI-VT-06203	Pump I Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
93	LS	DPS06-HPI-LS-06204	Pump I Oil Level	PLC-DPS06	DI						N/A	N/A	
94	TI	DPS06-HPI-TT-06205	Pump I NDE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
95	TI	DPS06-HPI-TT-06206	Pump I DE Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
96	TI	DPS06-HPI-TT-06207	Pump I Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
97	SI	DPS06-HPI-ST-06208	Pump I RPM	PLC-DPS06	AI						0-2000	RPM	
98	TI	DPS06-HPI-TT-06209	Pump I Motor Temperature	PLC-DPS06	AI						0-221	DEG F	
99	PI	DPS06-HPI-PT-06210	Pump I Gearbox Oil Pressure	PLC-DPS06	AI						0-100	PSI	
100	TI	DPS06-HPI-TT-06211	Pump I Gearbox Oil Temperature	PLC-DPS06	AI						0-221	DEG F	
101	VI	DPS06-HPI-VT-06212	Pump I Gearbox Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
102	TI	DPS06-HPI-TT-06213	Pump I Gearbox Temperature	PLC-DPS06	AI						0-221	DEG F	
103	TI	DPS06-VP1-TT-06225	Pump V1 Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
104	TI	DPS06-VP1-TT-06226	Pump V1 Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
105	VI	DPS06-VP1-VT-06227	Pump V1 Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
106	VI	DPS06-VP1-VT-06228	Pump V1 Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
107	TI	DPS06-VP2-TT-06250	Pump V2 Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
108	TI	DPS06-VP2-TT-06251	Pump V2 Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
109	VI	DPS06-VP2-VT-06252	Pump V2 Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
110	VI	DPS06-VP2-VT-06253	Pump V2 Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
111	TI	DPS06-VP3-TT-06275	Pump V3 Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
112	TI	DPS06-VP3-TT-06276	Pump V3 Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
113	VI	DPS06-VP3-VT-06277	Pump V3 Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
114	VI	DPS06-VP3-VT-06278	Pump V3 Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
115	TI	DPS06-VP4-TT-06300	Pump V4 Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
116	TI	DPS06-VP4-TT-06301	Pump V4 Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
117	VI	DPS06-VP4-VT-06302	Pump V4 Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
118	VI	DPS06-VP4-VT-06303	Pump V4 Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
119	TI	DPS06-CD1-TT-06325	Pump CD1 Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
120	TI	DPS06-CD1-TT-06326	Pump CD1 Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
121	VI	DPS06-CD1-VT-06327	Pump CD1 Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
122	VI	DPS06-CD1-VT-06328	Pump CD1 Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
123	TI	DPS06-CD2-TT-06350	Pump CD1 Thrust Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
124	TI	DPS06-CD2-TT-06351	Pump CD1 Radial Bearing Temperature	PLC-DPS06	AI						0-221	DEG F	
125	VI	DPS06-CD2-VT-06352	Pump CD1 Thrust Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
126	VI	DPS06-CD2-VT-06353	Pump CD1 Radial Bearing Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
127	JI	DPS06-GEN1-JT-06375	Generator 1 Power	PLC-DPS06	AI						0-4160	VOLTS	
128	PI	DPS06-GEN1-PT-06376	Generator 1 Fuel Pressure	PLC-DPS06	AI						0-100	PSI	Signal derived from generator control panel
129	PI	DPS06-GEN1-PT-06377	Generator 1 Oil Pressure	PLC-DPS06	AI						0-100	PSI	Signal derived from generator control panel
130	TI	DPS06-GEN1-TT-06378	Generator 1 Oil Temperature	PLC-DPS06	AI						0-221	DEG F	Signal derived from generator control panel
131	VI	DPS06-GEN1-VT-06379	Generator 1 Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel
132	TI	DPS06-GEN1-TT-06380	Generator 1 Temperature	PLC-DPS06	AI						0-221	DEG F	Signal derived from generator control panel
133	JI	DPS06-GEN2-JT-06400	Generator 2 Power	PLC-DPS06	AI						0-4160	VOLTS	
134	PI	DPS06-GEN2-PT-06401	Generator 2 Fuel Pressure	PLC-DPS06	AI						0-100	PSI	Signal derived from generator control panel
135	PI	DPS06-GEN2-PT-06402	Generator 2 Oil Pressure	PLC-DPS06	AI						0-100	PSI	Signal derived from generator control panel

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
136	TI	DPS06-GEN2-TT-06403	Generator 2 Oil Temperature	PLC-DPS06	AI						0-221	DEG F	Signal derived from generator control panel
137	VI	DPS06-GEN2-VT-06404	Generator 2 Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel
138	TI	DPS06-GEN2-TT-06405	Generator 2 Temperature	PLC-DPS06	AI						0-221	DEG F	Signal derived from generator control panel
139	JI	DPS06-HG-JT-06425	House Generator Power	PLC-DPS06	AI						0-480	VOLTS	
140	PI	DPS06-HG-PT-06426	House Generator Fuel Pressure	PLC-DPS06	AI						0-100	PSI	
141	PI	DPS06-HG-PT-06427	House Generator Oil Pressure	PLC-DPS06	AI						0-100	PSI	
142	TI	DPS06-HG-TT-06428	House Generator Oil Temperature	PLC-DPS06	AI						0-221	DEG F	
143	VI	DPS06-HG-VT-06429	House Generator Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
144	TI	DPS06-HG-TT-06430	House Generator Temperature	PLC-DPS06	AI						0-221	DEG F	
145	TI	DPS06-VAP1-TT-06450	Vacuum Pump 1 Temp	PLC-DPS06	AI						0-221	DEG F	
146	VI	DPS06-VAP1-VT-06451	Vacuum Pump 1 Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
147	PI	DPS06-VAP1-PT-06452	Vacuum Pump 1 Pressure	PLC-DPS06	AI						-15-0	PSI	
148	TI	DPS06-VAP2-TT-06475	Vacuum Pump 2 Temp	PLC-DPS06	AI						0-221	DEG F	
149	VI	DPS06-VAP2-VT-06476	Vacuum Pump 2 Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
150	PI	DPS06-VAP2-PT-06477	Vacuum Pump 2 Pressure	PLC-DPS06	AI						-15-0	PSI	
151	TI	DPS06-VAP3-TT-06500	Vacuum Pump 3 Temp	PLC-DPS06	AI						0-221	DEG F	
152	VI	DPS06-VAP3-VT-06501	Vacuum Pump 3 Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
153	PI	DPS06-VAP3-PT-06502	Vacuum Pump 3 Pressure	PLC-DPS06	AI						-15-0	PSI	
154	TI	DPS06-VAP4-TT-06525	Vacuum Pump 4 Temp	PLC-DPS06	AI						0-221	DEG F	
155	VI	DPS06-VAP4-VT-06526	Vacuum Pump 4 Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
156	PI	DPS06-VAP4-PT-06527	Vacuum Pump 4 Pressure	PLC-DPS06	AI						-15-0	PSI	
157	TI	DPS06-VAP5-TT-06550	Vacuum Pump 5 Temp	PLC-DPS06	AI						0-221	DEG F	
158	VI	DPS06-VAP5-VT-06551	Vacuum Pump 5 Vibration	PLC-DPS06	AI						0-1.8	IN/SEC RMS	
159	PI	DPS06-VAP5-PT-06552	Vacuum Pump 5 Pressure	PLC-DPS06	AI						-15-0	PSI	
160	LS	DPS06-TNK1-LS-06575	Diesel Tank 1 Level	PLC-DPS06	DI						N/A	N/A	
161	LS	DPS06-TNK2-LS-06600	Diesel Tank 2 Level	PLC-DPS06	DI						N/A	N/A	
162	LI	DPS06-SCT-LT-06650	Suction Water Level FOS	PLC-DPS06	AI						0-50	FT	
163	LI	DPS06-SCT-LT-06651	Suction Water Level BOS	PLC-DPS06	AI						0-50	FT	
164	LI	DPS06-DSCH-LT-06652	Channel Discharge Basin Level	PLC-DPS06	AI						0-50	FT	



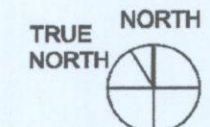
Date	Appr.	Mark	Description

DATE: MAY 24 2010
 DESIGNED BY: D.H. G.S. RK
 CHECKED BY: MOBBE
 SUBMITTED BY: MOBBE
 CONTRACT NO.: W1296-07-5-0029
 FILE NUMBER: H-47664
 PLOT DATE:
 FILE NAME:
 SIZE:
 ANSI D: A-101

U.S. ARMY CORPS OF ENGINEERS
 HURRICANE PROTECTION OFFICE
 NEW ORLEANS, LOUISIANA
 NEW ORLEANS SMALL BUSINESS
 ENGINEERING, LLP
 3815 PINEVILLE BLVD
 METairie, LA 70002

GENERATOR INSTALLATION AND STORM
 PROOFING AT DRAINAGE PUMP STATION (DPS) 7
 (OSP) - NEW ORLEANS PARISH, LA
 SITE PLAN
 DRAINAGE PUMP STATION No. 7

SHEET
 IDENTIFICATION
A-101



SEE R & C DRAWINGS FOR
 INFORMATION REGARDING
 COFFER DAM.
 CONCRETE EMBANKMENT
 EXISTING HIGHWAY R/W
 LIMITS OF CONSTRUCTION
 EXISTING MARCONI DRIVE
 R/W

Δ MOVED NEW FENCE SO AS NOT
 TO ENCLOSE UTILITIES.

SEE SHEET
2 OF 3

SEE SHEET
3 OF 3

Diesel
 Tank
 LS (1)

NOTES:
 CONTRACTOR TO STAKE-OUT
 AND FENCE-OFF EXISTING BOX
 CULVERT. NO HEAVY
 EQUIPMENT SHALL BE
 PERMITTED TO OPERATE ON
 TOP OF BOX CULVERT DURING
 CONSTRUCTION INTERVAL. SEE
 STRUCTURAL.

THE AREA OF SITE TO BE
 SEEDED FOLLOWING
 CONSTRUCTION IS 39,313 SF

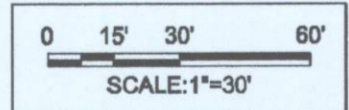
LEGEND:
 --- 7" CHAIN LINK FENCE
 ○○○○ CONFEDERATE
 5'-0" O.C. JASMINE
 TYP. (TRACHELOPSENUM
 JASMINOIDES) - 3
 GALLON POTS @ 5'-0"
 O.C. SEE SPECS.

RAILROAD BRIDGE
 UNDERPASS PUMPING STATION
 SUCTION BASIN
 APP. R.R. R/W
 NEW TEMP. WORK AREA
 (CONSTRUCTION) EASEMENT
 APP. R.R. R/W AND LIMITS
 OF WORK
 UTILITY BOX (TYP.)

1
A-101
SITE PLAN
 SCALE: 1"=30'-0"

Installation Notes

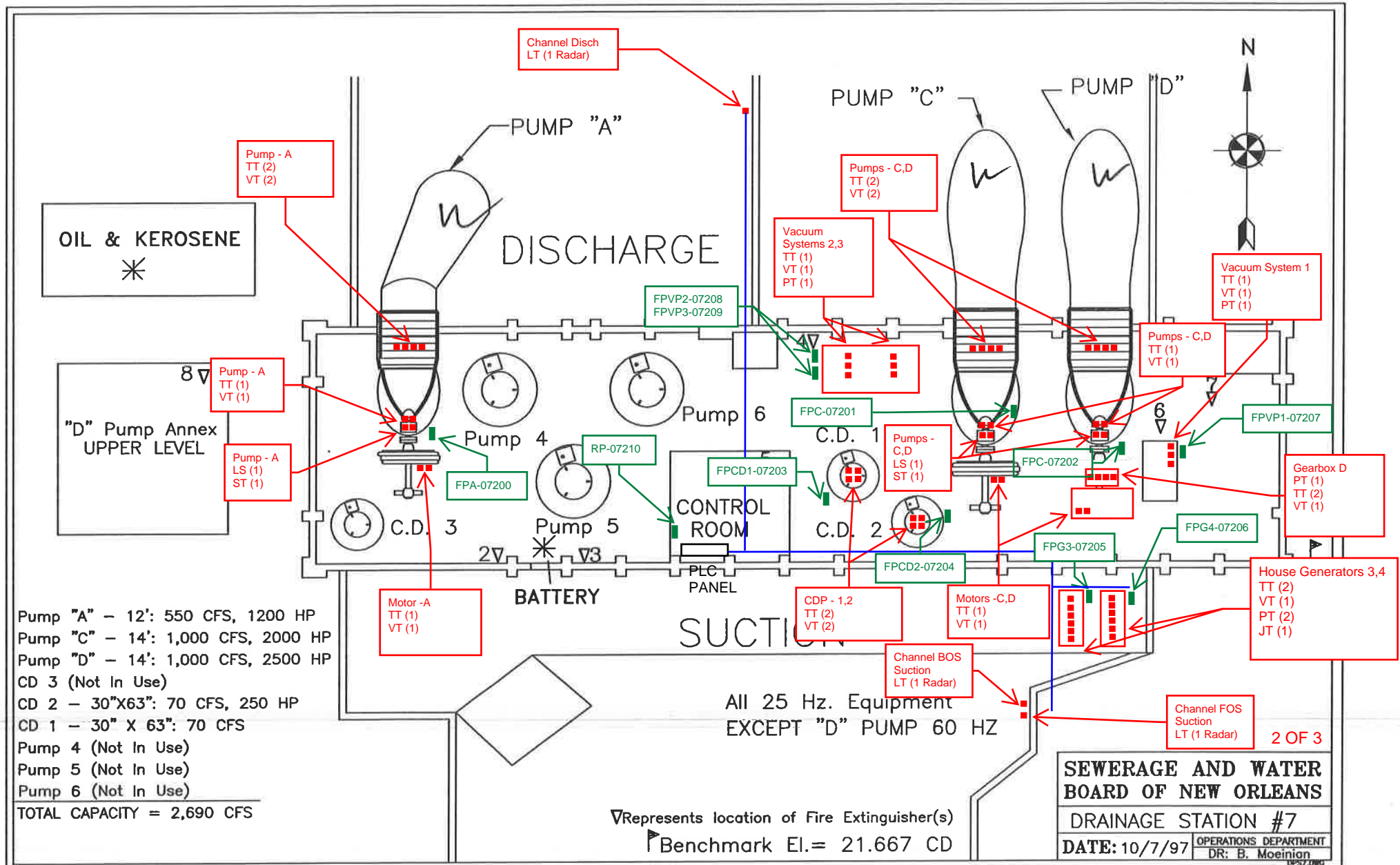
- Actual location of existing equipment to be verified by contractor.
- Coordinate installation and location of instrumentation, panels, and related devices with Owner
- Contractor to verify cable and conduit lengths.
- All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- All analog signals to be routed in conduit using single twisted shielded pair.
- All discrete input signals to be routed in conduit using #14 AWG.
- Modbus signals to be routed in conduit using RS485 cable.
- Minimum conduit size shall be 3/4".
- Coordinate 120VAC power supply to field panels at each pump island with owner.



1 OF 3
FOR CONSTRUCTION

Installation Notes

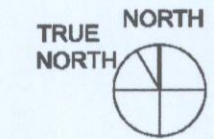
- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Installation Notes

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- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
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- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Date	Appr.	Description

NOTES:

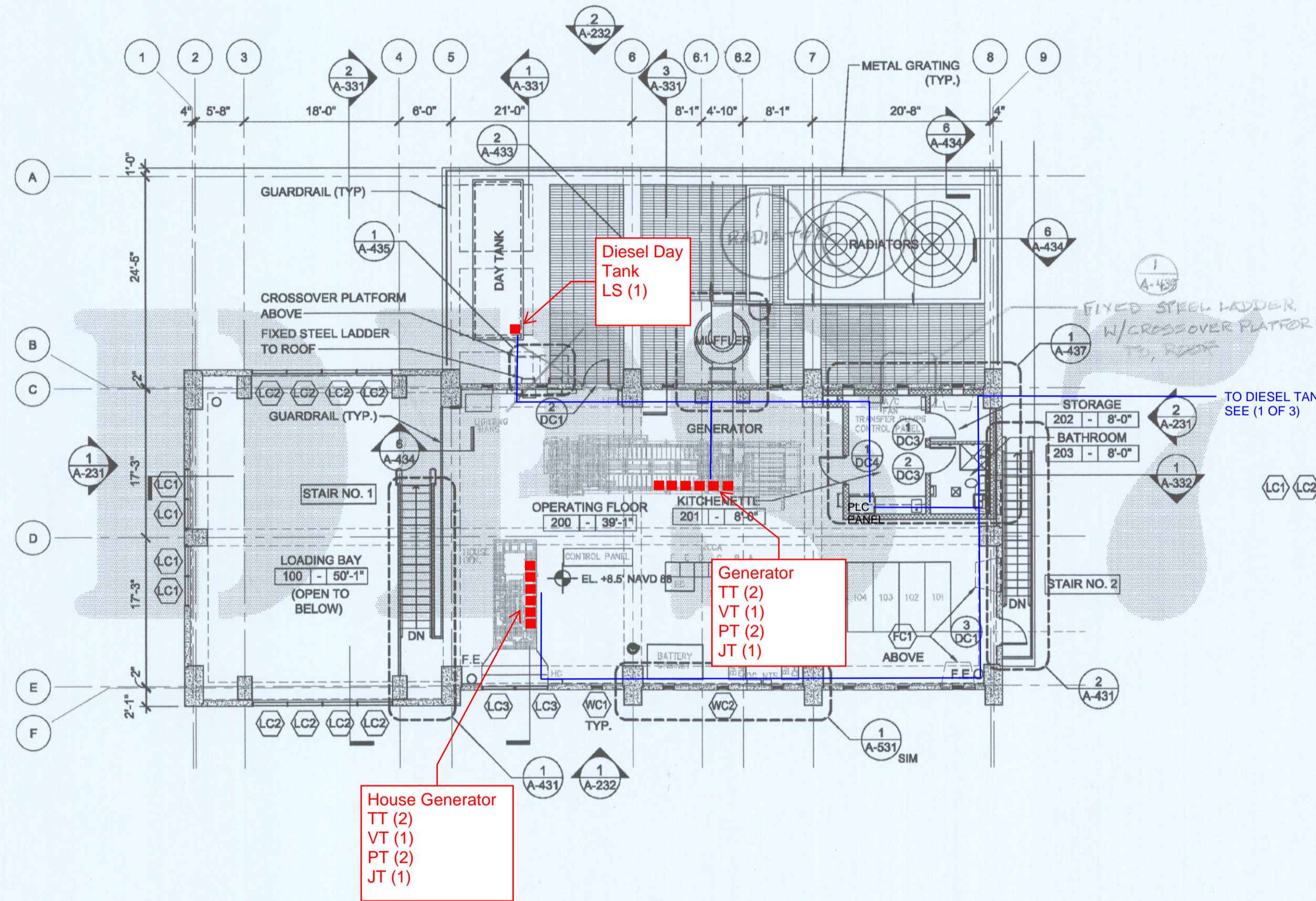
- 1. SEE ELEVATIONS FOR WINDOW SPACING DIMENSIONS.
- 2. SEE OPNGS SCHEDULE SHEET 631.

GENERAL NOTES:

- 1. ALL EXTERIOR CONCRETE SURFACES TO RECEIVE ELASTOMERIC COATING
- 2. ALL INTERIOR CONCRETE SURFACES TO BE PAINTED.
- 3. SEE STRUCTURAL DRAWINGS.
- 4. FLOOR SLAB SHALL BE SEALED CONC.
- 5. PIPE PENETRATION THRU WALLS & FLOORS; SEE SPEC. SECTION 07.92.00
- 6. INSTALL 3A-40B:C FIRE EXTINGUISHER. F.E.'S TO BE MOUNTED USING MANUFACTURER'S STRAP-TYPE BRACKET WITH THE T/ F.E. @ MAX. 4'-0" A.F.F. & B/ F.E. @ MIN. 4" A.F.F.

KEYED NOTES: (SEE SCHEDULE, A-631)

- (WC1) PROVIDE STORM-RATED (156 MPH @ 3-SECOND GUSTS) WINDOW WITH MISSILE-IMPACT GLASS.
- (WC2) PROVIDE STORM-RATED (156 MPH @ 3-SECOND GUSTS) ALUMINUM WINDOW FRAME WITH GASKETED, 3/8" THICK ALUM. PLATE AND SLEEVE TO MATCH FRAME.
- (FC1) PROVIDE EXHAUST FAN WITH STORM-RATED (156 MPH @ 3-SECOND GUSTS), MOTORIZED SHUTTER.
- (LC1) (LC2) (LC3) (LC4) PROVIDE STORM-RATED (156 MPH @ 3-SECOND GUSTS) LOUVERS.
- (2-4) (DC1) PROVIDE STORM-RATED (156 MPH @ 3-SECOND GUSTS) DOOR GLAZED WITH MISSILE-IMPACT GLASS VISION PANEL.
- (1,2) (DC3) PROVIDE FLUSH, H.M. INTERIOR DOOR.
- (1) (DC4) PROVIDE FLUSH, INSULATED, H.M. INTERIOR DOOR WITH IMPACT RESISTANT VISION PANEL.

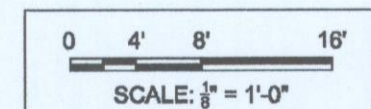


House Generator
 TT (2)
 VT (1)
 PT (2)
 JT (1)

Generator
 TT (2)
 VT (1)
 PT (2)
 JT (1)

Diesel Day Tank
 LS (1)

1 OPERATIONS FLOOR PLAN-GEN. BLDG
 A-101 SCALE: 1/8"=1'-0"



3 OF 3
FOR CONSTRUCTION

GENERATOR INSTALLATION AND STORM PROOFING AT PRINCE GEORGE PUMP STATION (OSP-7) INTERIOR PUMP STATION ORLEANS PARISH, LA.
 2ND FLOOR PLAN, GENERATOR BUILDING

SHEET IDENTIFICATION
 A-132



Existing PLC

NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.



SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS07-HPA-VT-07000	Pump A NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS07-HPA-VT-07001	Pump A DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	VI	DPS07-HPA-VT-07002	Pump A Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	LS	DPS07-HPA-LS-07003	Pump A Oil Level	Ashcroft		N/A	N/A	DI					
5	TI	DPS07-HPA-TT-07004	Pump A NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS07-HPA-TT-07005	Pump A DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS07-HPA-TT-07006	Pump A Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	SI	DPS07-HPA-ST-07007	Pump A RPM	Banner		0-2000	RPM	AI					
9	VI	DPS07-HPA-VT-07008	Pump A Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
10	TI	DPS07-HPA-TT-07009	Pump A Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS07-HPC-VT-07050	Pump C NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS07-HPC-VT-07051	Pump C DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	VI	DPS07-HPC-VT-07052	Pump C Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	LS	DPS07-HPC-LS-07053	Pump C Oil Level	Ashcroft		N/A	N/A	DI					
15	TI	DPS07-HPC-TT-07054	Pump C NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
16	TI	DPS07-HPC-TT-07055	Pump C DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS07-HPC-TT-07056	Pump C Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	SI	DPS07-HPC-ST-07057	Pump C RPM	Banner		0-2000	RPM	AI					
19	VI	DPS07-HPC-VT-07058	Pump C Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
20	TI	DPS07-HPC-TT-07059	Pump C Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
21	VI	DPS07-HPD-VT-07100	Pump D NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	VI	DPS07-HPD-VT-07101	Pump D DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
23	VI	DPS07-HPD-VT-07102	Pump D Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
24	LS	DPS07-HPD-LS-07103	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
25	TI	DPS07-HPD-TT-07104	Pump D NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
26	TI	DPS07-HPD-TT-07105	Pump D DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
27	TI	DPS07-HPD-TT-07106	Pump D Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
28	SI	DPS07-HPD-ST-07107	Pump D RPM	Banner		0-2000	RPM	AI					
29	VI	DPS07-HPD-VT-07108	Pump D Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
30	TI	DPS07-HPD-TT-07109	Pump D Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
31	PI	DPS07-HPD-PT-07110	Pump D Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
32	TI	DPS07-HPD-TT-07111	Pump D Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
33	VI	DPS07-HPD-VT-07112	Pump D Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
34	TI	DPS07-HPD-TT-07113	Pump D Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
35	TI	DPS07-VAP1-TT-07150	Vacuum Pump 1 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
36	VI	DPS07-VAP1-VT-07151	Vacuum Pump 1 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
37	PI	DPS07-VAP1-PT-07152	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
38	TI	DPS07-VAP2-TT-07200	Vacuum Pump 2 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
39	VI	DPS07-VAP2-VT-07201	Vacuum Pump 2 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
40	PI	DPS07-VAP2-PT-07202	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
41	TI	DPS07-VAP3-TT-07300	Vacuum Pump 3 Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
42	VI	DPS07-VAP3-VT-07301	Vacuum Pump 3 Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
43	PI	DPS07-VAP3-PT-07302	Vacuum Pump 3 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
44	JI	DPS07-GEN-JT-07350	Generator Power	SEL		0-4160	VOLTS	AI					
45	LS	DPS07-TNK1-LS-07400	Diesel Day Tank Level	Ashcroft		N/A	N/A	DI					
46	LS	DPS07-TNK2-LS-07450	Diesel Tank Level	Ashcroft		N/A	N/A	DI					
47	JI	DPS07-HG1-JT-07500	House Generator 1 Power	SEL		0-480	VOLTS	AI					

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FACILITY INSTRUMENT INDEX

48	Jl	DPS07-HG2-JT-07550	House Generator 2 Power	SEL		0-480	VOLTS	AI					
49	Jl	DPS07-HG3-JT-07600	House Generator 3 Power	SEL		0-480	VOLTS	AI					
50	TI	DPS07-CCD1-TT-07650	Pump CD1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
51	TI	DPS07-CCD1-TT-07651	Pump CD1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
52	VI	DPS07-CCD1-VT-07652	Pump CD1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
53	VI	DPS07-CCD1-VT-07653	Pump CD1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
54	LS	DPS07-CCD1-LS-07654	Pump CD1 Oil Level	Ashcroft		N/A	N/A	DI					
55	LS	DPS07-CCD2-LS-07700	Pump CD2 Oil Level	Ashcroft		N/A	N/A	DI					
56	TI	DPS07-CCD2-TT-07701	Pump CD2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
57	TI	DPS07-CCD2-TT-07702	Pump CD2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
58	VI	DPS07-CCD2-VT-07703	Pump CD2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
59	VI	DPS07-CCD2-VT-07704	Pump CD2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
60	LI	DPS07-SCT-LT-07750	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
61	LI	DPS07-SCT-LT-07751	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
62	LI	DPS07-DSC-LT-07752	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

PREPARED BY: JMJ

CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS07-HPA-VT-07000	Pump A NDE Radial Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
2	VI	DPS07-HPA-VT-07001	Pump A DE Radial Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
3	VI	DPS07-HPA-VT-07002	Pump A Thrust Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
4	LS	DPS07-HPA-LS-07003	Pump A Oil Level	PLC-DPS07	DI						N/A	N/A	
5	TI	DPS07-HPA-TT-07004	Pump A NDE Radial Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
6	TI	DPS07-HPA-TT-07005	Pump A DE Radial Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
7	TI	DPS07-HPA-TT-07006	Pump A Thrust Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
8	SI	DPS07-HPA-ST-07007	Pump A RPM	PLC-DPS07	AI						0-2000	RPM	
9	VI	DPS07-HPA-VT-07008	Pump A Motor Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
10	TI	DPS07-HPA-TT-07009	Pump A Motor Temperature	PLC-DPS07	AI						0-221	DEG F	
11	VI	DPS07-HPC-VT-07050	Pump C NDE Radial Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
12	VI	DPS07-HPC-VT-07051	Pump C DE Radial Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
13	VI	DPS07-HPC-VT-07052	Pump C Thrust Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
14	LS	DPS07-HPC-LS-07053	Pump C Oil Level	PLC-DPS07	DI						N/A	N/A	
15	TI	DPS07-HPC-TT-07054	Pump C NDE Radial Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
16	TI	DPS07-HPC-TT-07055	Pump C DE Radial Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
17	TI	DPS07-HPC-TT-07056	Pump C Thrust Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
18	SI	DPS07-HPC-ST-07057	Pump C RPM	PLC-DPS07	AI						0-2000	RPM	
19	VI	DPS07-HPC-VT-07058	Pump C Motor Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
20	TI	DPS07-HPC-TT-07059	Pump C Motor Temperature	PLC-DPS07	AI						0-221	DEG F	
21	VI	DPS07-HPD-VT-07100	Pump D NDE Radial Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
22	VI	DPS07-HPD-VT-07101	Pump D DE Radial Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
23	VI	DPS07-HPD-VT-07102	Pump D Thrust Bearing Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
24	LS	DPS07-HPD-LS-07103	Pump D Oil Level	PLC-DPS07	DI						N/A	N/A	
25	TI	DPS07-HPD-TT-07104	Pump D NDE Radial Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
26	TI	DPS07-HPD-TT-07105	Pump D DE Radial Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
27	TI	DPS07-HPD-TT-07106	Pump D Thrust Bearing Temperature	PLC-DPS07	AI						0-221	DEG F	
28	SI	DPS07-HPD-ST-07107	Pump D RPM	PLC-DPS07	AI						0-2000	RPM	
29	VI	DPS07-HPD-VT-07108	Pump D Motor Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
30	TI	DPS07-HPD-TT-07109	Pump D Motor Temperature	PLC-DPS07	AI						0-221	DEG F	
31	PI	DPS07-HPD-PT-07110	Pump D Gearbox Oil Pressure	PLC-DPS07	AI						0-100	PSI	
32	TI	DPS07-HPD-TT-07111	Pump D Gearbox Oil Temperature	PLC-DPS07	AI						0-221	DEG F	
33	VI	DPS07-HPD-VT-07112	Pump D Gearbox Vibration	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
34	TI	DPS07-HPD-TT-07113	Pump D Gearbox Temperature	PLC-DPS07	AI						0-221	DEG F	
35	TI	DPS07-VAP1-TT-07150	Vacuum 1 Pump Temp	PLC-DPS07	AI						0-221	DEG F	
36	VI	DPS07-VAP1-VT-07151	Vacuum 1 Pump Vib	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
37	PI	DPS07-VAP1-PT-07152	Vacuum 1 Pump Pressure	PLC-DPS07	AI						-15- 0	PSI	
38	TI	DPS07-VAP2-TT-07200	Vacuum 2 Pump Temp	PLC-DPS07	AI						0-221	DEG F	
39	VI	DPS07-VAP2-VT-07201	Vacuum 2 Pump Vib	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
40	PI	DPS07-VAP2-PT-07202	Vacuum 2 Pump Pressure	PLC-DPS07	AI						-15- 0	PSI	
41	TI	DPS07-VAP3-TT-07300	Vacuum 3 Pump Temp	PLC-DPS07	AI						0-221	DEG F	
42	VI	DPS07-VAP3-VT-07301	Vacuum 3 Pump Vib	PLC-DPS07	AI						0-1.8	IN/SEC RMS	
43	PI	DPS07-VAP3-PT-07302	Vacuum 3 Pump Pressure	PLC-DPS07	AI						-15- 0	PSI	
44	J1	DPS07-GEN-JT-07350	Generator Power	PLC-DPS07	AI						0-4160	VOLTS	
45	PI	DPS07-GEN-PT-07351	Generator Fuel Pressure	PLC-DPS07	AI						0-100	PSI	Signal derived from generator control panel.

PREPARED BY: JMJ

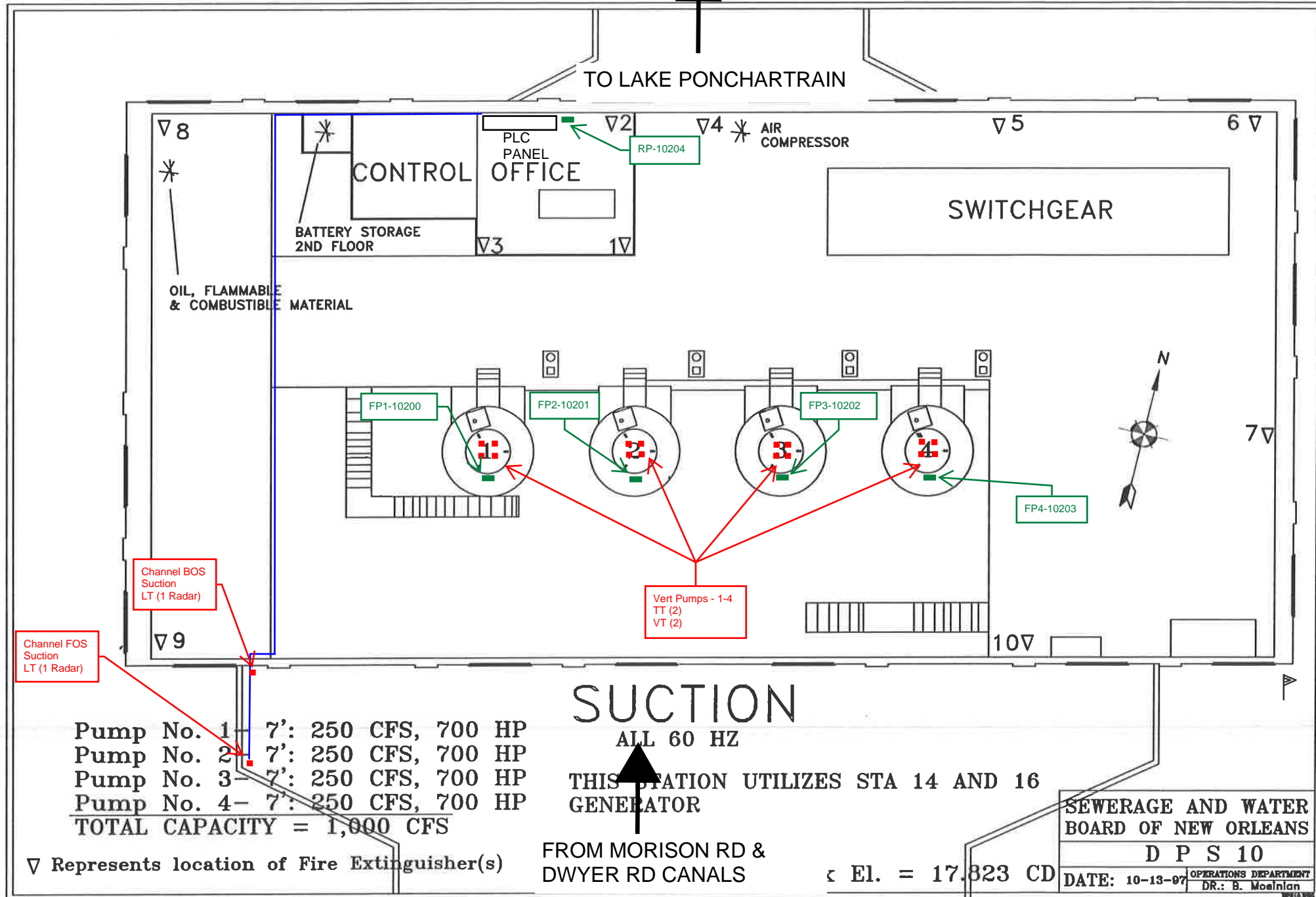
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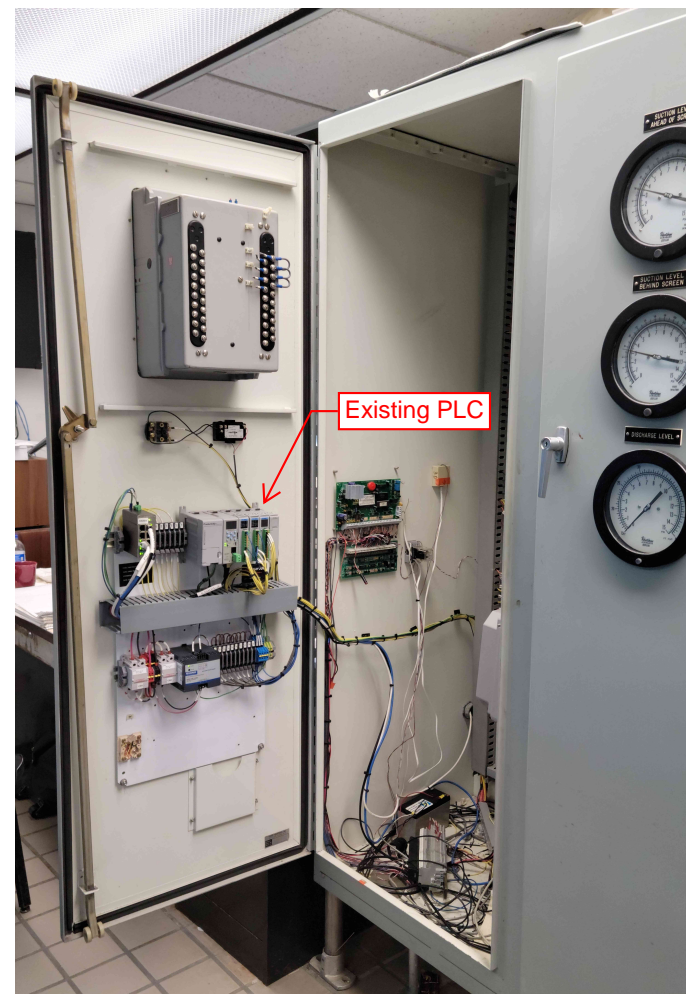
FACILITY PLC INPUT-OUTPUT LIST

46	PI	DPS07-GEN-PT-07352	Generator Oil Pressure	PLC-DPS07	AI					0-100	PSI	Signal derived from generator control panel.
47	TI	DPS07-GEN-TT-07353	Generator Oil Temperature	PLC-DPS07	AI					0-221	DEG F	Signal derived from generator control panel.
48	VI	DPS07-GEN-VT-07354	Generator Vibration	PLC-DPS07	AI					0-1.8	IN/SEC RMS	Signal derived from generator control panel.
49	TI	DPS07-GEN-TT-07355	Generator Temperature	PLC-DPS07	AI					0-221	DEG F	Signal derived from generator control panel.
50	LS	DPS07-TNK1-LS-07400	Diesel Day Tank Level	PLC-DPS07	DI					N/A	N/A	
51	LS	DPS07-TNK2-LS-07450	Diesel Tank Level	PLC-DPS07	DI					N/A	N/A	
52	JI	DPS07-HG1-JT-07500	House Generator 1 Power	PLC-DPS07	AI					0-480	VOLTS	
53	PI	DPS07-HG1-PT-07501	House Generator 1 Fuel Pressure	PLC-DPS07	AI					0-100	PSI	Signal derived from generator control panel.
54	PI	DPS07-HG1-PT-07502	House Generator 1 Oil Pressure	PLC-DPS07	AI					0-100	PSI	Signal derived from generator control panel.
55	TI	DPS07-HG1-TT-07503	House Generator 1 Oil Temperature	PLC-DPS07	AI					0-221	DEG F	Signal derived from generator control panel.
56	VI	DPS07-HG1-VT-07504	House Generator 1 Vibration	PLC-DPS07	AI					0-1.8	IN/SEC RMS	Signal derived from generator control panel.
57	TI	DPS07-HG1-TT-07505	House Generator 1 Temperature	PLC-DPS07	AI					0-221	DEG F	Signal derived from generator control panel.
58	JI	DPS07-HG2-JT-07550	House Generator 2 Power	PLC-DPS07	AI					0-480	VOLTS	
59	PI	DPS07-HG2-PT-07551	House Generator 2 Fuel Pressure	PLC-DPS07	AI					0-100	PSI	Signal derived from generator control panel.
60	PI	DPS07-HG2-PT-07552	House Generator 2 Oil Pressure	PLC-DPS07	AI					0-100	PSI	Signal derived from generator control panel.
61	TI	DPS07-HG2-TT-07553	House Generator 2 Oil Temperature	PLC-DPS07	AI					0-221	DEG F	Signal derived from generator control panel.
62	VI	DPS07-HG2-VT-07554	House Generator 2 Vibration	PLC-DPS07	AI					0-1.8	IN/SEC RMS	Signal derived from generator control panel.
63	TI	DPS07-HG2-TT-07555	House Generator 2 Temperature	PLC-DPS07	AI					0-221	DEG F	Signal derived from generator control panel.
64	JI	DPS07-HG3-JT-07600	House Generator 3 Power	PLC-DPS07	AI					0-480	VOLTS	
65	PI	DPS07-HG3-PT-07601	House Generator 3 Fuel Pressure	PLC-DPS07	AI					0-100	PSI	Signal derived from generator control panel.
66	PI	DPS07-HG3-PT-07602	House Generator 3 Oil Pressure	PLC-DPS07	AI					0-100	PSI	Signal derived from generator control panel.
67	TI	DPS07-HG3-TT-07603	House Generator 3 Oil Temperature	PLC-DPS07	AI					0-221	DEG F	Signal derived from generator control panel.
68	VI	DPS07-HG3-VT-07604	House Generator 3 Vibration	PLC-DPS07	AI					0-1.8	IN/SEC RMS	Signal derived from generator control panel.
69	TI	DPS07-HG3-TT-07605	House Generator 3 Temperature	PLC-DPS07	AI					0-221	DEG F	Signal derived from generator control panel.
70	TI	DPS07-CCD1-TT-07650	Pump CD1 Thrust Bearing Temperature	PLC-DPS07	AI					0-221	DEG F	
71	TI	DPS07-CCD1-TT-07651	Pump CD1 Radial Bearing Temperature	PLC-DPS07	AI					0-221	DEG F	
72	VI	DPS07-CCD1-VT-07652	Pump CD1 Thrust Bearing Vibration	PLC-DPS07	AI					0-1.8	IN/SEC RMS	
73	VI	DPS07-CCD1-VT-07653	Pump CD1 Radial Bearing Vibration	PLC-DPS07	AI					0-1.8	IN/SEC RMS	
74	LS	DPS07-CCD1-LS-07654	Pump CD1 Oil Level	PLC-DPS07	DI					N/A	N/A	
75	LS	DPS07-CCD2-LS-07700	Pump CD2 Oil Level	PLC-DPS07	DI					N/A	N/A	
76	TI	DPS07-CCD2-TT-07701	Pump CD2 Temperature	PLC-DPS07	AI					0-221	DEG F	
77	TI	DPS07-CCD2-TT-07702	Pump CD2 Temperature	PLC-DPS07	AI					0-221	DEG F	
78	VI	DPS07-CCD2-VT-07703	Pump CD2 Radial Bearing Vibration	PLC-DPS07	AI					0-1.8	IN/SEC RMS	
79	VI	DPS07-CCD2-VT-07704	Pump CD2 Radial Bearing Vibration	PLC-DPS07	AI					0-1.8	IN/SEC RMS	
80	LI	DPS07-SCT-LT-07750	FOS Suction Water Level 1	PLC-DPS07	AI					0-50	FT	
81	LI	DPS07-SCT-LT-07751	BOS Suction Water Level 2	PLC-DPS07	AI					0-50	FT	
82	LI	DPS07-DSC-LT-07752	Channel Discharge Basin Level	PLC-DPS07	AI					0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.





NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
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4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.



SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAI	NOTES
1	TI	DPS10-VP1-TT-10100	Pump V1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
2	TI	DPS10-VP1-TT-10101	Pump V1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
3	VI	DPS10-VP1-VT-10102	Pump V1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPS10-VP1-VT-10103	Pump V1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	TI	DPS10-VP2-TT-10200	Pump V2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS10-VP2-TT-10201	Pump V2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	VI	DPS10-VP2-VT-10202	Pump V2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	VI	DPS10-VP2-VT-10203	Pump V2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
9	TI	DPS10-VP3-TT-10300	Pump V3 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
10	TI	DPS10-VP3-TT-10301	Pump V3 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS10-VP3-VT-10302	Pump V3 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS10-VP3-VT-10303	Pump V3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	TI	DPS10-VP4-TT-10400	Pump V4 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
14	TI	DPS10-VP4-TT-10401	Pump V4 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
15	VI	DPS10-VP4-VT-10402	Pump V4 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
16	VI	DPS10-VP4-VT-10403	Pump V4 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
17	LI	DPS10-SCT1-LT-10500	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
18	LI	DPS10-SCT2-LT-10501	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

PREPARED BY: JMJ

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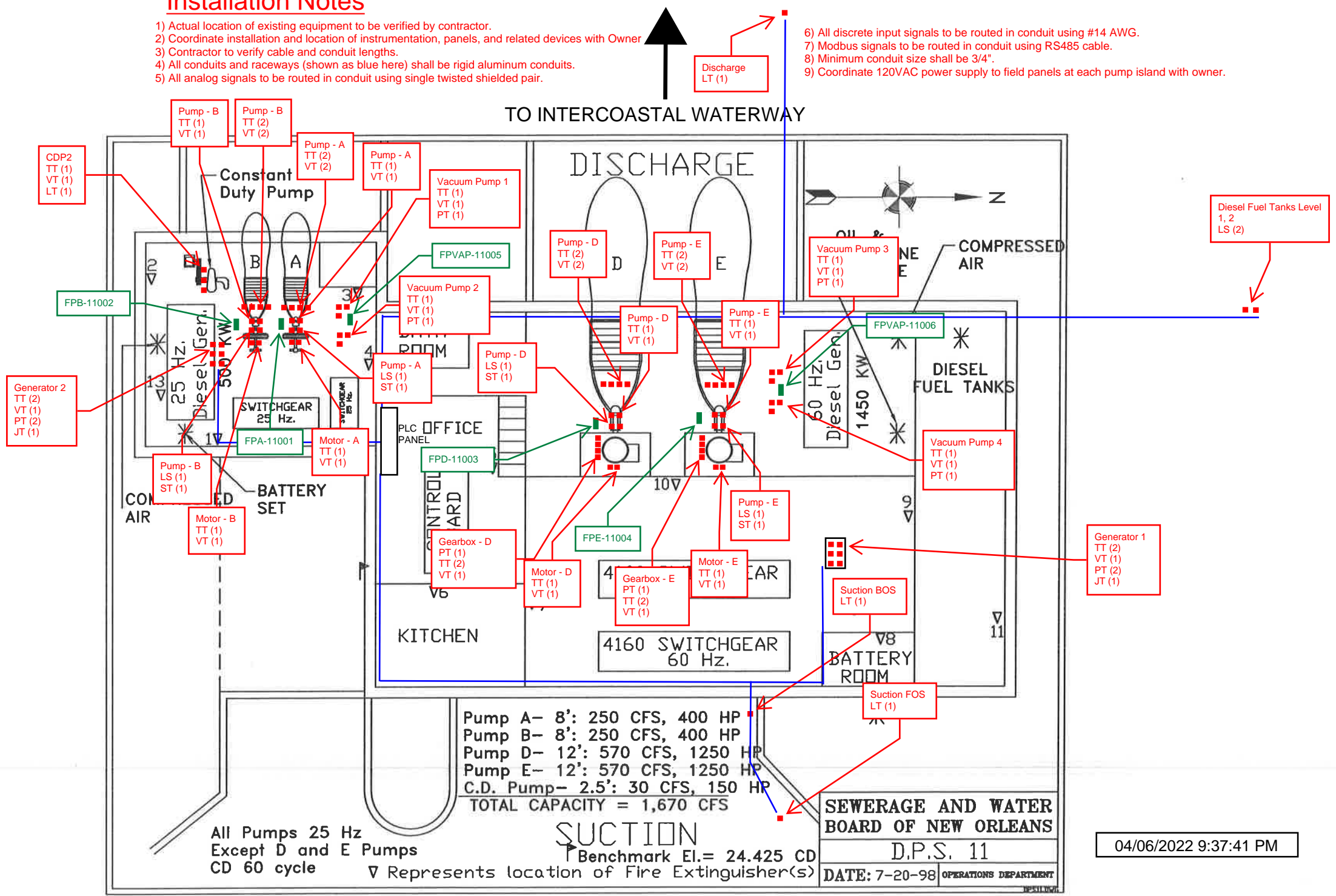
FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	TI	DPS10-VP1-TT-10100	Pump V1 Thrust Bearing Temperature	PLC-DPS10	AI						0-221	DEG F	
1	TI	DPS10-VP1-TT-10101	Pump V1 Radial Bearing Temperature	PLC-DPS10	AI						0-221	DEG F	
1	VI	DPS10-VP1-VT-10102	Pump V1 Thrust Bearing Vibration	PLC-DPS10	AI						0-1.8	IN/SEC RMS	
1	VI	DPS10-VP1-VT-10103	Pump V1 Radial Bearing Vibration	PLC-DPS10	AI						0-1.8	IN/SEC RMS	
1	TI	DPS10-VP2-TT-10200	Pump V2 Thrust Bearing Temperature	PLC-DPS10	AI						0-221	DEG F	
1	TI	DPS10-VP2-TT-10201	Pump V2 Radial Bearing Temperature	PLC-DPS10	AI						0-221	DEG F	
1	VI	DPS10-VP2-VT-10202	Pump V2 Thrust Bearing Vibration	PLC-DPS10	AI						0-1.8	IN/SEC RMS	
1	VI	DPS10-VP2-VT-10203	Pump V2 Radial Bearing Vibration	PLC-DPS10	AI						0-1.8	IN/SEC RMS	
1	TI	DPS10-VP3-TT-10300	Pump V3 Thrust Bearing Temperature	PLC-DPS10	AI						0-221	DEG F	
1	TI	DPS10-VP3-TT-10301	Pump V3 Radial Bearing Temperature	PLC-DPS10	AI						0-221	DEG F	
1	VI	DPS10-VP3-VT-10302	Pump V3 Thrust Bearing Vibration	PLC-DPS10	AI						0-1.8	IN/SEC RMS	
1	VI	DPS10-VP3-VT-10303	Pump V3 Radial Bearing Vibration	PLC-DPS10	AI						0-1.8	IN/SEC RMS	
1	TI	DPS10-VP4-TT-10400	Pump V4 Thrust Bearing Temperature	PLC-DPS10	AI						0-221	DEG F	
1	TI	DPS10-VP4-TT-10401	Pump V4 Radial Bearing Temperature	PLC-DPS10	AI						0-221	DEG F	
1	VI	DPS10-VP4-VT-10402	Pump V4 Thrust Bearing Vibration	PLC-DPS10	AI						0-1.8	IN/SEC RMS	
1	VI	DPS10-VP4-VT-10403	Pump V4 Radial Bearing Vibration	PLC-DPS10	AI						0-1.8	IN/SEC RMS	
1	LI	DPS10-SCT1-LT-10500	FOS Suction Water Level 1	PLC-DPS10	AI						0-50	FT	
1	LI	DPS10-SCT2-LT-10501	BOS Suction Water Level 2	PLC-DPS10	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.





NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.

2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.

3. Install a new P2-SCM module in slot 4

4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"

5. Install wireless receiver enclosure and connect to existing PLC via new communication module.

6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.

7. See specifications for additional installation instructions.





NOTES:

1) Contractor to furnish a new PLC system to match PLC systems at other existing Drainage Pump Stations.

2) The new PLC system will include all appurtenances for stand alone operation and integration into existing networked SCADA/HMI system.

3) Contractor to locate new PLC in enclosure within the control room on a wall location to be coordinated with Owner.

4) Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"

6. Install wireless receiver enclosure and connect to new PLC via a communication module.

7. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.

8. See specifications for additional installation instructions.

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTE
1	VI	DPS11-HPA-VT-11000	Pump A NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS11-HPA-VT-11001	Pump A DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	VI	DPS11-HPA-VT-11002	Pump A Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	LS	DPS11-HPA-LS-11003	Pump A Oil Level	Ashcroft		N/A	N/A	DI					
5	TI	DPS11-HPA-TT-11004	Pump A NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS11-HPA-TT-11005	Pump A DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS11-HPA-TT-11006	Pump A Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	SI	DPS11-HPA-ST-11007	Pump A RPM	Banner		0-2000	RPM	AI					
9	VI	DPS11-HPA-VT-11008	Pump A Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
10	TI	DPS11-HPA-TT-11009	Pump A Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS11-HPB-VT-11050	Pump B NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS11-HPB-VT-11051	Pump B DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	VI	DPS11-HPB-VT-11052	Pump B Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	LS	DPS11-HPB-LS-11053	Pump B Oil Level	Ashcroft		N/A	N/A	DI					
15	TI	DPS11-HPB-TT-11054	Pump B NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
16	TI	DPS11-HPB-TT-11055	Pump B DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS11-HPB-TT-11056	Pump B Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	SI	DPS11-HPB-ST-11057	Pump B RPM	Banner		0-2000	RPM	AI					
19	VI	DPS11-HPB-VT-11058	Pump B Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
20	TI	DPS11-HPB-TT-11059	Pump B Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
21	VI	DPS11-HPD-VT-11100	Pump D NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	VI	DPS11-HPD-VT-11101	Pump D DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
23	VI	DPS11-HPD-VT-11102	Pump D Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
24	LS	DPS11-HPD-LS-11103	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
25	TI	DPS11-HPD-TT-11104	Pump D NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
26	TI	DPS11-HPD-TT-11105	Pump D DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
27	TI	DPS11-HPD-TT-11106	Pump D Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
28	SI	DPS11-HPD-ST-11107	Pump D RPM	Banner		0-2000	RPM	AI					
29	VI	DPS11-HPD-VT-11108	Pump D Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
30	TI	DPS11-HPD-TT-11109	Pump D Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
31	PI	DPS11-HPD-PT-11110	Pump D Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
32	TI	DPS11-HPD-TT-11111	Pump D Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
33	VI	DPS11-HPD-VT-11112	Pump D Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
34	TI	DPS11-HPD-TT-11113	Pump D Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
35	VI	DPS11-HPE-VT-11150	Pump E NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
36	VI	DPS11-HPE-VT-11151	Pump E DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
37	VI	DPS11-HPE-VT-11152	Pump E Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
38	LS	DPS11-HPE-LS-11153	Pump E Oil Level	Ashcroft		N/A	N/A	DI					
39	TI	DPS11-HPE-TT-11154	Pump E NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
40	TI	DPS11-HPE-TT-11155	Pump E DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
41	TI	DPS11-HPE-TT-11156	Pump E Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
42	SI	DPS11-HPE-ST-11157	Pump E RPM	Banner		0-2000	RPM	AI					
43	VI	DPS11-HPE-VT-11158	Pump E Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
44	TI	DPS11-HPE-TT-11159	Pump E Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
45	PI	DPS11-HPE-PT-11160	Pump E Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
46	TI	DPS11-HPE-TT-11161	Pump E Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
47	VI	DPS11-HPE-VT-11162	Pump E Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
48	TI	DPS11-HPE-TT-11163	Pump E Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

49	TI	DPS11-VAP1-TT-11200	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
50	VI	DPS11-VAP1-VT-11201	Vacuum Pump 1 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
51	PI	DPS11-VAP1-PT-11202	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
52	TI	DPS11-VAP2-TT-11250	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
53	VI	DPS11-VAP2-VT-11251	Vacuum Pump 2 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
54	PI	DPS11-VAP2-PT-11252	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
55	TI	DPS11-VAP3-TT-11200	Vacuum Pump 3 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
56	VI	DPS11-VAP3-VT-11201	Vacuum Pump 3 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
57	PI	DPS11-VAP3-PT-11202	Vacuum Pump 3 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
58	TI	DPS11-VAP4-TT-11250	Vacuum Pump 4 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
59	VI	DPS11-VAP4-VT-11251	Vacuum Pump 4 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
60	PI	DPS11-VAP4-PT-11252	Vacuum Pump 4 Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
61	JI	DPS11-GEN1-JT-11300	Generator 1 Power	SEL		0-4160	VOLTS	AI					
62	JI	DPS11-GEN2-JT-11350	Generator 2 Power	SEL		0-4160	VOLTS	AI					
63	LS	DPS11-TNK1-LS-11450	Diesel Tank 1 Level	Ashcroft		N/A	N/A	DI					
64	LS	DPS11-TNK2-LS-11500	Diesel Tank 2 Level	Ashcroft		N/A	N/A	DI					
65	TI	DPS11-CCD-TT-11551	Pump CD Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
66	VI	DPS11-CCD-VT-11553	Pump CD Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
67	LS	DPS11-CCD-LS-11554	Pump CD Oil Level	Ashcroft		N/A	N/A	DI					
68	LI	DPS11-SCT1-LT-11600	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
69	LI	DPS11-SCT2-LT-11601	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
70	LI	DPS11-DSC-LT-11602	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

PREPARED BY: JMJ

CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

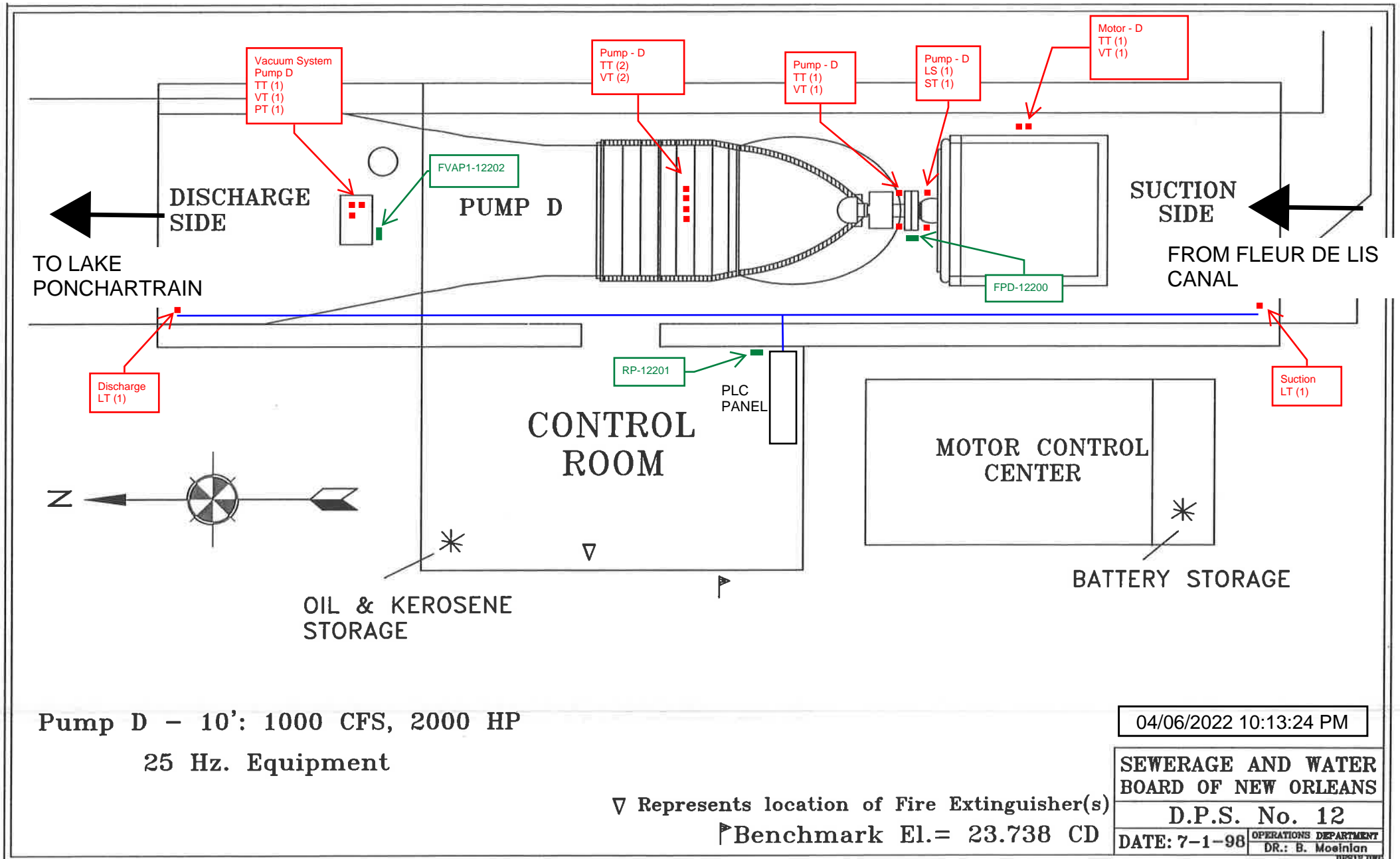
SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS11-HPA-VT-11000	Pump A NDE Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
2	VI	DPS11-HPA-VT-11001	Pump A DE Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
3	VI	DPS11-HPA-VT-11002	Pump A Thrust Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
4	LS	DPS11-HPA-LS-11003	Pump A Oil Level	PLC-DPS11	DI						N/A	N/A	
5	TI	DPS11-HPA-TT-11004	Pump A NDE Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
6	TI	DPS11-HPA-TT-11005	Pump A DE Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
7	TI	DPS11-HPA-TT-11006	Pump A Thrust Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
8	SI	DPS11-HPA-ST-11007	Pump A RPM	PLC-DPS11	AI						0-2000	RPM	
9	VI	DPS11-HPA-VT-11008	Pump A Motor Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
10	TI	DPS11-HPA-TT-11009	Pump A Motor Temperature	PLC-DPS11	AI						0-221	DEG F	
11	VI	DPS11-HPB-VT-11050	Pump B NDE Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
12	VI	DPS11-HPB-VT-11051	Pump B DE Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
13	VI	DPS11-HPB-VT-11052	Pump B Thrust Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
14	LS	DPS11-HPB-LS-11053	Pump B Oil Level	PLC-DPS11	DI						N/A	N/A	
15	TI	DPS11-HPB-TT-11054	Pump B NDE Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
16	TI	DPS11-HPB-TT-11055	Pump B DE Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
17	TI	DPS11-HPB-TT-11056	Pump B Thrust Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
18	SI	DPS11-HPB-ST-11057	Pump B RPM	PLC-DPS11	AI						0-2000	RPM	
19	VI	DPS11-HPB-VT-11058	Pump B Motor Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
20	TI	DPS11-HPB-TT-11059	Pump B Motor Temperature	PLC-DPS11	AI						0-221	DEG F	
21	VI	DPS11-HPD-VT-11100	Pump D NDE Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
22	VI	DPS11-HPD-VT-11101	Pump D DE Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
23	VI	DPS11-HPD-VT-11102	Pump D Thrust Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
24	LS	DPS11-HPD-LS-11103	Pump D Oil Level	PLC-DPS11	DI						N/A	N/A	
25	TI	DPS11-HPD-TT-11104	Pump D NDE Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
26	TI	DPS11-HPD-TT-11105	Pump D DE Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
27	TI	DPS11-HPD-TT-11106	Pump D Thrust Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
28	SI	DPS11-HPD-ST-11107	Pump D RPM	PLC-DPS11	AI						0-2000	RPM	
29	PI	DPS11-HPD-VT-11108	Pump D Motor Vibration	PLC-DPS11	AI						0-100	PSI	
30	TI	DPS11-HPD-TT-11109	Pump D Motor Temperature	PLC-DPS11	AI						0-221	DEG F	
31	VI	DPS11-HPD-PT-11110	Pump D Gearbox Oil Pressure	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
32	TI	DPS11-HPD-TT-11111	Pump D Gearbox Oil Temperature	PLC-DPS11	AI						0-221	DEG F	
33	VI	DPS11-HPD-VT-11112	Pump D Gearbox Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
34	TI	DPS11-HPD-TT-11113	Pump D Gearbox Temperature	PLC-DPS11	AI						0-221	DEG F	
35	VI	DPS11-HPE-VT-11150	Pump E NDE Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
36	VI	DPS11-HPE-VT-11151	Pump E DE Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
37	VI	DPS11-HPE-VT-11152	Pump E Thrust Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
38	LS	DPS11-HPE-LS-11153	Pump E Oil Level	PLC-DPS11	DI						N/A	N/A	
39	TI	DPS11-HPE-TT-11154	Pump E NDE Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
40	TI	DPS11-HPE-TT-11155	Pump E DE Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
41	TI	DPS11-HPE-TT-11156	Pump E Thrust Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
42	SI	DPS11-HPE-ST-11157	Pump E RPM	PLC-DPS11	AI						0-2000	RPM	
43	PI	DPS11-HPE-VT-11158	Pump E Motor Vibration	PLC-DPS11	AI						0-100	PSI	
44	TI	DPS11-HPE-TT-11159	Pump E Motor Temperature	PLC-DPS11	AI						0-221	DEG F	

FACILITY PLC INPUT-OUTPUT LIST

45	VI	DPS11-HPE-PT-11160	Pump E Gearbox Oil Pressure	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
46	TI	DPS11-HPE-TT-11161	Pump E Gearbox Oil Temperature	PLC-DPS11	AI						0-221	DEG F	
47	VI	DPS11-HPE-VT-11162	Pump E Gearbox Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
48	TI	DPS11-HPE-TT-11163	Pump E Gearbox Temperature	PLC-DPS11	AI						0-221	DEG F	
49	TI	DPS11-VAP1-TT-11200	Vacuum Pump 1 Temp	PLC-DPS11	AI						0-221	DEG F	
50	VI	DPS11-VAP1-VT-11201	Vacuum Pump 1 Vib	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
51	PI	DPS11-VAP1-PT-11202	Vacuum Pump 1 Pressure	PLC-DPS11	AI						-15-0	PSI	
52	TI	DPS11-VAP2-TT-11250	Vacuum Pump 2 Temp	PLC-DPS11	AI						0-221	DEG F	
53	VI	DPS11-VAP2-VT-11251	Vacuum Pump 2 Vib	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
54	PI	DPS11-VAP2-PT-11252	Vacuum Pump 2 Pressure	PLC-DPS11	AI						-15-0	PSI	
55	TI	DPS11-VAP3-TT-11200	Vacuum Pump 3 Temp	PLC-DPS11	AI						0-221	DEG F	
56	VI	DPS11-VAP3-VT-11201	Vacuum Pump 3 Vib	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
57	PI	DPS11-VAP3-PT-11202	Vacuum Pump 3 Pressure	PLC-DPS11	AI						-15-0	PSI	
58	TI	DPS11-VAP4-TT-11250	Vacuum Pump 4 Temp	PLC-DPS11	AI						0-221	DEG F	
59	VI	DPS11-VAP4-VT-11251	Vacuum Pump 4 Vib	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
60	PI	DPS11-VAP4-PT-11252	Vacuum Pump 4 Pressure	PLC-DPS11	AI						-15-0	PSI	
61	JI	DPS11-GEN1-JT-11300	Generator 1 Power	PLC-DPS11	AI						0-4160	VOLTS	
62	PI	DPS11-GEN1-PT-11301	Generator 1 Fuel Pressure	PLC-DPS11	AI						0-100	PSI	Signal derived from generator control panel.
63	PI	DPS11-GEN1-PT-11302	Generator 1 Oil Pressure	PLC-DPS11	AI						0-100	PSI	Signal derived from generator control panel.
64	TI	DPS11-GEN1-TT-11303	Generator 1 Oil Temperature	PLC-DPS11	AI						0-221	DEG F	Signal derived from generator control panel.
65	VI	DPS11-GEN1-VT-11304	Generator 1 Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
66	TI	DPS11-GEN1-TT-11305	Generator 1 Temperature	PLC-DPS11	AI						0-221	DEG F	Signal derived from generator control panel.
67	JI	DPS11-GEN2-JT-11350	Generator 2 Power	PLC-DPS11	AI						0-4160	VOLTS	
68	PI	DPS11-GEN2-PT-11400	Generator 2 Fuel Pressure	PLC-DPS11	AI						0-100	PSI	Signal derived from generator control panel.
69	PI	DPS11-GEN2-PT-11401	Generator 2 Oil Pressure	PLC-DPS11	AI						0-100	PSI	Signal derived from generator control panel.
70	TI	DPS11-GEN2-TT-11402	Generator 2 Oil Temperature	PLC-DPS11	AI						0-221	DEG F	Signal derived from generator control panel.
71	VI	DPS11-GEN2-VT-11403	Generator 2 Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
72	TI	DPS11-GEN2-TT-11404	Generator 2 Temperature	PLC-DPS11	AI						0-221	DEG F	Signal derived from generator control panel.
73	LS	DPS11-TNK1-LS-11450	Diesel Tank 1 Level	PLC-DPS11	DI						N/A	N/A	
74	LS	DPS11-TNK2-LS-11500	Diesel Tank 2 Level	PLC-DPS11	DI						N/A	N/A	
75	TI	DPS11-CCD-TT-11551	Pump CD Radial Bearing Temperature	PLC-DPS11	AI						0-221	DEG F	
76	VI	DPS11-CCD-VT-11553	Pump CD Radial Bearing Vibration	PLC-DPS11	AI						0-1.8	IN/SEC RMS	
77	LS	DPS11-CCD-LS-11554	Pump CD Oil Level	PLC-DPS11	DI						N/A	N/A	
78	LI	DPS11-SCT1-LT-11600	FOS Suction Water Level 1	PLC-DPS11	AI						0-50	FT	
79	LI	DPS11-SCT2-LT-11601	BOS Suction Water Level 2	PLC-DPS11	AI						0-50	FT	
80	LI	DPS11-DSC-LT-11602	Channel Discharge Basin Level	PLC-DPS11	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.





NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.



SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS12-HPD-VT-12000	Pump D NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS12-HPD-VT-12001	Pump D DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	VI	DPS12-HPD-VT-12002	Pump D Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	LS	DPS12-HPD-LS-12003	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
5	TI	DPS12-HPD-TT-12004	Pump D NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS12-HPD-TT-12005	Pump D DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS12-HPD-TT-12006	Pump D Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	SI	DPS12-HPD-ST-12007	Pump D RPM	Banner		0-2000	RPM	AI					
9	VI	DPS12-HPD-VT-12011	Pump D Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
10	TI	DPS12-HPD-TT-12012	Pump D Motor Temperature	Banner	QM30VT2-SS-QP	0-2000	DEG F	AI					May be combined with vibration sensor
11	TI	DPS12-VAP1-TT-12100	Vacuum 1 Pump Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
12	VI	DPS12-VAP1-VT-12101	Vacuum 1 Pump Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	PI	DPS12-VAP1-PT-12102	Vacuum 1 Pump Pressure	Vega	Bar-series 28	-15- 0	PSI	AI					
14	LI	DPS12-SCT-LT-12200	Suction Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
15	LI	DPS12-DSC-LT-12201	Discharge Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR GRANT ADDITIONAL INSTRUMENTATION

REVISION: IFB

Rev. DATE: 4/7/2022

PREPARED BY: JMJ

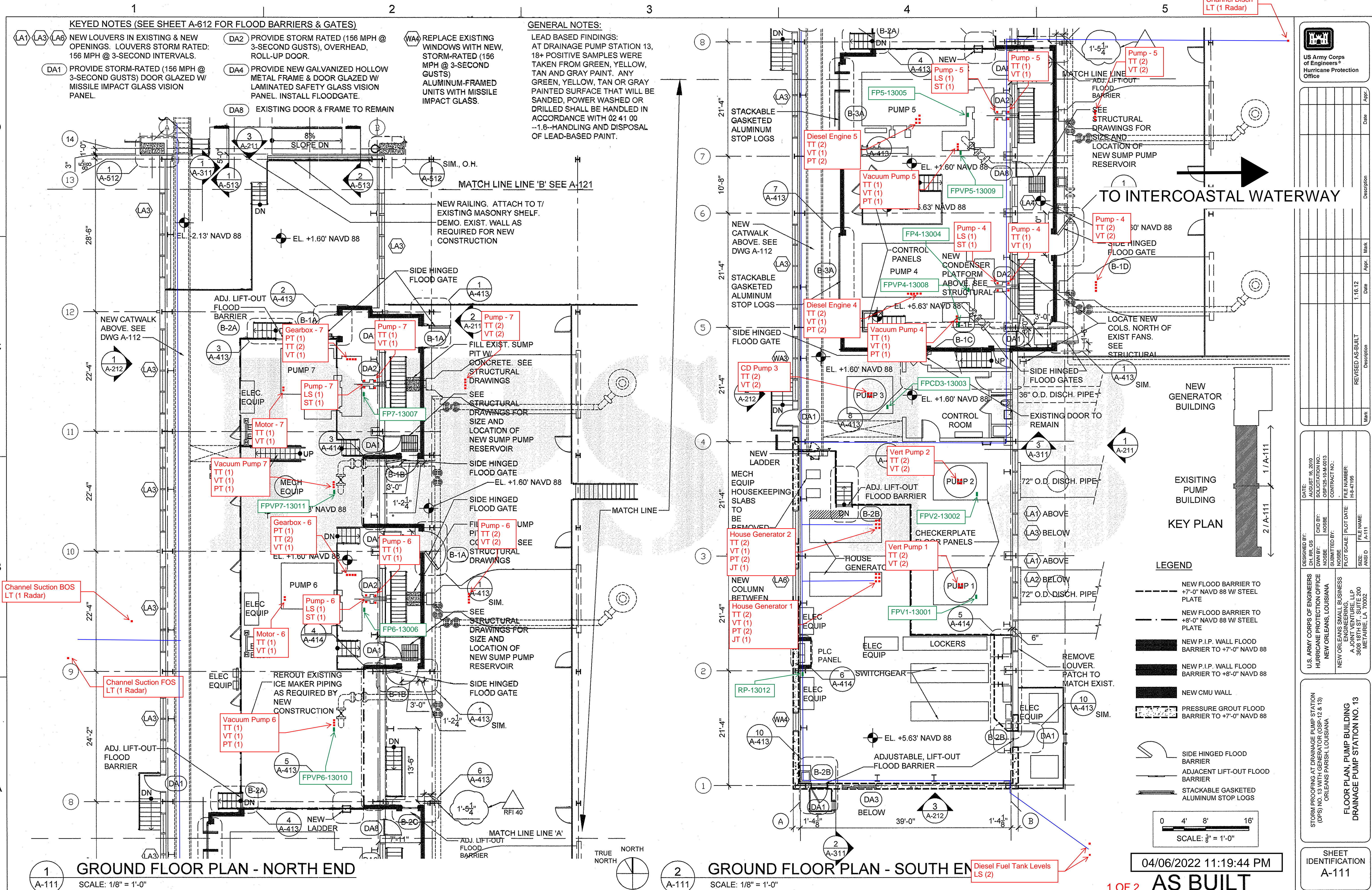
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS12-HPD-VT-12000	Pump D NDE Radial Bearing Vibration	PLC-DPS12	AI						0-1.8	IN/SEC RMS	
2	VI	DPS12-HPD-VT-12001	Pump D DE Radial Bearing Vibration	PLC-DPS12	AI						0-1.8	IN/SEC RMS	
3	VI	DPS12-HPD-VT-12002	Pump D Thrust Bearing Vibration	PLC-DPS12	AI						0-1.8	IN/SEC RMS	
4	LS	DPS12-HPD-LS-12003	Pump D Oil Level	PLC-DPS12	DI						N/A	N/A	
5	TI	DPS12-HPD-TT-12004	Pump D NDE Radial Bearing Temperature	PLC-DPS12	AI						0-221	DEG F	
6	TI	DPS12-HPD-TT-12005	Pump D DE Radial Bearing Temperature	PLC-DPS12	AI						0-221	DEG F	
7	TI	DPS12-HPD-TT-12006	Pump D Thrust Bearing Temperature	PLC-DPS12	AI						0-221	DEG F	
8	SI	DPS12-HPD-ST-12007	Pump D RPM	PLC-DPS12	AI						0-2000	RPM	
9	VI	DPS12-HPD-VT-12008	Pump D Motor Vibration	PLC-DPS12	AI						0-1.8	IN/SEC RMS	
10	TI	DPS12-HPD-TT-12009	Pump D Motor Temperature	PLC-DPS12	AI						0-221	DEG F	
11	TI	DPS12-VAP1-TT-12100	Vacuum Pump 1 Temp	PLC-DPS12	AI						0-221	DEG F	
12	VI	DPS12-VAP1-VT-12101	Vacuum Pump 1 Vib	PLC-DPS12	AI						0-1.8	IN/SEC RMS	
13	PI	DPS12-VAP1-PT-12102	Vacuum Pump 1 Pressure	PLC-DPS12	AI						-15-0	PSI	
14	LI	DPS12-SCT-LT-12200	Suction Water Level	PLC-DPS12	AI						0-50	FT	
15	LI	DPS12-DSC-LT-12201	Discharge Water Level	PLC-DPS12	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
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- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



US Army Corps of Engineers
Hurricane Protection Office

DESIGNED BY:	DATE:
DRAWN BY:	AUGUST 16, 2010
CHECKED BY:	SOLICITATION NO.:
NOSE	OSF125-10-M-0013
NOSE	CONTRACT NO.:
NOSE	H-8-4195
NOSE	FILE NUMBER:
NOSE	H-8-4195
NOSE	FILE NAME:
NOSE	A-111
NOSE	ANSI D

STORM PROOFING AT DRAINAGE PUMP STATION (OPS) NO. 13 WITH GENERATOR (OSF-12 & 13) - ORLEANS PARISH, LOUISIANA

FLOOR PLAN, PUMP BUILDING DRAINAGE PUMP STATION NO. 13

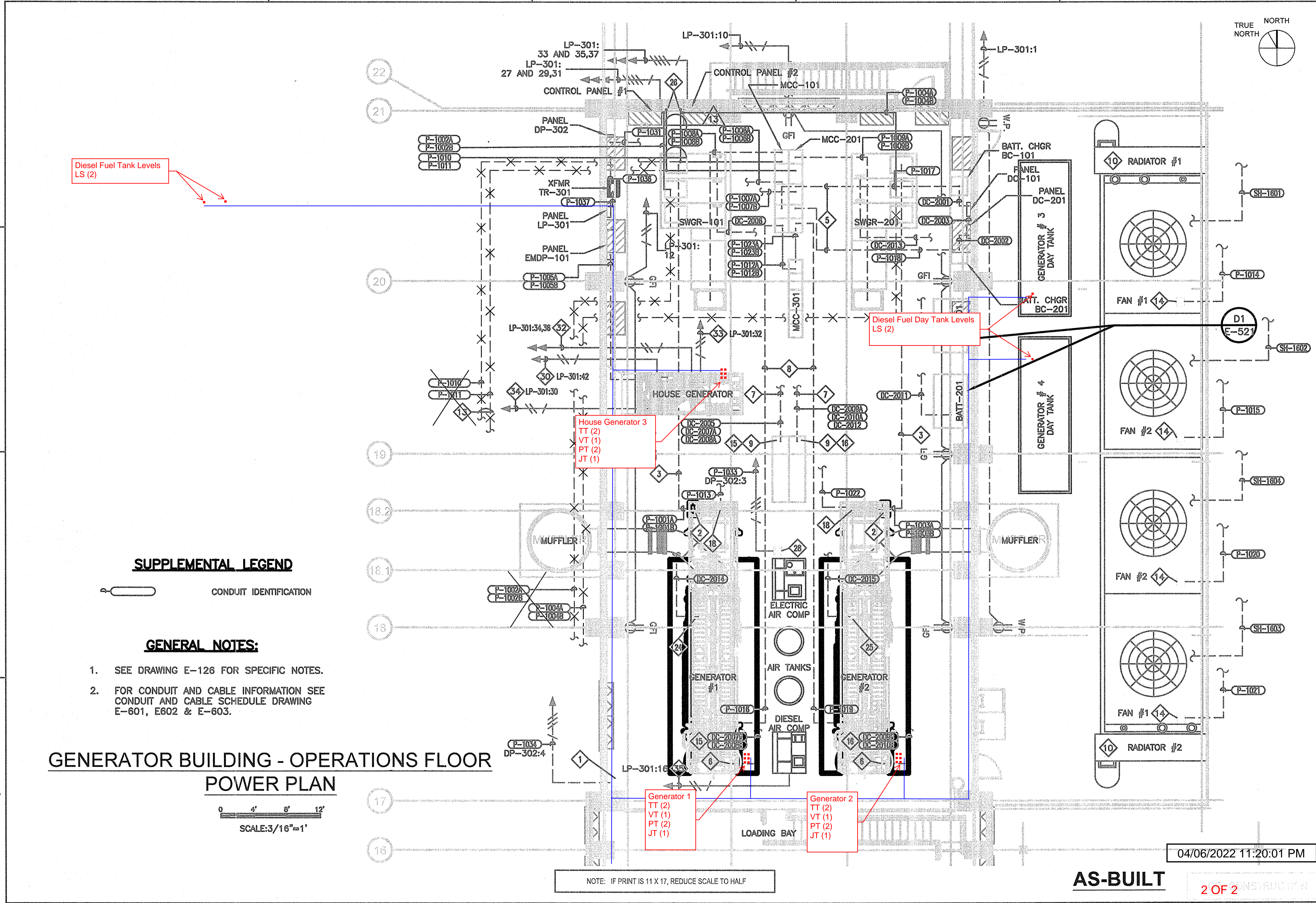
SHEET IDENTIFICATION A-111

12093-W-10

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
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sk Projects\419253 Pump Station DSP 13\Fisk CAD\AS-BUILT CAD FILES\Fisk As-Built\Fisk-E123.dwg
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Diesel Fuel Tank Levels
LS (2)

Diesel Fuel Day Tank Levels
LS (2)

House Generator 3
TT (2)
VT (1)
PT (2)
JT (1)

Generator 1
TT (2)
VT (1)
PT (2)
JT (1)

Generator 2
TT (2)
VT (1)
PT (2)
JT (1)

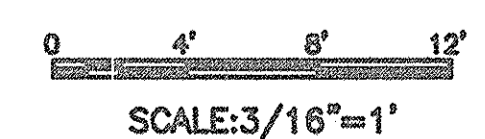
SUPPLEMENTAL LEGEND

CONDUIT IDENTIFICATION

GENERAL NOTES:

1. SEE DRAWING E-126 FOR SPECIFIC NOTES.
2. FOR CONDUIT AND CABLE INFORMATION SEE CONDUIT AND CABLE SCHEDULE DRAWING E-601, E602 & E-603.

**GENERATOR BUILDING - OPERATIONS FLOOR
POWER PLAN**



NOTE: IF PRINT IS 11 X 17, REDUCE SCALE TO HALF

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AS-BUILT

2 OF 2 INSTRUCTIONS

12093-W-10

5059-P9

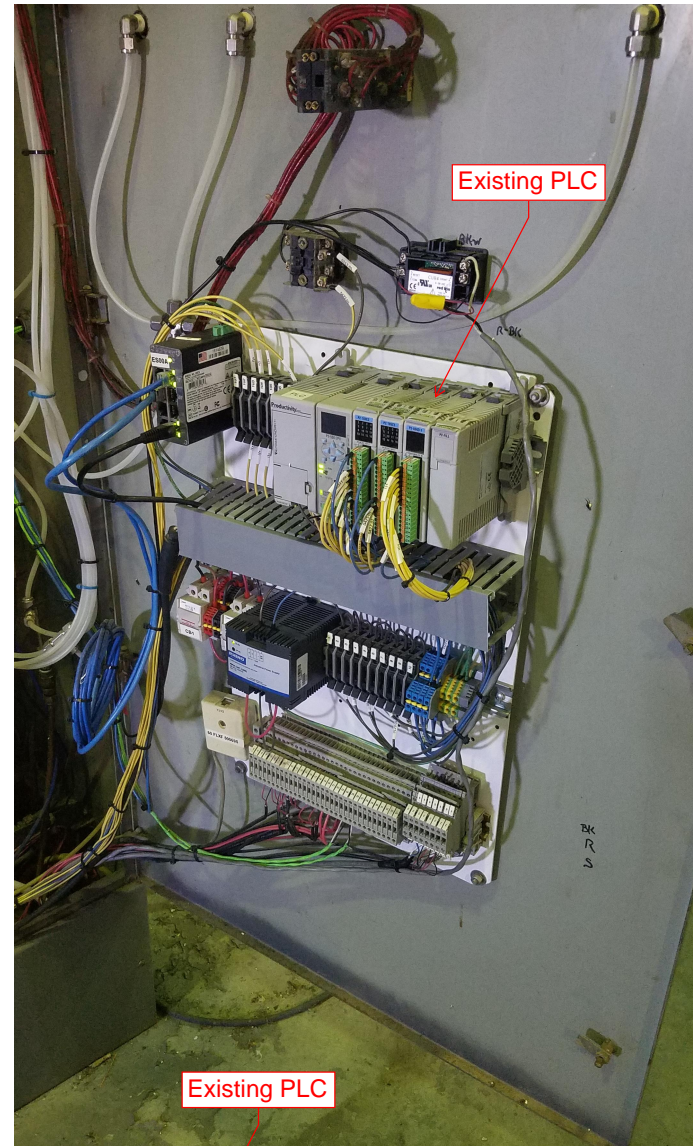
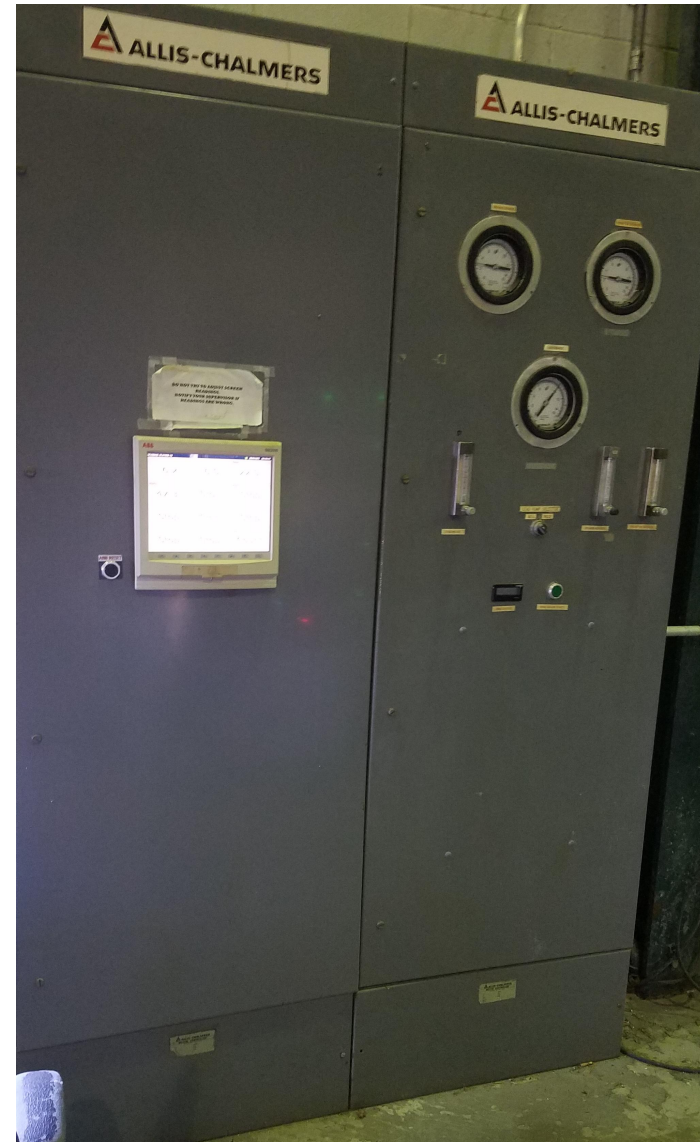


Date	Appr.	Desc.
AS-BUILT 01-17-2012		
13 APR 050		

DATE	DESIGNED BY	SUBMITTED BY	NO. OF SHEETS	FILE NUMBER	DATE
01-17-2012	AS-BUILT	AS-BUILT	13	AS-BUILT	01-17-2012

STORM PROOFING AT DRAINAGE PUMP STATION (DPS) NO. 13 WITH GENERATOR (OSP-2 & 13) ORLEANS PARISH, LOUISIANA
GENERATOR BUILDING - OPER. FLOOR
POWER PLAN
DRAINAGE PUMP STATION NO. 13

SHEET IDENTIFICATION
E-123



NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

REVISION: IFB
Rev. DATE: 4/7/2022

PREPARED BY: JMJ
CHECKED BY: AJS

FACILITY INSTRUMENT INDEX

SEQ+A1	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTE
1	TI	DPS13-VP1-TT-13000	Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
2	TI	DPS13-VP1-TT-13001	Pump 1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
3	VI	DPS13-VP1-VT-13002	Pump 1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPS13-VP1-VT-13003	Pump 1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	TI	DPS13-VP2-TT-13050	Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS13-VP2-TT-13051	Pump 2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	VI	DPS13-VP2-VT-13052	Pump 2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	VI	DPS13-VP2-VT-13053	Pump 2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
9	TI	DPS13-CCD3-TT-13100	Pump 3 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
10	TI	DPS13-CCD3-TT-13101	Pump 3 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS13-CCD3-VT-13102	Pump 3 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPS13-CCD3-VT-13103	Pump 3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	VI	DPS13-HP4-VT-13150	Pump 4 NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	VI	DPS13-HP4-VT-13151	Pump 4 DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
15	VI	DPS13-HP4-VT-13152	Pump 4 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
16	LS	DPS13-HP4-LS-13153	Pump 4 Oil Level	Ashcroft		N/A	N/A	DI					
17	TI	DPS13-HP4-TT-13154	Pump 4 NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	TI	DPS13-HP4-TT-13155	Pump 4 DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
19	TI	DPS13-HP4-TT-13156	Pump 4 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
20	SI	DPS13-HP4-ST-13157	Pump 4 RPM	Banner		0-2000	RPM	AI					
21	VI	DPS13-ENG2-VT-13158	Pump 4 Diesel Engine Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	TI	DPS13-ENG2-TT-13159	Pump 4 Diesel Engine Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
23	PI	DPS13-ENG2-PT-13160	Pump 4 Diesel Engine Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
24	TI	DPS13-ENG2-TT-13161	Pump 4 Diesel Engine Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
25	PI	DPS13-ENG2-PT-13162	Pump 4 Diesel Engine Fuel Pressure	Vega	Bar-series 28	0-100	PSI	AI					
26	VI	DPS13-HP5-VT-13200	Pump 5 NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
27	VI	DPS13-HP5-VT-13201	Pump 5 DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
28	VI	DPS13-HP5-VT-13202	Pump 5 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
29	LS	DPS13-HP5-LS-13203	Pump 5 Oil Level	Ashcroft		N/A	N/A	DI					
30	TI	DPS13-HP5-TT-13204	Pump 5 NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
31	TI	DPS13-HP5-TT-13205	Pump 5 DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
32	TI	DPS13-HP5-TT-13206	Pump 5 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
33	SI	DPS13-HP5-ST-13207	Pump 5 RPM	Banner		0-2000	RPM	AI					
34	VI	DPS13-ENG2-VT-13208	Pump 5 Diesel Engine Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
35	TI	DPS13-ENG2-TT-13209	Pump 5 Diesel Engine Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
36	PI	DPS13-ENG2-PT-13210	Pump 5 Diesel Engine Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
37	TI	DPS13-ENG2-TT-13211	Pump 5 Diesel Engine Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
38	PI	DPS13-ENG2-PT-13212	Pump 5 Diesel Engine Fuel Pressure	Vega	Bar-series 28	0-100	PSI	AI					
39	VI	DPS13-HP6-VT-13250	Pump 6 NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
40	VI	DPS13-HP6-VT-13251	Pump 6 DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
41	VI	DPS13-HP6-VT-13252	Pump 6 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
42	LS	DPS13-HP6-LS-13253	Pump 6 Oil Level	Ashcroft		N/A	N/A	DI					
43	TI	DPS13-HP6-TT-13254	Pump 6 NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
44	TI	DPS13-HP6-TT-13255	Pump 6 DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
45	TI	DPS13-HP6-TT-13256	Pump 6 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
46	SI	DPS13-HP6-ST-13257	Pump 6 RPM	Banner		0-2000	RPM	AI					
47	PI	DPS13-HP6-PT-13258	Pump 6 Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
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48	TI	DPS13-HP6-TT-13259	Pump 6 Gearbox Oil Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
49	VI	DPS13-HP6-VT-13260	Pump 6 Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
50	TI	DPS13-HP6-TT-13261	Pump 6 Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
51	VI	DPS13-HP6-VT-13262	Pump 6 Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
52	TI	DPS13-HP6-TT-13263	Pump 6 Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
53	VI	DPS13-HP7-VT-13300	Pump 7 NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
54	VI	DPS13-HP7-VT-13301	Pump 7 DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
55	VI	DPS13-HP7-VT-13302	Pump 7 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
56	LS	DPS13-HP7-LS-13303	Pump 7 Oil Level	Ashcroft		N/A	N/A	DI					
57	TI	DPS13-HP7-TT-13304	Pump 7 NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
58	TI	DPS13-HP7-TT-13305	Pump 7 DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
59	TI	DPS13-HP7-TT-13306	Pump 7 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
60	SI	DPS13-HP7-ST-13307	Pump 7 RPM	Banner		0-2000	RPM	AI					
61	PI	DPS13-HP7-PT-13308	Pump 7 Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
62	TI	DPS13-HP7-TT-13309	Pump 7 Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
63	VI	DPS13-HP7-VT-13310	Pump 7 Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
64	TI	DPS13-HP7-TT-13311	Pump 7 Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
65	VI	DPS13-HP7-VT-13312	Pump 7 Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
66	TI	DPS13-HP7-TT-13313	Pump 7 Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
67	TI	DPS13-VAP1-TT-13350	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
68	VI	DPS13-VAP1-VT-13351	Vacuum Pump 1 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
69	PI	DPS13-VAP1-PT-13352	Vacuum Pump 1 Pressure	Vega	Bar-series 28	0-4160	PSI	AI					
70	TI	DPS13-VAP2-TT-13400	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
71	VI	DPS13-VAP2-VT-13401	Vacuum Pump 2 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
72	PI	DPS13-VAP2-PT-13402	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
73	TI	DPS13-VAP3-TT-13450	Vacuum Pump 3 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
74	VI	DPS13-VAP3-VT-13451	Vacuum Pump 3 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
75	PI	DPS13-VAP3-PT-13452	Vacuum Pump 3 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
76	TI	DPS13-VAP4-TT-13500	Vacuum Pump 4 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
77	VI	DPS13-VAP4-VT-13501	Vacuum Pump 4 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
78	PI	DPS13-VAP4-PT-13502	Vacuum Pump 4 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
79	JJ	DPS13-GEN1-JT-13550	Generator 1 Power	SEL		0-4160	VOLTS	AI					
80	JJ	DPS13-GEN2-JT-13600	Generator 2 Power	SEL		0-4160	VOLTS	AI					
81	LS	DPS13-TNK1-LS-13650	Diesel Tank 1 Level	Ashcroft		N/A	N/A	DI					
82	LS	DPS13-TNK2-LS-13651	Diesel Tank 2 Level	Ashcroft		N/A	N/A	DI					
83	LS	DPS13-TNK3-LS-13652	Diesel Tank 3 Level	Ashcroft		N/A	N/A	DI					
84	LS	DPS13-TNK4-LS-13653	Diesel Tank 4 Level	Ashcroft		N/A	N/A	DI					
85	LS	DPS13-TNK5-LS-13652	Diesel Day Tank 5 Level	Ashcroft		N/A	N/A	DI					
86	LS	DPS13-TNK6-LS-13653	Diesel Day Tank 6 Level	Ashcroft		N/A	N/A	DI					
87	JJ	DPS13-HG1-JT-13700	House Generator 1 Power	SEL		0-480	VOLTS	AI					
88	JJ	DPS13-HG2-JT-13750	House Generator 2 Power	SEL		0-480	VOLTS	AI					
89	JJ	DPS13-HG3-JT-13850	House Generator 3 Power	SEL		0-480	VOLTS	AI					
90	LI	DPS13-SCT1-LT-13900	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
91	LI	DPS13-SCT2-LT-13901	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
92	LI	DPS13-DSC-LT-13902	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	TI	DPS13-VP1-TT-13000	Pump 1 Thrust Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
2	TI	DPS13-VP1-TT-13001	Pump 1 Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
3	VI	DPS13-VP1-VT-13002	Pump 1 Thrust Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
4	VI	DPS13-VP1-VT-13003	Pump 1 Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
5	TI	DPS13-VP2-TT-13050	Pump 2 Thrust Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
6	TI	DPS13-VP2-TT-13051	Pump 2 Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
7	VI	DPS13-VP2-VT-13052	Pump 2 Thrust Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
8	VI	DPS13-VP2-VT-13053	Pump 2 Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
9	TI	DPS13-CCD3-TT-13100	Pump 3 Thrust Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
10	TI	DPS13-CCD3-TT-13101	Pump 3 Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
11	VI	DPS13-CCD3-VT-13102	Pump 3 Thrust Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
12	VI	DPS13-CCD3-VT-13103	Pump 3 Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
13	VI	DPS13-HP4-VT-13150	Pump 4 NDE Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
14	VI	DPS13-HP4-VT-13151	Pump 4 DE Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
15	VI	DPS13-HP4-VT-13152	Pump 4 Thrust Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
16	LS	DPS13-HP4-LS-13153	Pump 4 Oil Level	PLC-DPS13	DI						N/A	N/A	
17	TI	DPS13-HP4-TT-13154	Pump 4 NDE Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
18	TI	DPS13-HP4-TT-13155	Pump 4 DE Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
19	TI	DPS13-HP4-TT-13156	Pump 4 Thrust Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
20	SI	DPS13-HP4-ST-13157	Pump 4 RPM	PLC-DPS13	AI						0-2000	RPM	
21	VI	DPS13-ENG2-VT-13158	Pump 4 Diesel Engine Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
22	TI	DPS13-ENG2-TT-13159	Pump 4 Diesel Engine Temperature	PLC-DPS13	AI						0-221	DEG F	
23	PI	DPS13-ENG2-PT-13160	Pump 4 Diesel Engine Oil Pressure	PLC-DPS13	AI						0-100	PSI	
24	TI	DPS13-ENG2-TT-13161	Pump 4 Diesel Engine Oil Temperature	PLC-DPS13	AI						0-221	DEG F	
25	PI	DPS13-ENG2-PT-13162	Pump 4 Diesel Engine Fuel Pressure	PLC-DPS13	AI						0-100	PSI	
26	VI	DPS13-HP5-VT-13200	Pump 5 NDE Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
27	VI	DPS13-HP5-VT-13201	Pump 5 DE Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
28	VI	DPS13-HP5-VT-13202	Pump 5 Thrust Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
29	LS	DPS13-HP5-LS-13203	Pump 5 Oil Level	PLC-DPS13	DI						N/A	N/A	
30	TI	DPS13-HP5-TT-13204	Pump 5 NDE Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
31	TI	DPS13-HP5-TT-13205	Pump 5 DE Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
32	TI	DPS13-HP5-TT-13206	Pump 5 Thrust Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
33	SI	DPS13-HP5-ST-13207	Pump 5 RPM	PLC-DPS13	AI						0-2000	RPM	
34	VI	DPS13-ENG2-VT-13208	Pump 5 Diesel Engine Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
35	TI	DPS13-ENG2-TT-13209	Pump 5 Diesel Engine Temperature	PLC-DPS13	AI						0-221	DEG F	
36	PI	DPS13-ENG2-PT-13210	Pump 5 Diesel Engine Oil Pressure	PLC-DPS13	AI						0-100	PSI	
37	TI	DPS13-ENG2-TT-13211	Pump 5 Diesel Engine Oil Temperature	PLC-DPS13	AI						0-221	DEG F	
38	PI	DPS13-ENG2-PT-13212	Pump 5 Diesel Engine Fuel Pressure	PLC-DPS13	AI						0-100	PSI	
39	VI	DPS13-HP6-VT-13250	Pump 6 NDE Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
40	VI	DPS13-HP6-VT-13251	Pump 6 DE Radial Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
41	VI	DPS13-HP6-VT-13252	Pump 6 Thrust Bearing Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	
42	LS	DPS13-HP6-LS-13253	Pump 6 Oil Level	PLC-DPS13	DI						N/A	N/A	
43	TI	DPS13-HP6-TT-13254	Pump 6 NDE Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
44	TI	DPS13-HP6-TT-13255	Pump 6 DE Radial Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	
45	TI	DPS13-HP6-TT-13256	Pump 6 Thrust Bearing Temperature	PLC-DPS13	AI						0-221	DEG F	

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
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FACILITY PLC INPUT-OUTPUT LIST

46	SI	DPS13-HP6-ST-13257	Pump 6 RPM	PLC-DPS13	AI					0-2000	RPM	
47	PI	DPS13-HP6-PT-13258	Pump 6 Gearbox Oil Pressure	PLC-DPS13	AI					0-100	PSI	
48	TI	DPS13-HP6-TT-13259	Pump 6 Gearbox Oil Temperature	PLC-DPS13	AI					0-221	DEG F	
49	VI	DPS13-HP6-VT-13260	Pump 6 Gearbox Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
50	TI	DPS13-HP6-TT-13261	Pump 6 Gearbox Temperature	PLC-DPS13	AI					0-221	DEG F	
51	VI	DPS13-HP6-VT-13262	Pump 6 Motor Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
52	TI	DPS13-HP6-TT-13263	Pump 6 Motor Temperature	PLC-DPS13	AI					0-221	DEG F	
53	VI	DPS13-HP7-VT-13300	Pump 7 NDE Radial Bearing Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
54	VI	DPS13-HP7-VT-13301	Pump 7 DE Radial Bearing Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
55	VI	DPS13-HP7-VT-13302	Pump 7 Thrust Bearing Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
56	LS	DPS13-HP7-LS-13303	Pump 7 Oil Level	PLC-DPS13	DI					N/A	N/A	
57	TI	DPS13-HP7-TT-13304	Pump 7 NDE Radial Bearing Temperature	PLC-DPS13	AI					0-221	DEG F	
58	TI	DPS13-HP7-TT-13305	Pump 7 DE Radial Bearing Temperature	PLC-DPS13	AI					0-221	DEG F	
59	TI	DPS13-HP7-TT-13306	Pump 7 Thrust Bearing Temperature	PLC-DPS13	AI					0-221	DEG F	
60	SI	DPS13-HP7-ST-13307	Pump 7 RPM	PLC-DPS13	AI					0-2000	RPM	
61	PI	DPS13-HP7-PT-13308	Pump 7 Gearbox Oil Pressure	PLC-DPS13	AI					0-100	PSI	
62	TI	DPS13-HP7-TT-13309	Pump 7 Gearbox Oil Temperature	PLC-DPS13	AI					0-221	DEG F	
63	VI	DPS13-HP7-VT-13310	Pump 7 Gearbox Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
64	TI	DPS13-HP7-TT-13311	Pump 7 Gearbox Temperature	PLC-DPS13	AI					0-221	DEG F	
65	VI	DPS13-HP7-VT-13312	Pump 7 Motor Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
66	TI	DPS13-HP7-TT-13313	Pump 7 Motor Temperature	PLC-DPS13	AI					0-221	DEG F	
67	TI	DPS13-VAP1-TT-13350	Vacuum Pump 1 Temp	PLC-DPS13	AI					0-221	DEG F	
68	VI	DPS13-VAP1-VT-13351	Vacuum Pump 1 Vib	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
69	PI	DPS13-VAP1-PT-13352	Vacuum Pump 1 Pressure	PLC-DPS13	AI					-15-0	PSI	
70	TI	DPS13-VAP2-TT-13400	Vacuum Pump 2 Temp	PLC-DPS13	AI					0-221	DEG F	
71	VI	DPS13-VAP2-VT-13401	Vacuum Pump 2 Vib	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
72	PI	DPS13-VAP2-PT-13402	Vacuum Pump 2 Pressure	PLC-DPS13	AI					-15-0	PSI	
73	TI	DPS13-VAP3-TT-13450	Vacuum Pump 3 Temp	PLC-DPS13	AI					0-221	DEG F	
74	VI	DPS13-VAP3-VT-13451	Vacuum Pump 3 Vib	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
75	PI	DPS13-VAP3-PT-13452	Vacuum Pump 3 Pressure	PLC-DPS13	AI					-15-0	PSI	
76	TI	DPS13-VAP4-TT-13500	Vacuum Pump 4 Temp	PLC-DPS13	AI					0-221	DEG F	
77	VI	DPS13-VAP4-VT-13501	Vacuum Pump 4 Vib	PLC-DPS13	AI					0-1.8	IN/SEC RMS	
78	PI	DPS13-VAP4-PT-13502	Vacuum Pump 4 Pressure	PLC-DPS13	AI					-15-0	PSI	
79	J1	DPS13-GEN1-JT-13550	Generator 1 Power	PLC-DPS13	AI					0-4160	VOLTS	
80	PI	DPS13-GEN1-PT-13551	Generator 1 Fuel Pressure	PLC-DPS13	AI					0-100	PSI	Signal derived from generator control panel.
81	PI	DPS13-GEN1-PT-13552	Generator 1 Oil Pressure	PLC-DPS13	AI					0-100	PSI	Signal derived from generator control panel.
82	TI	DPS13-GEN1-TT-13553	Generator 1 Oil Temperature	PLC-DPS13	AI					0-221	DEG F	Signal derived from generator control panel.
83	VI	DPS13-GEN1-VT-13554	Generator 1 Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	Signal derived from generator control panel.
84	TI	DPS13-GEN1-TT-13555	Generator 1 Temperature	PLC-DPS13	AI					0-221	DEG F	Signal derived from generator control panel.
85	J1	DPS13-GEN2-JT-13600	Generator 2 Power	PLC-DPS13	AI					0-4160	VOLTS	
86	PI	DPS13-GEN2-PT-13601	Generator 2 Fuel Pressure	PLC-DPS13	AI					0-100	PSI	Signal derived from generator control panel.
87	PI	DPS13-GEN2-PT-13602	Generator 2 Oil Pressure	PLC-DPS13	AI					0-100	PSI	Signal derived from generator control panel.
88	TI	DPS13-GEN2-TT-13603	Generator 2 Oil Temperature	PLC-DPS13	AI					0-221	DEG F	Signal derived from generator control panel.
89	VI	DPS13-GEN2-VT-13604	Generator 2 Vibration	PLC-DPS13	AI					0-1.8	IN/SEC RMS	Signal derived from generator control panel.
90	TI	DPS13-GEN2-TT-13605	Generator 2 Temperature	PLC-DPS13	AI					0-221	DEG F	Signal derived from generator control panel.
91	LS	DPS13-TNK1-LS-13650	Diesel Tank 1 Level	PLC-DPS13	DI					N/A	N/A	

PREPARED BY: JMJ

CHECKED BY: AJS

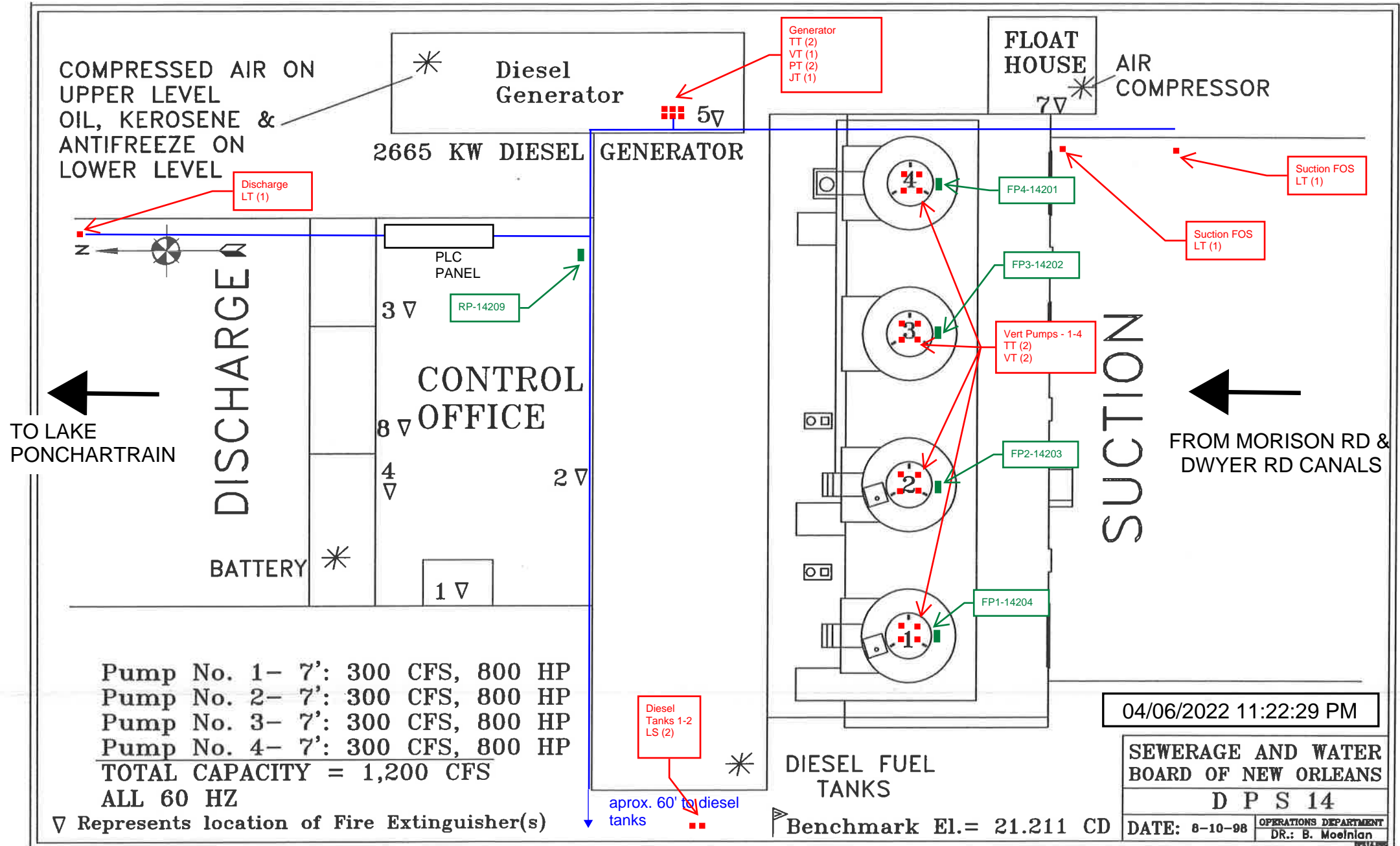
FACILITY PLC INPUT-OUTPUT LIST

92	LS	DPS13-TNK2-LS-13651	Diesel Tank 2 Level	PLC-DPS13	DI						N/A	N/A	
93	LS	DPS13-TNK3-LS-13652	Diesel Tank 3 Level	PLC-DPS13	DI						N/A	N/A	
94	LS	DPS13-TNK4-LS-13653	Diesel Tank 4 Level	PLC-DPS13	DI						N/A	N/A	
95	LS	DPS13-TNK5-LS-13652	Diesel Day Tank 5 Level	PLC-DPS13	DI						N/A	N/A	
96	LS	DPS13-TNK6-LS-13653	Diesel Day Tank 6 Level	PLC-DPS13	DI						N/A	N/A	
97	JI	DPS13-HG1-JT-13700	House Generator 1 Power	PLC-DPS13	AI						0-480	VOLTS	
98	PI	DPS13-HG1-PT-13701	House Generator 1 Fuel Pressure	PLC-DPS13	AI						0-100	PSI	Signal derived from generator control panel.
99	PI	DPS13-HG1-PT-13702	House Generator 1 Oil Pressure	PLC-DPS13	AI						0-100	PSI	Signal derived from generator control panel.
100	TI	DPS13-HG1-TT-13703	House Generator 1 Oil Temperature	PLC-DPS13	AI						0-221	DEG F	Signal derived from generator control panel.
101	VI	DPS13-HG1-VT-13704	House Generator 1 Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
102	TI	DPS13-HG1-TT-13705	House Generator 1 Temperature	PLC-DPS13	AI						0-221	DEG F	Signal derived from generator control panel.
103	JI	DPS13-HG2-JT-13750	House Generator 2 Power	PLC-DPS13	AI						0-480	VOLTS	
104	PI	DPS13-HG2-PT-13800	House Generator 2 Fuel Pressure	PLC-DPS13	AI						0-100	PSI	Signal derived from generator control panel.
105	PI	DPS13-HG2-PT-13801	House Generator 2 Oil Pressure	PLC-DPS13	AI						0-100	PSI	Signal derived from generator control panel.
106	TI	DPS13-HG2-TT-13802	House Generator 2 Oil Temperature	PLC-DPS13	AI						0-221	DEG F	Signal derived from generator control panel.
107	VI	DPS13-HG2-VT-13803	House Generator 2 Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
108	TI	DPS13-HG2-TT-13804	House Generator 2 Temperature	PLC-DPS13	AI						0-221	DEG F	Signal derived from generator control panel.
109	JI	DPS13-HG3-JT-13850	House Generator 3 Power	PLC-DPS13	AI						0-480	VOLTS	
110	PI	DPS13-HG3-PT-13851	House Generator 3 Fuel Pressure	PLC-DPS13	AI						0-100	PSI	Signal derived from generator control panel.
111	PI	DPS13-HG3-PT-13852	House Generator 3 Oil Pressure	PLC-DPS13	AI						0-100	PSI	Signal derived from generator control panel.
112	TI	DPS13-HG3-TT-13853	House Generator 3 Oil Temperature	PLC-DPS13	AI						0-221	DEG F	Signal derived from generator control panel.
113	VI	DPS13-HG3-VT-13854	House Generator 3 Vibration	PLC-DPS13	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
114	TI	DPS13-HG3-TT-13855	House Generator 3 Temperature	PLC-DPS13	AI						0-221	DEG F	Signal derived from generator control panel.
115	LI	DPS13-SCT1-LT-13900	FOS Suction Water Level 1	PLC-DPS13	AI						0-50	FT	
116	LI	DPS13-SCT2-LT-13901	BOS Suction Water Level 2	PLC-DPS13	AI						0-50	FT	
117	LI	DPS13-DSC-LT-13902	Channel Discharge Basin Level	PLC-DPS13	AI						0-50	FT	

Installation Notes

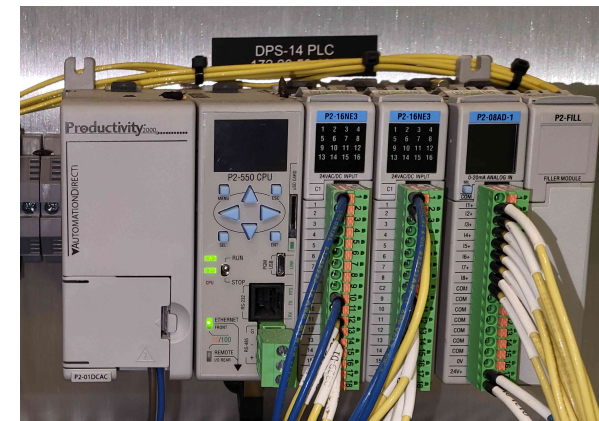
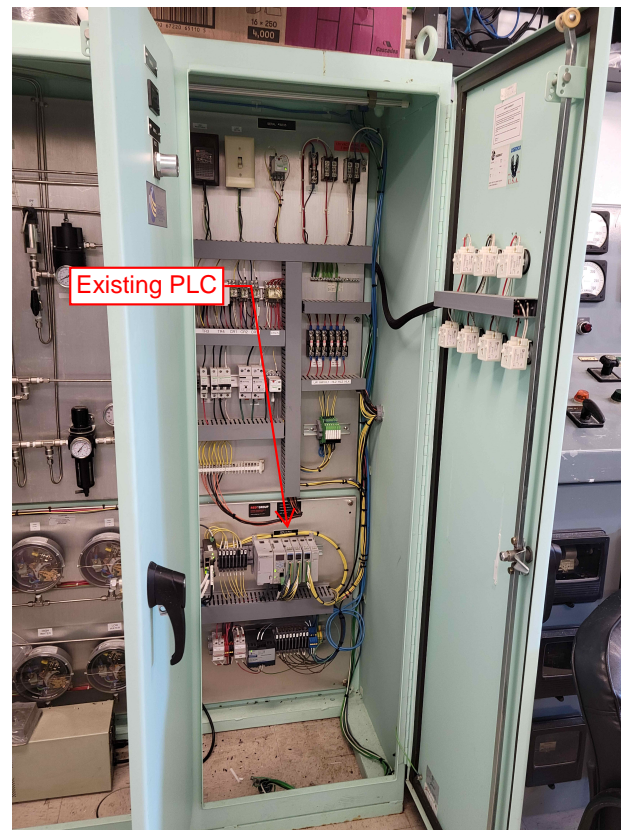
- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Pump No. 1- 7': 300 CFS, 800 HP
 Pump No. 2- 7': 300 CFS, 800 HP
 Pump No. 3- 7': 300 CFS, 800 HP
 Pump No. 4- 7': 300 CFS, 800 HP
TOTAL CAPACITY = 1,200 CFS
ALL 60 HZ

∇ Represents location of Fire Extinguisher(s)



NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAI	NOTES
1	JJ	DPS14-GEN-JT-14100	Generator Power	SEL		0-4160	VOLTS	AI					
2	LS	DPS14-TNK1-LS-14200	Diesel Tank 1 Level	Ashcroft		N/A	N/A	AI					
3	LS	DPS14-TNK2-LS-14201	Diesel Tank 2 Level	Ashcroft		N/A	N/A	AI					
4	TI	DPS14-VP1-TT-14300	Pump V1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
5	TI	DPS14-VP1-TT-14301	Pump V1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	VI	DPS14-VP1-VT-14302	Pump V1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
7	VI	DPS14-VP1-VT-14303	Pump V1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	TI	DPS14-VP2-TT-14400	Pump V2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
9	TI	DPS14-VP2-TT-14401	Pump V2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
10	VI	DPS14-VP2-VT-14402	Pump V2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
11	VI	DPS14-VP2-VT-14403	Pump V2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	TI	DPS14-VP3-TT-14500	Pump V3 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
13	TI	DPS14-VP3-TT-14501	Pump V3 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
14	VI	DPS14-VP3-VT-14502	Pump V3 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
15	VI	DPS14-VP3-VT-14503	Pump V3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
16	TI	DPS14-VP4-TT-14600	Pump V4 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS14-VP4-TT-14601	Pump V4 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	VI	DPS14-VP4-VT-14602	Pump V4 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
19	VI	DPS14-VP4-VT-14603	Pump V4 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
20	LI	DPS14-SCT1-LT-140700	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
21	LI	DPS14-SCT2-LT-140701	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
22	LI	DPS14-DSC-LT-140702	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR ADDITIONAL INSTRUMENTATION

REVISION: IFB

Rev. DATE: 4/7/2022

PREPARED BY: JMJ

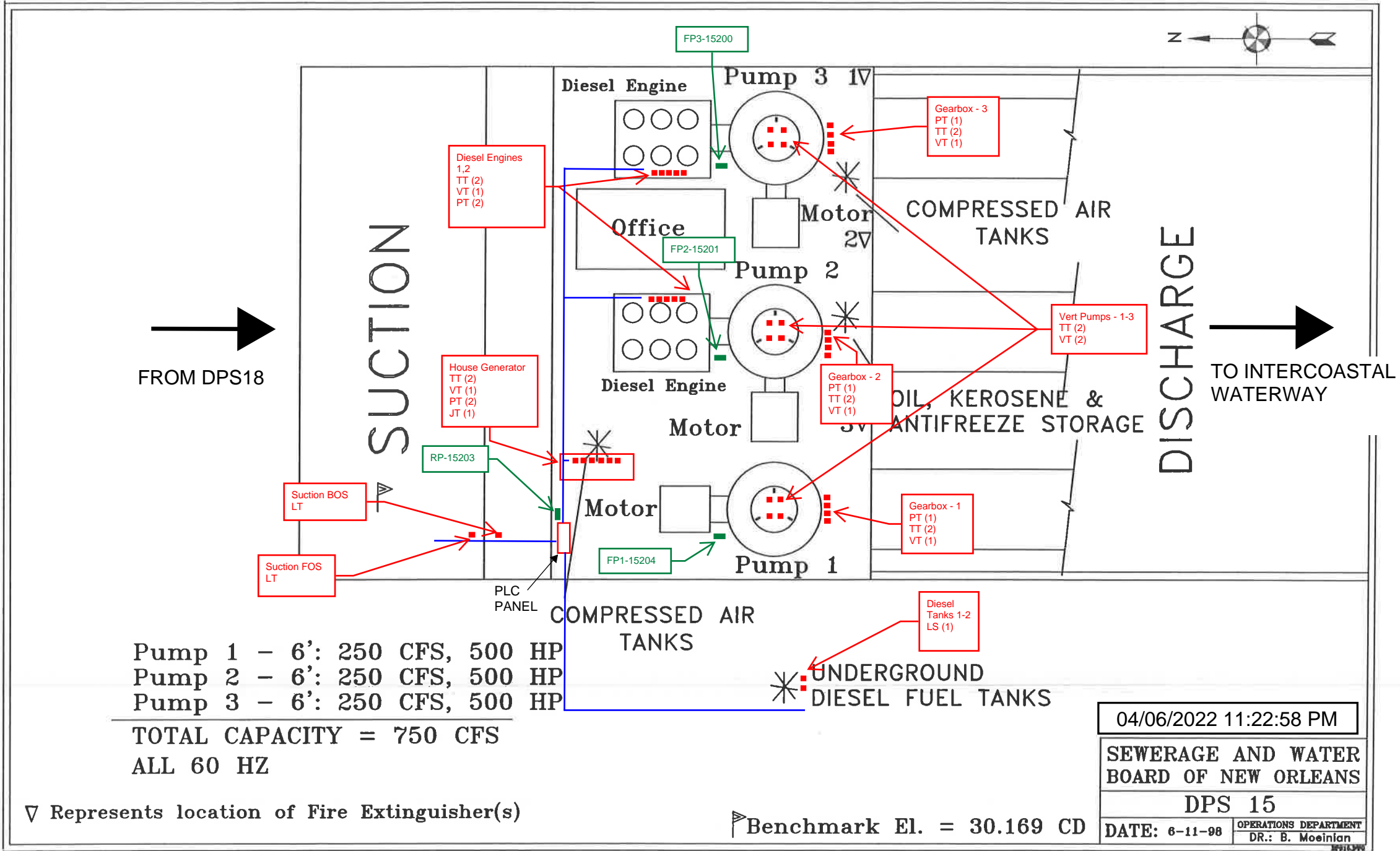
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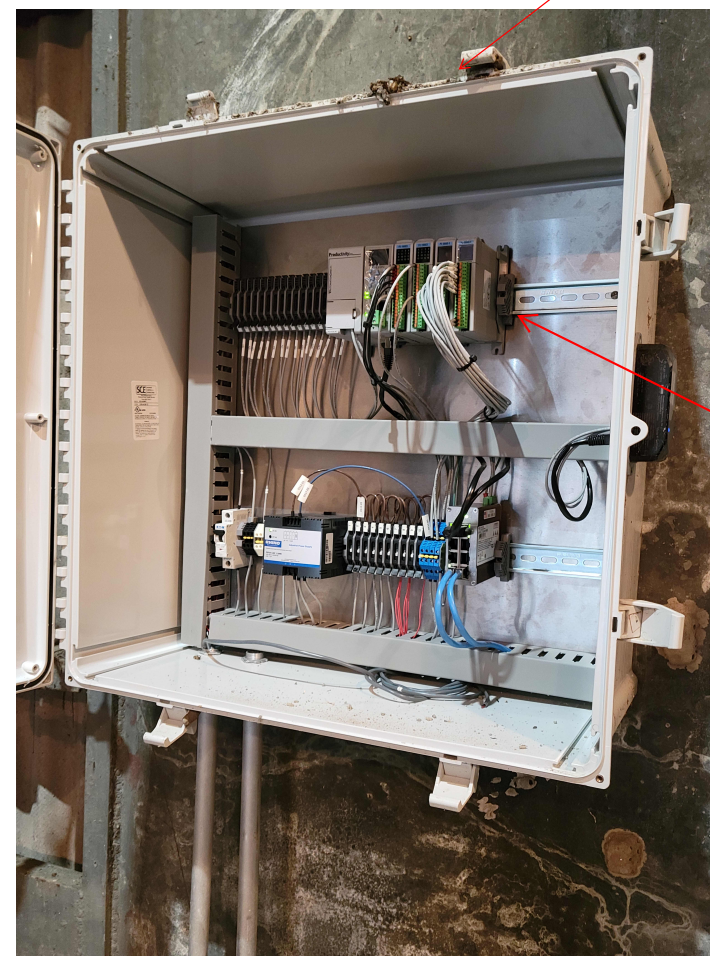
FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	JI	DPS14-GEN-JT-14100	Generator Power	PLC-DPS14	AI						0-4160	VOLTS	
2	PI	DPS14-GEN-PT-14101	Generator Fuel Pressure	PLC-DPS14	AI						0-100	PSI	Signal derived from generator control panel.
3	PI	DPS14-GEN-PT-14102	Generator Oil Pressure	PLC-DPS14	AI						0-100	PSI	Signal derived from generator control panel.
4	TI	DPS14-GEN-TT-14103	Generator Oil Temperature	PLC-DPS14	AI						0-221	DEG F	Signal derived from generator control panel.
5	VI	DPS14-GEN-VT-14104	Generator Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
6	TI	DPS14-GEN-TT-14105	Generator Temperature	PLC-DPS14	AI						0-221	DEG F	Signal derived from generator control panel.
7	LS	DPS14-TNK1-LS-14200	Diesel Tank 1 Level	PLC-DPS14	DI						N/A	N/A	
8	LS	DPS14-TNK2-LS-14201	Diesel Tank 2 Level	PLC-DPS14	DI						N/A	N/A	
9	TI	DPS14-VP1-TT-14300	Pump V1 Thrust Bearing Temperature	PLC-DPS14	AI						0-221	DEG F	
10	TI	DPS14-VP1-TT-14301	Pump V1 Radial Bearing Temperature	PLC-DPS14	AI						0-221	DEG F	
11	VI	DPS14-VP1-VT-14302	Pump V1 Thrust Bearing Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	
12	VI	DPS14-VP1-VT-14303	Pump V1 Radial Bearing Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	
13	TI	DPS14-VP2-TT-14400	Pump V2 Thrust Bearing Temperature	PLC-DPS14	AI						0-221	DEG F	
14	TI	DPS14-VP2-TT-14401	Pump V2 Radial Bearing Temperature	PLC-DPS14	AI						0-221	DEG F	
15	VI	DPS14-VP2-VT-14402	Pump V2 Thrust Bearing Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	
16	VI	DPS14-VP2-VT-14403	Pump V2 Radial Bearing Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	
17	TI	DPS14-VP3-TT-14500	Pump V3 Thrust Bearing Temperature	PLC-DPS14	AI						0-221	DEG F	
18	TI	DPS14-VP3-TT-14501	Pump V3 Radial Bearing Temperature	PLC-DPS14	AI						0-221	DEG F	
19	VI	DPS14-VP3-VT-14502	Pump V3 Thrust Bearing Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	
20	VI	DPS14-VP3-VT-14503	Pump V3 Radial Bearing Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	
21	TI	DPS14-VP4-TT-14600	Pump V4 Thrust Bearing Temperature	PLC-DPS14	AI						0-221	DEG F	
22	TI	DPS14-VP4-TT-14601	Pump V4 Radial Bearing Temperature	PLC-DPS14	AI						0-221	DEG F	
23	VI	DPS14-VP4-VT-14602	Pump V4 Thrust Bearing Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	
24	VI	DPS14-VP4-VT-14603	Pump V4 Radial Bearing Vibration	PLC-DPS14	AI						0-1.8	IN/SEC RMS	
25	LI	DPS14-SCT1-LT-14700	FOS Suction Water Level 1	PLC-DPS14	AI						0-50	FT	
26	LI	DPS14-SCT2-LT-14701	BOS Suction Water Level 2	PLC-DPS14	AI						0-50	FT	
27	LI	DPS14-DSC-LT-14702	Discharge Water Level	PLC-DPS14	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.





NOTES:

- 1) Contractor to inspect existing enclosure and determine if corrosion or damage exists due to water and contaminants observed. Coordinate evaluation with Owner.
2. If the enclosure is free of damage and corrosion, contractor to fabricate a 316 Stainless Steel shield to both isolate the panel's backplane off of the existing structure. This 316 SS shield shall also include an overhang to prevent other rain or moisture events from impacting the enclosure.
- 3) Contractor shall then determine if existing space allows for new PLC equipment to be mounted within. If space is insufficient, Contractor to provide new enclosure and coordinate the location with owner.
4. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
5. Connect existing PLC through a serial link to the new DIN rail mounted base.
6. New base will be an 7 module base (P2-7B) to accommodate the new analog and discrete signals.
7. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
8. Install wireless receiver enclosure and connect to existing PLC via new communication module.
9. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
10. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	PI	DPS15-VP1-PT-15000	Pump 1 Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
2	TI	DPS15-VP1-TT-15001	Pump 1 Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
3	VI	DPS15-VP1-VT-15002	Pump 1 Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	TI	DPS15-VP1-TT-15003	Pump 1 Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
5	TI	DPS15-VP1-TT-15004	Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS15-VP1-TT-15005	Pump 1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	VI	DPS15-VP1-VT-15006	Pump 1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	VI	DPS15-VP1-VT-15007	Pump 1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
9	PI	DPS15-VP2-PT-15100	Pump 2 Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
10	TI	DPS15-VP2-TT-15101	Pump 2 Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
11	VI	DPS15-VP2-VT-15102	Pump 2 Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	TI	DPS15-VP2-TT-15103	Pump 2 Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
13	VI	DPS15-ENG2-VT-15106	Pump 2 Diesel Engine Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	TI	DPS15-ENG2-TT-15107	Pump 2 Diesel Engine Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
15	PI	DPS15-ENG2-PT-15108	Pump 2 Diesel Engine Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
16	TI	DPS15-ENG2-TT-15109	Pump 2 Diesel Engine Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
17	PI	DPS15-ENG2-PT-15110	Pump 2 Diesel Engine Fuel Pressure	Vega	Bar-series 28	0-100	PSI	AI					
18	TI	DPS15-VP2-TT-15111	Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
19	TI	DPS15-VP2-TT-15112	Pump 2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
20	VI	DPS15-VP2-VT-15113	Pump 2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
21	VI	DPS15-VP2-VT-15114	Pump 2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
22	PI	DPS15-VP3-PT-15200	Pump 3 Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
23	TI	DPS15-VP3-TT-15201	Pump 3 Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
24	VI	DPS15-VP3-VT-15202	Pump 3 Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
25	TI	DPS15-VP3-TT-15203	Pump 3 Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
26	VI	DPS15-ENG3-VT-15206	Pump 3 Diesel Engine Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
27	TI	DPS15-ENG3-TT-15207	Pump 3 Diesel Engine Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
28	PI	DPS15-ENG3-PT-15208	Pump 3 Diesel Engine Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
29	TI	DPS15-ENG3-TT-15209	Pump 3 Diesel Engine Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
30	PI	DPS15-ENG3-PT-15210	Pump 3 Diesel Engine Fuel Pressure	Vega	Bar-series 28	0-100	PSI	AI					
31	TI	DPS15-VP3-TT-15211	Pump 3 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
32	TI	DPS15-VP3-TT-15212	Pump 3 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
33	VI	DPS15-VP3-VT-15213	Pump 3 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
34	VI	DPS15-VP3-VT-15214	Pump 3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
35	JI	DPS15-GEN-JT-15300	House Generator Power	SEL		0-480	VOLTS	AI					
36	LS	DPS15-TNK1-LS-15400	Underground Diesel Tank 1 Level	Ashcroft		N/A	N/A	DI					
37	LS	DPS15-TNK2-LS-15401	Underground Diesel Tank 2 Level	Ashcroft		N/A	N/A	DI					
38	LI	DPS15-SCT1-LT-15500	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
39	LI	DPS15-SCT2-LT-15501	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

REVISION: IFB
Rev. DATE: 4/7/2022

PREPARED BY: JMJ
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	PI	DPS15-VP1-PT-15000	Pump 1 Gearbox Oil Pressure	PLC-DPS15	AI						0-100	PSI	
2	TI	DPS15-VP1-TT-15001	Pump 1 Gearbox Oil Temperature	PLC-DPS15	AI						0-221	DEG F	
3	VI	DPS15-VP1-VT-15002	Pump 1 Gearbox Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
4	TI	DPS15-VP1-TT-15003	Pump 1 Gearbox Temperature	PLC-DPS15	AI						0-221	DEG F	
7	TI	DPS15-VP1-TT-15006	Pump 1 Thrust Bearing Temperature	PLC-DPS15	AI						0-221	DEG F	
8	TI	DPS15-VP1-TT-15007	Pump 1 Radial Bearing Temperature	PLC-DPS15	AI						0-221	DEG F	
9	VI	DPS15-VP1-VT-15008	Pump 1 Thrust Bearing Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
10	VI	DPS15-VP1-VT-15009	Pump 1 Radial Bearing Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
11	PI	DPS15-VP2-PT-15100	Pump 2 Gearbox Oil Pressure	PLC-DPS15	AI						0-100	PSI	
12	TI	DPS15-VP2-TT-15101	Pump 2 Gearbox Oil Temperature	PLC-DPS15	AI						0-221	DEG F	
13	VI	DPS15-VP2-VT-15102	Pump 2 Gearbox Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
14	TI	DPS15-VP2-TT-15103	Pump 2 Gearbox Temperature	PLC-DPS15	AI						0-221	DEG F	
17	VI	DPS15-ENG2-VT-15106	Pump 2 Diesel Engine Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
18	TI	DPS15-ENG2-TT-15107	Pump 2 Diesel Engine Temperature	PLC-DPS15	AI						0-221	DEG F	
19	PI	DPS15-ENG2-PT-15108	Pump 2 Diesel Engine Oil Pressure	PLC-DPS15	AI						0-100	PSI	
20	TI	DPS15-ENG2-TT-15109	Pump 2 Diesel Engine Oil Temperature	PLC-DPS15	AI						0-221	DEG F	
21	PI	DPS15-ENG2-PT-15110	Pump 2 Diesel Engine Fuel Pressure	PLC-DPS15	AI						0-100	PSI	
22	TI	DPS15-VP2-TT-15111	Pump 2 Thrust Bearing Temperature	PLC-DPS15	AI						0-221	DEG F	
23	TI	DPS15-VP2-TT-15112	Pump 2 Radial Bearing Temperature	PLC-DPS15	AI						0-221	DEG F	
24	VI	DPS15-VP2-VT-15113	Pump 2 Thrust Bearing Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
25	VI	DPS15-VP2-VT-15114	Pump 2 Radial Bearing Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
26	PI	DPS15-VP3-PT-15200	Pump 3 Gearbox Oil Pressure	PLC-DPS15	AI						0-100	PSI	
27	TI	DPS15-VP3-TT-15201	Pump 3 Gearbox Oil Temperature	PLC-DPS15	AI						0-221	DEG F	
28	VI	DPS15-VP3-VT-15202	Pump 3 Gearbox Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
29	TI	DPS15-VP3-TT-15203	Pump 3 Gearbox Temperature	PLC-DPS15	AI						0-221	DEG F	
32	VI	DPS15-ENG3-VT-15206	Pump 3 Diesel Engine Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
33	TI	DPS15-ENG3-TT-15207	Pump 3 Diesel Engine Temperature	PLC-DPS15	AI						0-221	DEG F	
34	PI	DPS15-ENG3-PT-15208	Pump 3 Diesel Engine Oil Pressure	PLC-DPS15	AI						0-100	PSI	
35	TI	DPS15-ENG3-TT-15209	Pump 3 Diesel Engine Oil Temperature	PLC-DPS15	AI						0-221	DEG F	
36	PI	DPS15-ENG3-PT-15210	Pump 3 Diesel Engine Fuel Pressure	PLC-DPS15	AI						0-100	PSI	
37	TI	DPS15-VP3-TT-15211	Pump 3 Thrust Bearing Temperature	PLC-DPS15	AI						0-221	DEG F	
38	TI	DPS15-VP3-TT-15212	Pump 3 Radial Bearing Temperature	PLC-DPS15	AI						0-221	DEG F	
39	VI	DPS15-VP3-VT-15213	Pump 3 Thrust Bearing Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
40	VI	DPS15-VP3-VT-15214	Pump 3 Radial Bearing Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	
41	JI	DPS15-GEN-JT-15300	House Generator Power	PLC-DPS15	AI						0-480	VOLTS	
42	PI	DPS15-GEN-PT-15301	House Generator Fuel Pressure	PLC-DPS15	AI						0-100	PSI	Signal derived from generator control panel.
43	PI	DPS15-GEN-PT-15302	House Generator Oil Pressure	PLC-DPS15	AI						0-100	PSI	Signal derived from generator control panel.
44	TI	DPS15-GEN-TT-15303	House Generator Oil Temperature	PLC-DPS15	AI						0-221	DEG F	Signal derived from generator control panel.
45	VI	DPS15-GEN-VT-15304	House Generator Vibration	PLC-DPS15	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
46	TI	DPS15-GEN-TT-15305	House Generator Temperature	PLC-DPS15	AI						0-221	DEG F	Signal derived from generator control panel.
47	LS	DPS15-TNK1-LS-15400	Underground Diesel Tank 1 Level	PLC-DPS15	DI						N/A	N/A	
48	LS	DPS15-TNK2-LS-15401	Underground Diesel Tank 2 Level	PLC-DPS15	DI						N/A	N/A	
49	LI	DPS15-SCT1-LT-15500	FOS Suction Water Level 1	PLC-DPS15	AI						0-50	FT	
50	LI	DPS15-SCT2-LT-15501	BOS Suction Water Level 2	PLC-DPS15	AI						0-50	FT	

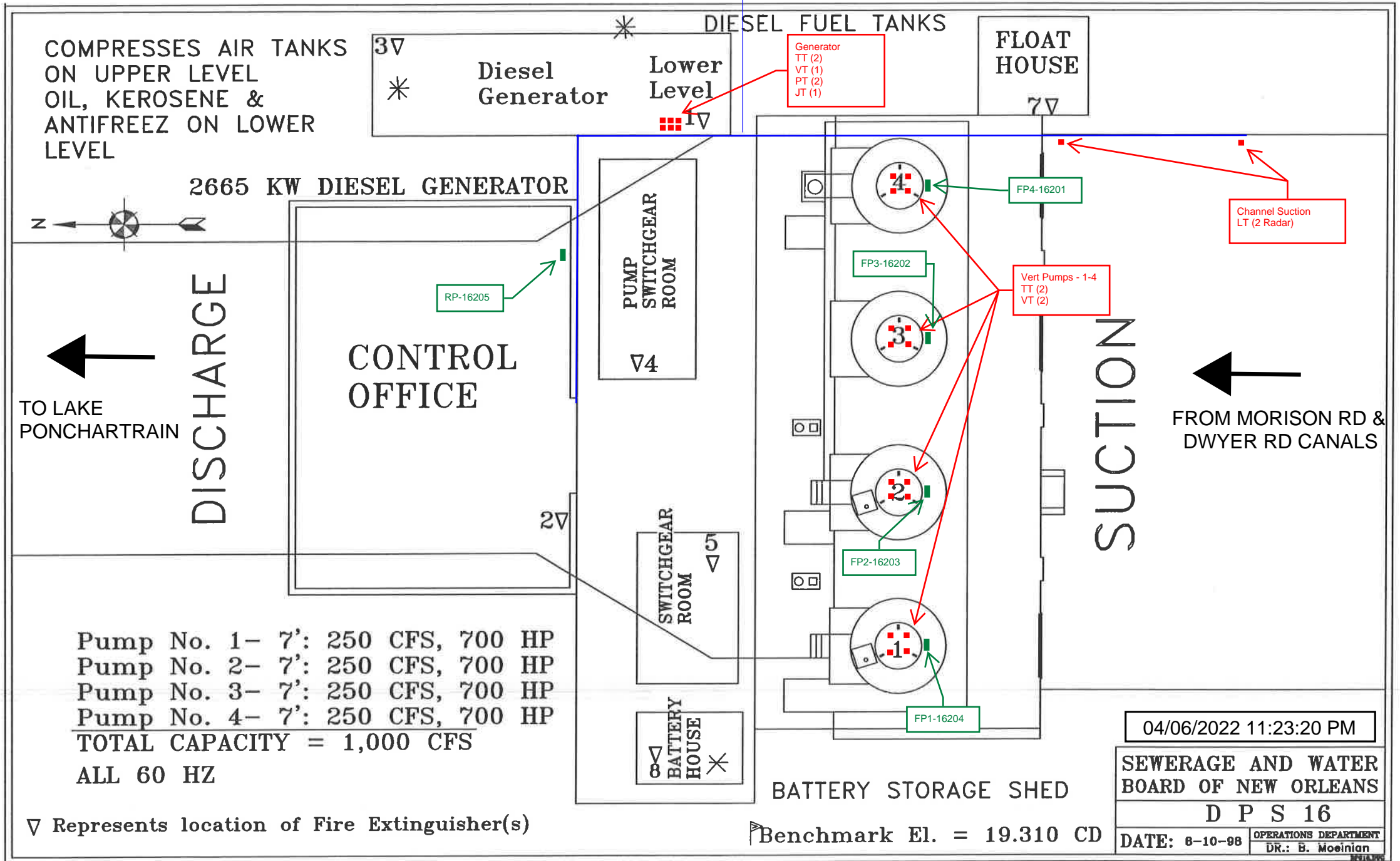
Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

Diesel Tanks 1-2 LS (1)

85' to diesel tanks from google earth

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ

CHECKED BY: AJS

REVISION: IFB

Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAI	NOTES
1	JJ	DPS16-GEN-JT-16100	Generator Power	SEL		0-4160	VOLTS	AI					
2	LS	DPS16-TNK1-LS-16200	Diesel Tank 1 Level	Ashcroft		N/A	N/A	DI					
3	LS	DPS16-TNK2-LS-16201	Diesel Tank 2 Level	Ashcroft		N/A	N/A	DI					
4	TI	DPS16-VP1-TT-16300	Pump V1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
5	TI	DPS16-VP1-TT-16301	Pump V1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	VI	DPS16-VP1-VT-16302	Pump V1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
7	VI	DPS16-VP1-VT-16303	Pump V1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	TI	DPS16-VP2-TT-16400	Pump V2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
9	TI	DPS16-VP2-TT-16401	Pump V2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
10	VI	DPS16-VP2-VT-16402	Pump V2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
11	VI	DPS16-VP2-VT-16403	Pump V2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	TI	DPS16-VP3-TT-16500	Pump V3 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
13	TI	DPS16-VP3-TT-16501	Pump V3 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
14	VI	DPS16-VP3-VT-16502	Pump V3 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
15	VI	DPS16-VP3-VT-16503	Pump V3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
16	TI	DPS16-VP4-TT-16600	Pump V4 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
17	TI	DPS16-VP4-TT-16601	Pump V4 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	VI	DPS16-VP4-VT-16602	Pump V4 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
19	VI	DPS16-VP4-VT-16603	Pump V4 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
20	LI	DPS16-SCT-LT-16700	Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
21	LI	DPS16-SCT-LT-16701	Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)

DRAINAGE PUMP STATIONS

NDR ADDITIONAL INSTRUMENTATION

REVISION: IFB

Rev. DATE: 4/7/2022

PREPARED BY: JMJ

CHECKED BY: AJS

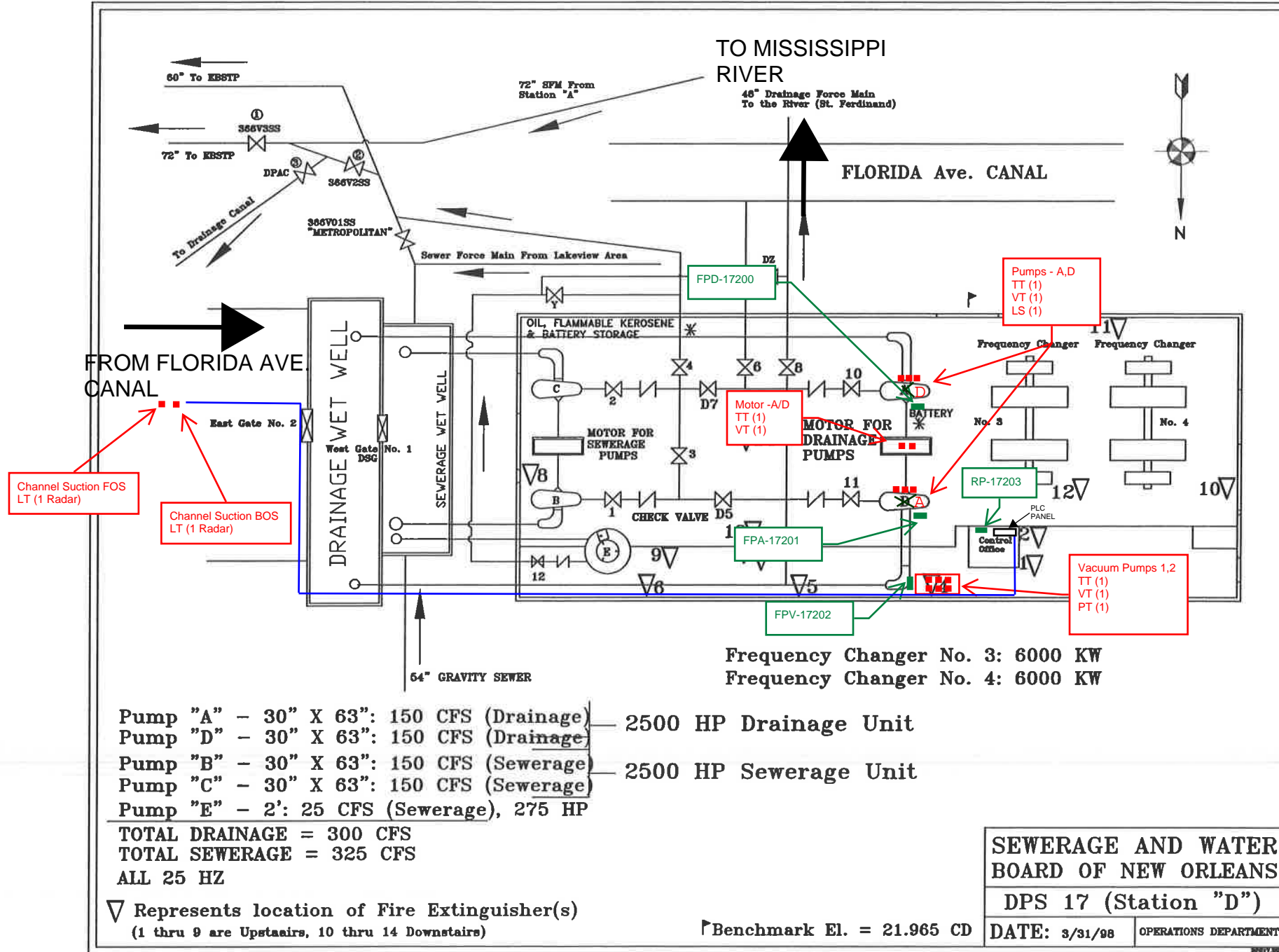
FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	J1	DPS16-GEN-JT-16100	Generator Power	PLC-DPS16	AI						0-4160	VOLTS	
2	PI	DPS16-GEN-PT-16101	Generator Fuel Pressure	PLC-DPS16	AI						0-100	PSI	Signal derived from generator control panel.
3	PI	DPS16-GEN-PT-16102	Generator Oil Pressure	PLC-DPS16	AI						0-100	PSI	Signal derived from generator control panel.
4	TI	DPS16-GEN-TT-16103	Generator Oil Temperature	PLC-DPS16	AI						0-221	DEG F	Signal derived from generator control panel.
5	VI	DPS16-GEN-VT-16104	Generator Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
6	TI	DPS16-GEN-TT-16105	Generator Temperature	PLC-DPS16	AI						0-221	DEG F	Signal derived from generator control panel.
7	LS	DPS16-TNK1-LS-16200	Diesel Tank 1 Level	PLC-DPS16	DI						N/A	N/A	
8	LS	DPS16-TNK2-LS-16201	Diesel Tank 2 Level	PLC-DPS16	DI						N/A	N/A	
9	TI	DPS16-VP1-TT-16300	Pump V1 Thrust Bearing Temperature	PLC-DPS16	AI						0-221	DEG F	
10	TI	DPS16-VP1-TT-16301	Pump V1 Radial Bearing Temperature	PLC-DPS16	AI						0-221	DEG F	
11	VI	DPS16-VP1-VT-16302	Pump V1 Thrust Bearing Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	
12	VI	DPS16-VP1-VT-16303	Pump V1 Radial Bearing Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	
13	TI	DPS16-VP2-TT-16400	Pump V2 Thrust Bearing Temperature	PLC-DPS16	AI						0-221	DEG F	
14	TI	DPS16-VP2-TT-16401	Pump V2 Radial Bearing Temperature	PLC-DPS16	AI						0-221	DEG F	
15	VI	DPS16-VP2-VT-16402	Pump V2 Thrust Bearing Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	
16	VI	DPS16-VP2-VT-16403	Pump V2 Radial Bearing Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	
17	TI	DPS16-VP3-TT-16500	Pump V3 Thrust Bearing Temperature	PLC-DPS16	AI						0-221	DEG F	
18	TI	DPS16-VP3-TT-16501	Pump V3 Radial Bearing Temperature	PLC-DPS16	AI						0-221	DEG F	
19	VI	DPS16-VP3-VT-16502	Pump V3 Thrust Bearing Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	
20	VI	DPS16-VP3-VT-16503	Pump V3 Radial Bearing Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	
21	TI	DPS16-VP4-TT-16600	Pump V4 Thrust Bearing Temperature	PLC-DPS16	AI						0-221	DEG F	
22	TI	DPS16-VP4-TT-16601	Pump V4 Radial Bearing Temperature	PLC-DPS16	AI						0-221	DEG F	
23	VI	DPS16-VP4-VT-16602	Pump V4 Thrust Bearing Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	
24	VI	DPS16-VP4-VT-16603	Pump V4 Radial Bearing Vibration	PLC-DPS16	AI						0-1.8	IN/SEC RMS	
25	LI	DPS16-SCT-LT-16700	Suction Water Level 1	PLC-DPS16	AI						0-50	FT	
26	LI	DPS16-SCT-LT-16701	Suction Water Level 2	PLC-DPS16	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.





Existing PLC

NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.



SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS17-CPA-VT-17000	Pump A Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	LS	DPS17-CPA-LS-17001	Pump A Oil Level	Ashcroft		N/A	N/A	DI					
3	TI	DPS17-CPA-TT-17002	Pump A Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
4	VI	DPS17-CPD-VT-17100	Pump D Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	LS	DPS17-CPD-LS-17101	Pump D Oil Level	Ashcroft		N/A	N/A	DI					
6	TI	DPS17-CPD-TT-17102	Pump D Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS17-VAP1-TT-17200	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	VI	DPS17-VAP1-VT-17201	Vacuum Pump 1 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
9	PI	DPS17-VAP1-PT-17202	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
10	TI	DPS17-VAP2-TT-17300	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPS17-VAP2-VT-17301	Vacuum Pump 2 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	PI	DPS17-VAP2-PT-17302	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
13	VI	DPS17-HP-VT-17400	Pump A/D Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	TI	DPS17-HP-TT-17401	Pump A/D Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
15	LI	DPS17-SCT-LT-17500	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
16	LI	DPS17-SCT-LT-17501	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

PREPARED BY: JMJ

CHECKED BY: AJS

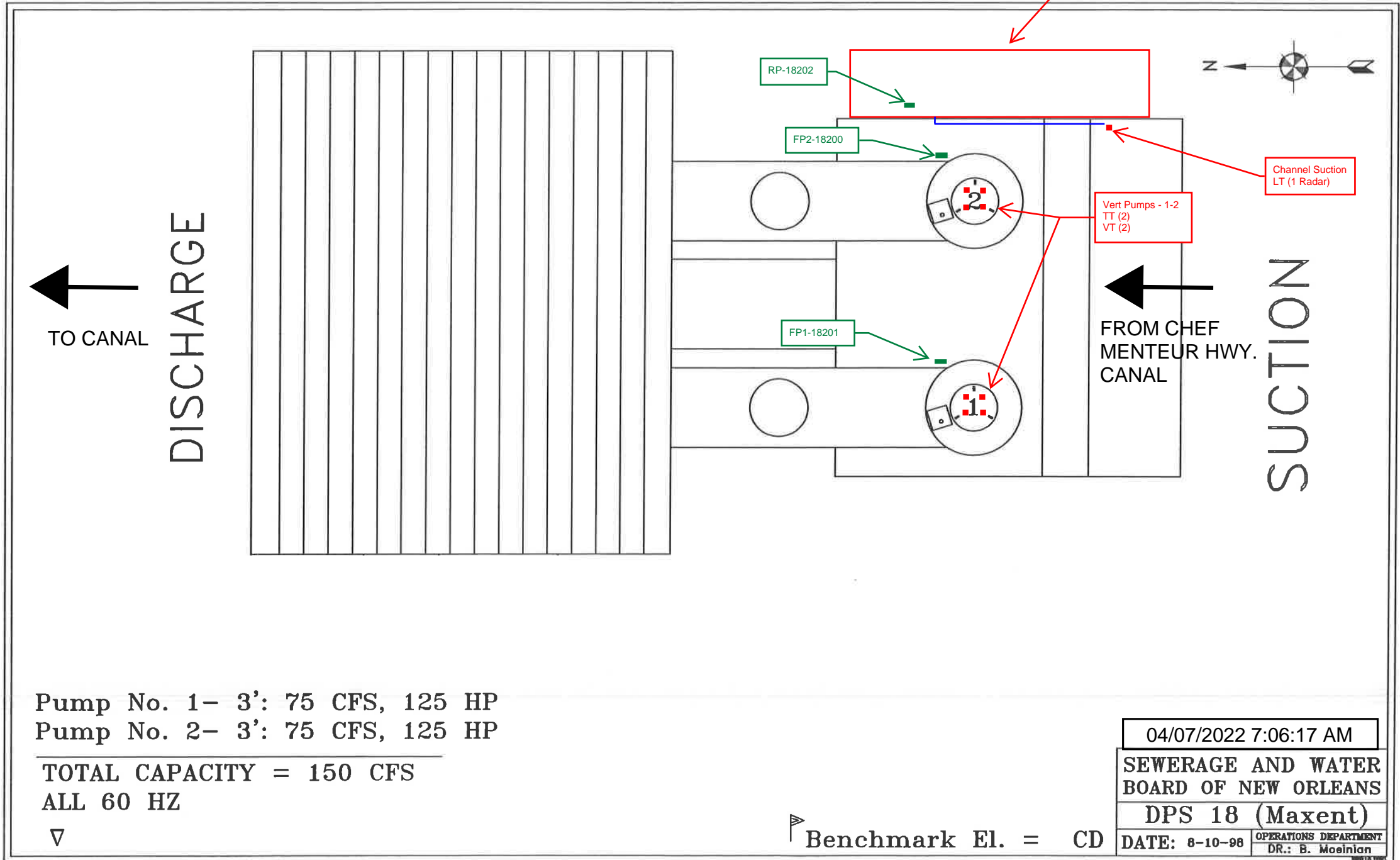
FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS17-CPA-VT-17000	Pump A Radial Bearing Vibration	PLC-DPS17	AI						0-1.8	IN/SEC RMS	
2	LS	DPS17-CPA-LS-17001	Pump A Oil Level	PLC-DPS17	DI						N/A	N/A	
3	TI	DPS17-CPA-TT-17002	Pump A Radial Bearing Temperature	PLC-DPS17	AI						0-221	DEG F	
4	VI	DPS17-CPD-VT-17100	Pump D Radial Bearing Vibration	PLC-DPS17	AI						0-1.8	IN/SEC RMS	
5	LS	DPS17-CPD-LS-17101	Pump D Oil Level	PLC-DPS17	DI						N/A	N/A	
6	TI	DPS17-CPD-TT-17102	Pump D Radial Bearing Temperature	PLC-DPS17	AI						0-221	DEG F	
7	TI	DPS17-VAP1-TT-17200	Vacuum Pump 1 Temp	PLC-DPS17	AI						0-221	DEG F	
8	VI	DPS17-VAP1-VT-17201	Vacuum Pump 1 Vib	PLC-DPS17	AI						0-1.8	IN/SEC RMS	
9	PI	DPS17-VAP1-PT-17202	Vacuum Pump 1 Pressure	PLC-DPS17	AI						-15- 0	PSI	
10	TI	DPS17-VAP2-TT-17300	Vacuum Pump 2 Temp	PLC-DPS17	AI						0-221	DEG F	
11	VI	DPS17-VAP2-VT-17301	Vacuum Pump 2 Vib	PLC-DPS17	AI						0-1.8	IN/SEC RMS	
12	PI	DPS17-VAP2-PT-17302	Vacuum Pump 2 Pressure	PLC-DPS17	AI						-15- 0	PSI	
13	VI	DPS17-HP-VT-17400	Pump A/D Motor Vibration	PLC-DPS17	AI						0-1.8	IN/SEC RMS	
14	TI	DPS17-HP-TT-17401	Pump A/D Motor Temperature	PLC-DPS17	AI						0-221	DEG F	
15	LI	DPS17-SCT-LT-17500	FOS Suction Water Level 1	PLC-DPS17	AI						0-50	FT	
16	LI	DPS17-SCT-LT-17501	BOS Suction Water Level 2	PLC-DPS17	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Pump No. 1- 3': 75 CFS, 125 HP
 Pump No. 2- 3': 75 CFS, 125 HP

TOTAL CAPACITY = 150 CFS
 ALL 60 HZ



Benchmark El. = CD

04/07/2022 7:06:17 AM	
SEWERAGE AND WATER BOARD OF NEW ORLEANS	
DPS 18 (Maxent)	
DATE: 8-10-98	OPERATIONS DEPARTMENT
	DR.: B. Moenian



NOTES:

- 1) Contractor to furnish a new PLC system to match PLC systems at other existing Drainage Pump Stations.
- 2) The new PLC system will include all appurtenances for stand alone operation and integration into existing networked SCADA/HMI system.
- 3) Contractor to locate new PLC in enclosure within the control room on a wall location to be coordinated with Owner.
- 4) Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
6. Install wireless receiver enclosure and connect to new PLC via a communication module.
7. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
8. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	TI	DPS18-VP1-TT-18100	Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
2	TI	DPS18-VP1-TT-18101	Pump 1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
3	VI	DPS18-VP1-VT-18102	Pump 1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPS18-VP1-VT-18103	Pump 1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	TI	DPS18-VP2-TT-18200	Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS18-VP2-TT-18201	Pump 2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	VI	DPS18-VP2-VT-18202	Pump 2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	VI	DPS18-VP2-VT-18203	Pump 2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
9	LI	DPS18-SCT-LT-18300	Suction Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
10													

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
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REVISION: IFB
Rev. DATE: 4/7/2022

PREPARED BY: JMJ
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	TI	DPS18-VP1-TT-18100	Pump 1 Thrust Bearing Temperature	PLC-DPS18	AI						0-221	DEG F	
2	TI	DPS18-VP1-TT-18101	Pump 1 Radial Bearing Temperature	PLC-DPS18	AI						0-221	DEG F	
3	VI	DPS18-VP1-VT-18102	Pump 1 Thrust Bearing Vibration	PLC-DPS18	AI						0-1.8	IN/SEC RMS	
4	VI	DPS18-VP1-VT-18103	Pump 1 Radial Bearing Vibration	PLC-DPS18	AI						0-1.8	IN/SEC RMS	
5	TI	DPS18-VP2-TT-18200	Pump 2 Thrust Bearing Temperature	PLC-DPS18	AI						0-221	DEG F	
6	TI	DPS18-VP2-TT-18201	Pump 2 Radial Bearing Temperature	PLC-DPS18	AI						0-221	DEG F	
7	VI	DPS18-VP2-VT-18202	Pump 2 Thrust Bearing Vibration	PLC-DPS18	AI						0-1.8	IN/SEC RMS	
8	VI	DPS18-VP2-VT-18203	Pump 2 Radial Bearing Vibration	PLC-DPS18	AI						0-1.8	IN/SEC RMS	
9	LI	DPS18-SCT-LT-18300	Suction Water Level	PLC-DPS18	AI						0-50	FT	
10													

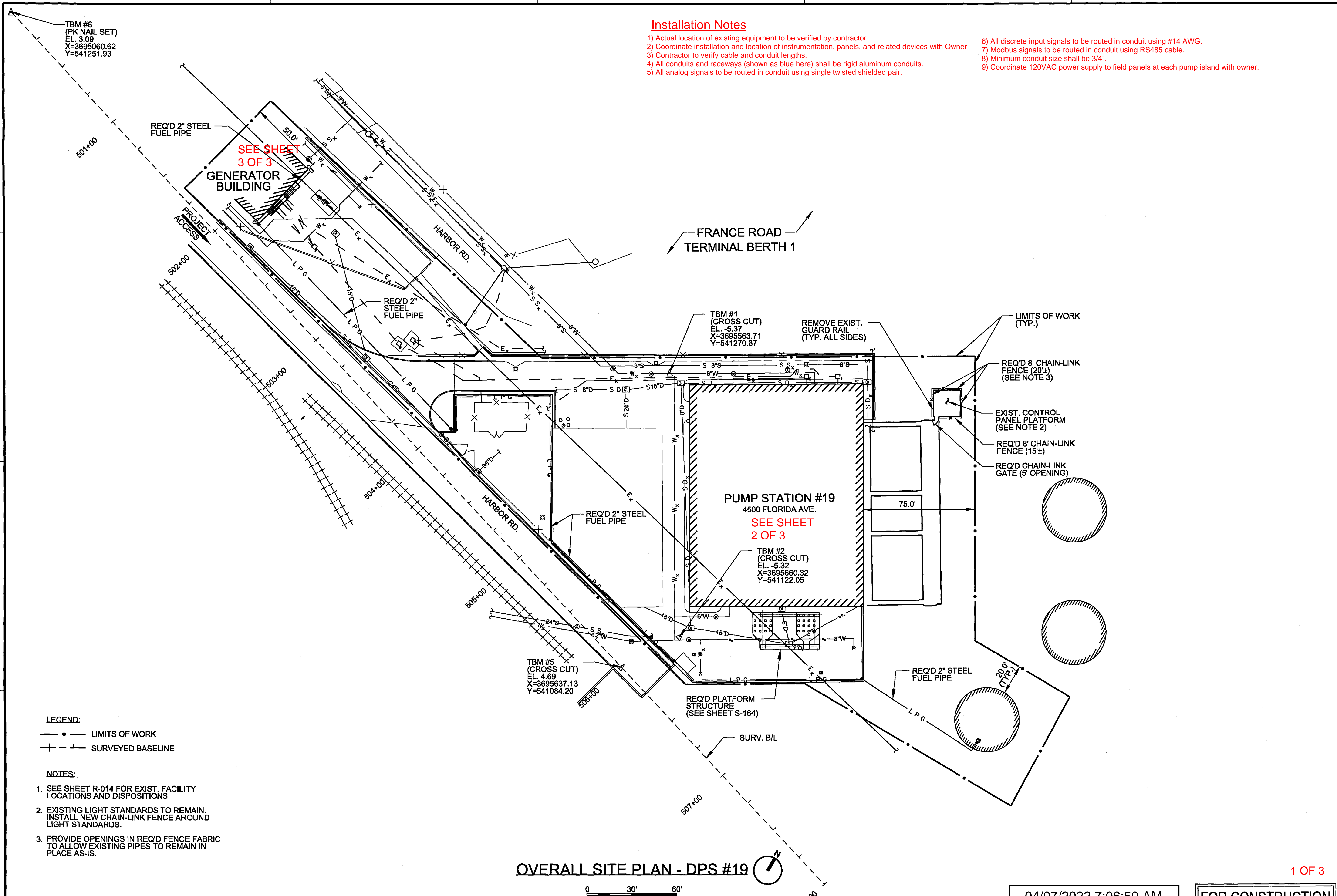
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Installation Notes

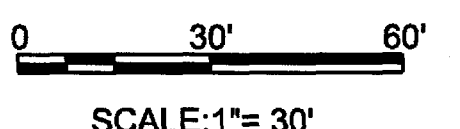
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- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



LEGEND:
 - - - - - LIMITS OF WORK
 + - + - + SURVEYED BASELINE

NOTES:
 1. SEE SHEET R-014 FOR EXIST. FACILITY LOCATIONS AND DISPOSITIONS
 2. EXISTING LIGHT STANDARDS TO REMAIN. INSTALL NEW CHAIN-LINK FENCE AROUND LIGHT STANDARDS.
 3. PROVIDE OPENINGS IN REQ'D FENCE FABRIC TO ALLOW EXISTING PIPES TO REMAIN IN PLACE AS-IS.

OVERALL SITE PLAN - DPS #19



04/07/2022 7:06:59 AM

FOR CONSTRUCTION

SHEET IDENTIFICATION
C-160

OVERALL SITE PLAN - DPS #19
STORM PROOFING DRAINAGE PUMP STATIONS NOS 1, 2, 4, 12, 19, & L-10
STORM PROOFING INTERIOR PUMP STATIONS
SEWERAGE AND WATERBOARD OF NEW ORLEANS
CSF-6

DESIGNED BY: N.O.S.B.E.	DATE: 08/16/2010
DRAWN BY: N.O.S.B.E.	SUBMITTAL NO.: V81298-10-0-079
CHECKED BY: N.O.S.B.E.	CONTRACT NO.: V81298-07-0-0689
APPROVED BY: N.O.S.B.E.	FILE NUMBER: H-4-47139
PROJECT NAME: CIVIL/H847139-C-160XXX.dgn	FILE NAME: CIVIL/H847139-C-160XXX.dgn
AS SHOWN	PLOT DATE: 08/12/2010
AS SHOWN	SIZE: ANSI D
AS SHOWN	SCALE: AS SHOWN

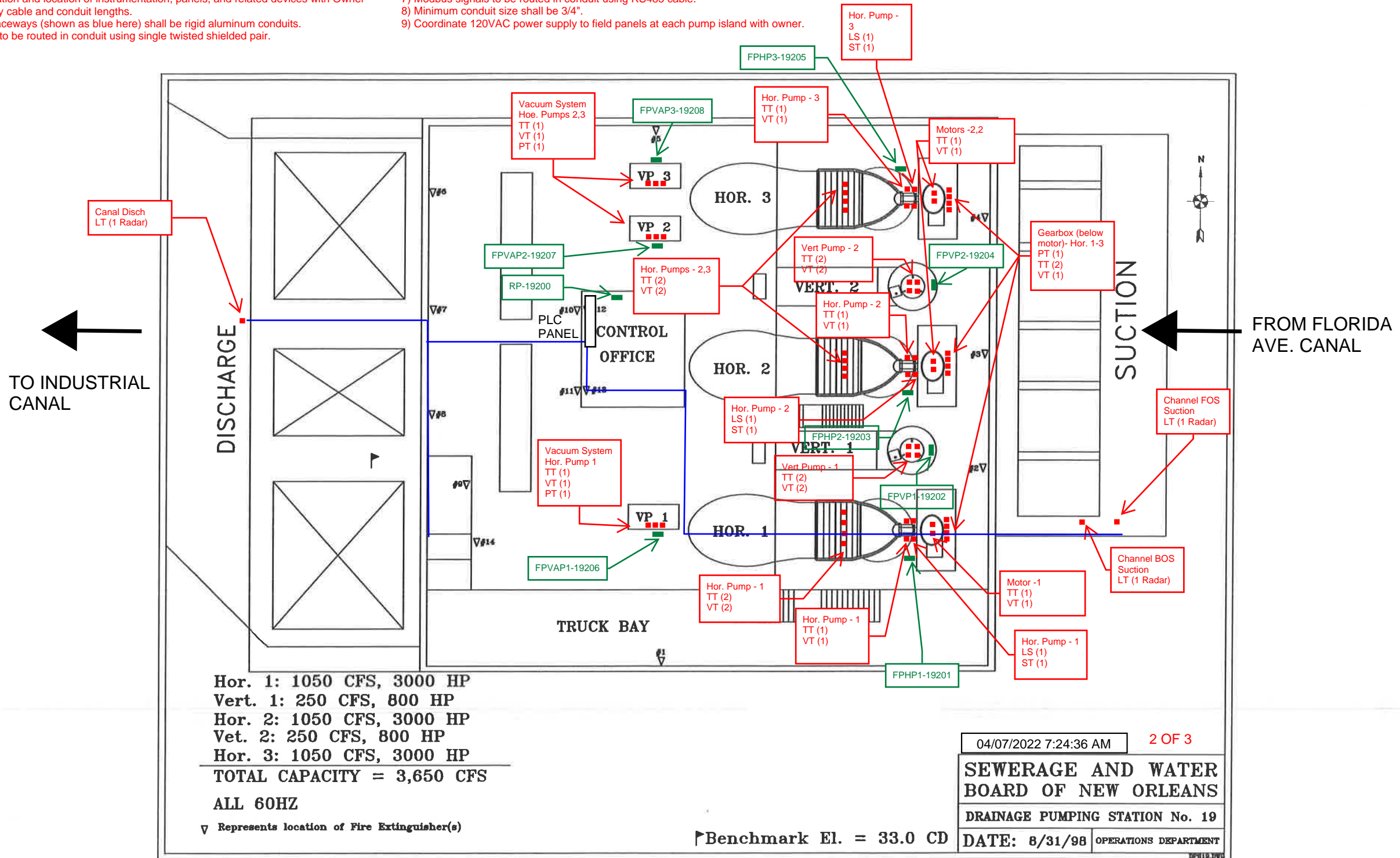
MARK	DESCRIPTION	DATE	APPR.



Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Hor. 1: 1050 CFS, 3000 HP
 Vert. 1: 250 CFS, 800 HP
 Hor. 2: 1050 CFS, 3000 HP
 Vert. 2: 250 CFS, 800 HP
 Hor. 3: 1050 CFS, 3000 HP
TOTAL CAPACITY = 3,650 CFS

ALL 60HZ

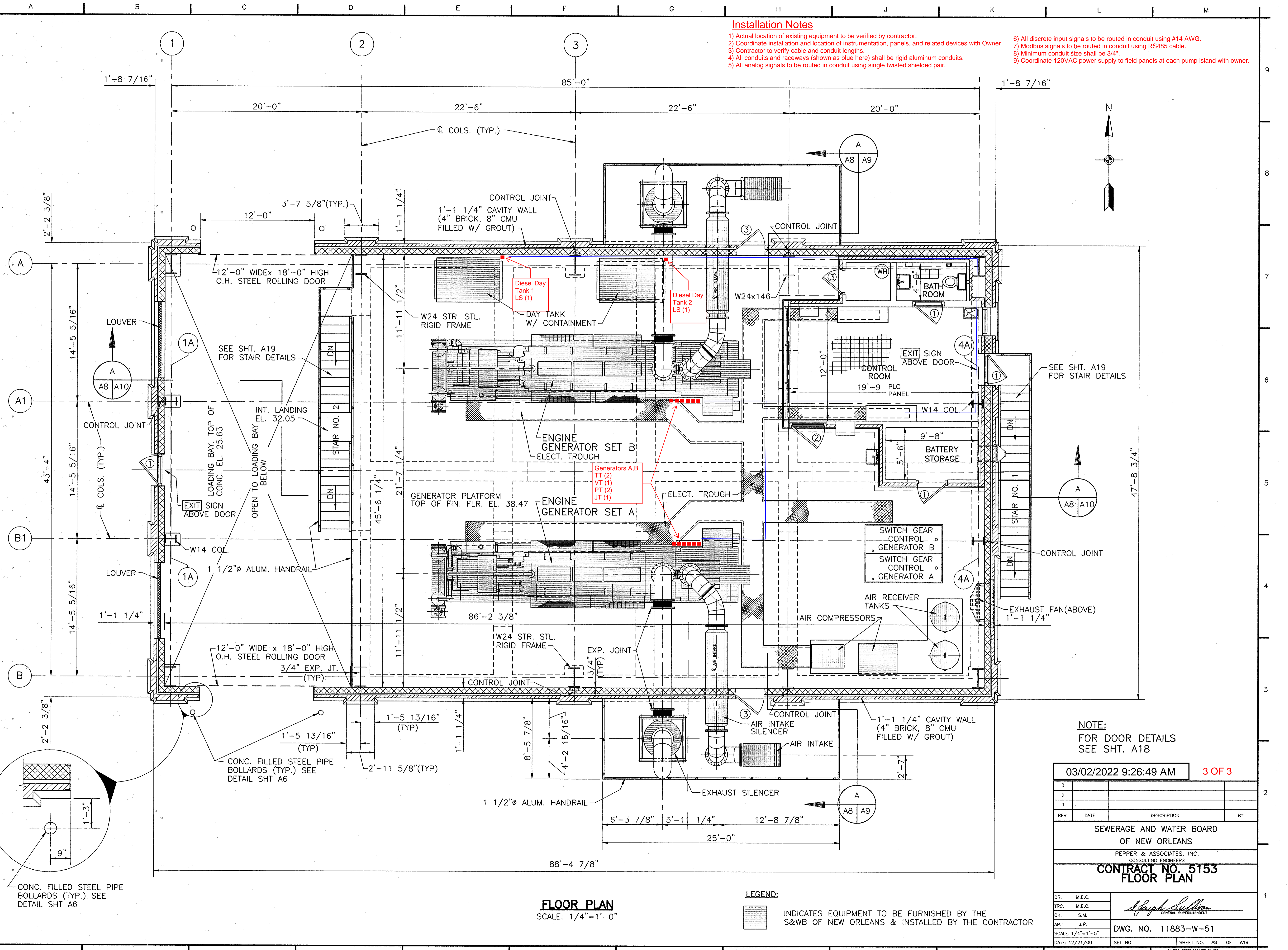
▽ Represents location of Fire Extinguisher(s)

▴ Benchmark El. = 33.0 CD

04/07/2022 7:24:36 AM	2 OF 3
SEWERAGE AND WATER BOARD OF NEW ORLEANS	
DRAINAGE PUMPING STATION No. 19	
DATE: 8/31/98	OPERATIONS DEPARTMENT

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner.
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



FLOOR PLAN
SCALE: 1/4"=1'-0"

LEGEND:
 INDICATES EQUIPMENT TO BE FURNISHED BY THE S&WB OF NEW ORLEANS & INSTALLED BY THE CONTRACTOR

NOTE:
FOR DOOR DETAILS
SEE SHT. A18

03/02/2022 9:26:49 AM 3 OF 3

REV.	DATE	DESCRIPTION	BY
3			
2			
1			

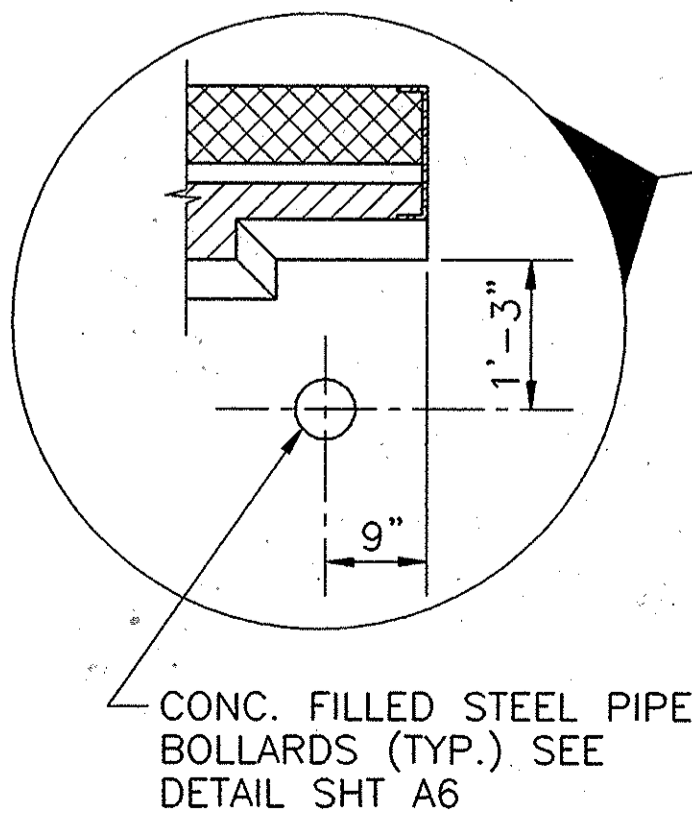
SEWERAGE AND WATER BOARD
OF NEW ORLEANS
PEPPER & ASSOCIATES, INC.
CONSULTING ENGINEERS
CONTRACT NO. 5153
FLOOR PLAN

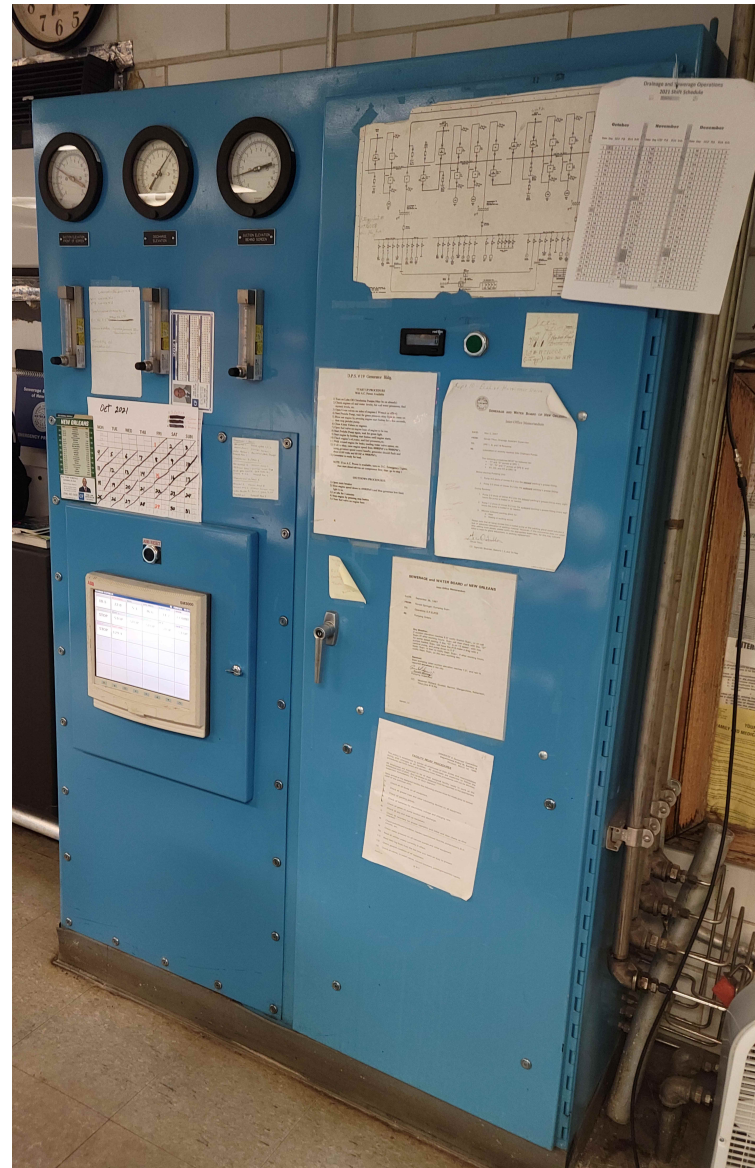
DR. M.E.C.
TRC. M.E.C.
CK. S.M.
AP. J.P.
SCALE: 1/4"=1'-0"
DATE: 12/21/00

Joseph Sullivan
GENERAL SUPERINTENDENT

DWG. NO. 11883-W-51

SET NO. SHEET NO. A8 OF A19





Existing PLC

NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.



SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	VI	DPS19-HP1-VT-19000	Hor. Pump 1 NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
2	VI	DPS19-HP1-VT-19001	Hor. Pump 1 DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
3	VI	DPS19-HP1-VT-19002	Hor. Pump 1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	LS	DPS19-HP1-LS-19003	Hor. Pump 1 Oil Level	Ashcroft		N/A	N/A	DI					
5	TI	DPS19-HP1-TT-19004	Hor. Pump 1 NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPS19-HP1-TT-19005	Hor. Pump 1 DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	TI	DPS19-HP1-TT-19006	Hor. Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	SI	DPS19-HP1-ST-19007	Hor. Pump 1 RPM	Banner		0-2000	RPM	AI					
9	PI	DPS19-HP1-PT-19008	Hor. Pump 1 Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
10	TI	DPS19-HP1-TT-19009	Hor. Pump 1 Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
11	VI	DPS19-HP1-VT-19010	Hor. Pump 1 Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	TI	DPS19-HP1-TT-19011	Hor. Pump 1 Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
13	VI	DPS19-HP1-VT-19012	Hor. Pump 1 Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
14	TI	DPS19-HP1-TT-19013	Hor. Pump 1 Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
15	VI	DPS19-HP2-VT-19050	Hor. Pump 2 NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
16	VI	DPS19-HP2-VT-19051	Hor. Pump 2 DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
17	VI	DPS19-HP2-VT-19052	Hor. Pump 2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
18	LS	DPS19-HP2-LS-19053	Hor. Pump 2 Oil Level	Ashcroft		N/A	N/A	DI					
19	TI	DPS19-HP2-TT-19054	Hor. Pump 2 NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
20	TI	DPS19-HP2-TT-19055	Hor. Pump 2 DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
21	TI	DPS19-HP2-TT-19056	Hor. Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
22	SI	DPS19-HP2-ST-19057	Hor. Pump 2 RPM	Banner		0-2000	RPM	AI					
23	PI	DPS19-HP2-PT-19058	Hor. Pump 2 Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
24	TI	DPS19-HP2-TT-19059	Hor. Pump 2 Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
25	VI	DPS19-HP2-VT-19060	Hor. Pump 2 Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
26	TI	DPS19-HP2-TT-19061	Hor. Pump 2 Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
27	VI	DPS19-HP2-VT-19062	Hor. Pump 2 Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
28	TI	DPS19-HP2-TT-19063	Hor. Pump 2 Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
29	VI	DPS19-HP3-VT-19100	Hor. Pump 3 NDE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
30	VI	DPS19-HP3-VT-19101	Hor. Pump 3 DE Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
31	VI	DPS19-HP3-VT-19102	Hor. Pump 3 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
32	LS	DPS19-HP3-LS-19103	Hor. Pump 3 Oil Level	Ashcroft		N/A	N/A	DI					
33	TI	DPS19-HP3-TT-19104	Hor. Pump 3 NDE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
34	TI	DPS19-HP3-TT-19105	Hor. Pump 3 DE Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
35	TI	DPS19-HP3-TT-19106	Hor. Pump 3 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
36	SI	DPS19-HP3-ST-19107	Hor. Pump 3 RPM	Banner		0-2000	RPM	AI					
37	PI	DPS19-HP3-PT-19108	Hor. Pump 3 Gearbox Oil Pressure	Vega	Bar-series 28	0-100	PSI	AI					
38	TI	DPS19-HP3-TT-19109	Hor. Pump 3 Gearbox Oil Temperature	ElectroSensor	RTDZ Series	0-221	DEG F	AI					
39	VI	DPS19-HP3-VT-19110	Hor. Pump 3 Gearbox Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
40	TI	DPS19-HP3-TT-19111	Hor. Pump 3 Gearbox Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
41	VI	DPS19-HP3-VT-19112	Hor. Pump 3 Motor Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
42	TI	DPS19-HP3-TT-19113	Hor. Pump 3 Motor Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
43	TI	DPS19-VP1-TT-19150	Vert. Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
44	TI	DPS19-VP1-TT-19151	Vert. Pump 1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
45	VI	DPS19-VP1-VT-19152	Vert. Pump 1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
46	VI	DPS19-VP1-VT-19153	Vert. Pump 1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
47	TI	DPS19-VP2-TT-19200	Vert. Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

48	TI	DPS19-VP2-TT-19201	Vert. Pump 2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
49	VI	DPS19-VP2-VT-19202	Vert. Pump 2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
50	VI	DPS19-VP2-VT-19203	Vert. Pump 2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
51	TI	DPS19-VAP1-TT-19300	Vacuum Pump 1 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
52	VI	DPS19-VAP1-VT-19251	Vacuum Pump 1 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
53	PI	DPS19-VAP1-PT-19252	Vacuum Pump 1 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
54	TI	DPS19-VAP2-TT-19300	Vacuum Pump 2 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
55	VI	DPS19-VAP2-VT-19301	Vacuum Pump 2 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
56	PI	DPS19-VAP2-PT-19302	Vacuum Pump 2 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
57	TI	DPS19-VAP3-TT-19350	Vacuum Pump 3 Temp	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
58	VI	DPS19-VAP3-VT-19351	Vacuum Pump 3 Vib	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
59	PI	DPS19-VAP3-PT-19352	Vacuum Pump 3 Pressure	Vega	Bar-series 28	-15-0	PSI	AI					
60	JL	DPS19-GENA-JT-19400	Generator A Power	SEL		0-4160	VOLTS	AI					
61	LS	DPS19-TNK1-LS-19450	Diesel Day Tank 1 Level	Ashcroft		N/A	N/A	DI					
62	JL	DPS19-GENB-JT-19500	Generator B Power	SEL		0-4160	VOLTS	AI					
63	LS	DPS19-TNK2-LS-19550	Diesel Day Tank 2 Level	Ashcroft		N/A	N/A	DI					
64	LI	DPS19-SCT-LT-19600	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
65	LI	DPS19-SCT-LT-19601	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
66	LI	DPS19-DSC-LT-19602	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

REVISION: IFB
Rev. DATE: 4/7/2022

PREPARED BY: JMJ
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG NO	DESCRIPT	PLC	IO TYPE	SIGNAL	POWER	PLC TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	VI	DPS19-HP1-VT-19000	Hor. Pump 1 NDE Radial Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
2	VI	DPS19-HP1-VT-19001	Hor. Pump 1 DE Radial Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
3	VI	DPS19-HP1-VT-19002	Hor. Pump 1 Thrust Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
4	LS	DPS19-HP1-LS-19003	Hor. Pump 1 Oil Level	PLC-DPS19	DI							N/A	N/A	
5	TI	DPS19-HP1-TT-19004	Hor. Pump 1 NDE Radial Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
6	TI	DPS19-HP1-TT-19005	Hor. Pump 1 DE Radial Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
7	TI	DPS19-HP1-TT-19006	Hor. Pump 1 Thrust Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
8	SI	DPS19-HP1-ST-19007	Hor. Pump 1 RPM	PLC-DPS19	AI							0-2000	RPM	
9	PI	DPS19-HP1-PT-19008	Hor. Pump 1 Gearbox Oil Pressure	PLC-DPS19	AI							0-100	PSI	
10	TI	DPS19-HP1-TT-19009	Hor. Pump 1 Gearbox Oil Temperature	PLC-DPS19	AI							0-221	DEG F	
11	VI	DPS19-HP1-VT-19010	Hor. Pump 1 Gearbox Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
12	TI	DPS19-HP1-TT-19011	Hor. Pump 1 Gearbox Temperature	PLC-DPS19	AI							0-221	DEG F	
13	VI	DPS19-HP1-VT-19012	Hor. Pump 1 Motor Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
14	TI	DPS19-HP1-TT-19013	Hor. Pump 1 Motor Temperature	PLC-DPS19	AI							0-221	DEG F	
15	VI	DPS19-HP2-VT-19050	Hor. Pump 2 NDE Radial Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
16	VI	DPS19-HP2-VT-19051	Hor. Pump 2 DE Radial Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
17	VI	DPS19-HP2-VT-19052	Hor. Pump 2 Thrust Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
18	LS	DPS19-HP2-LS-19053	Hor. Pump 2 Oil Level	PLC-DPS19	DI							N/A	N/A	
19	TI	DPS19-HP2-TT-19054	Hor. Pump 2 NDE Radial Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
20	TI	DPS19-HP2-TT-19055	Hor. Pump 2 DE Radial Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
21	TI	DPS19-HP2-TT-19056	Hor. Pump 2 Thrust Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
22	SI	DPS19-HP2-ST-19057	Hor. Pump 2 RPM	PLC-DPS19	AI							0-2000	RPM	
23	PI	DPS19-HP2-PT-19058	Hor. Pump 2 Gearbox Oil Pressure	PLC-DPS19	AI							0-100	PSI	
24	TI	DPS19-HP2-TT-19059	Hor. Pump 2 Gearbox Oil Temperature	PLC-DPS19	AI							0-221	DEG F	
25	VI	DPS19-HP2-VT-19060	Hor. Pump 2 Gearbox Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
26	TI	DPS19-HP2-TT-19061	Hor. Pump 2 Gearbox Temperature	PLC-DPS19	AI							0-221	DEG F	
27	VI	DPS19-HP2-VT-19062	Hor. Pump 2 Motor Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
28	TI	DPS19-HP2-TT-19063	Hor. Pump 2 Motor Temperature	PLC-DPS19	AI							0-221	DEG F	
29	VI	DPS19-HP3-VT-19100	Hor. Pump 3 NDE Radial Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
30	VI	DPS19-HP3-VT-19101	Hor. Pump 3 DE Radial Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
31	VI	DPS19-HP3-VT-19102	Hor. Pump 3 Thrust Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
32	LS	DPS19-HP3-LS-19103	Hor. Pump 3 Oil Level	PLC-DPS19	DI							N/A	N/A	
33	TI	DPS19-HP3-TT-19104	Hor. Pump 3 NDE Radial Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
34	TI	DPS19-HP3-TT-19105	Hor. Pump 3 DE Radial Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
35	TI	DPS19-HP3-TT-19106	Hor. Pump 3 Thrust Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
36	SI	DPS19-HP3-ST-19107	Hor. Pump 3 RPM	PLC-DPS19	AI							0-2000	RPM	
37	PI	DPS19-HP3-PT-19108	Hor. Pump 3 Gearbox Oil Pressure	PLC-DPS19	AI							0-100	PSI	
38	TI	DPS19-HP3-TT-19109	Hor. Pump 3 Gearbox Oil Temperature	PLC-DPS19	AI							0-221	DEG F	
39	VI	DPS19-HP3-VT-19110	Hor. Pump 3 Gearbox Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
40	TI	DPS19-HP3-TT-19111	Hor. Pump 3 Gearbox Temperature	PLC-DPS19	AI							0-221	DEG F	
41	VI	DPS19-HP3-VT-19112	Hor. Pump 3 Motor Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
42	TI	DPS19-HP3-TT-19113	Hor. Pump 3 Motor Temperature	PLC-DPS19	AI							0-221	DEG F	
43	TI	DPS19-VP1-TT-19150	Vert. Pump 1 Thrust Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
44	TI	DPS19-VP1-TT-19151	Vert. Pump 1 Radial Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	
45	VI	DPS19-VP1-VT-19152	Vert. Pump 1 Thrust Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
46	VI	DPS19-VP1-VT-19153	Vert. Pump 1 Radial Bearing Vibration	PLC-DPS19	AI							0-1.8	IN/SEC RMS	
47	TI	DPS19-VP2-TT-19200	Vert. Pump 2 Thrust Bearing Temperature	PLC-DPS19	AI							0-221	DEG F	

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

REVISION: IFB
Rev. DATE: 4/7/2022

PREPARED BY: JMJ
CHECKED BY: AJS

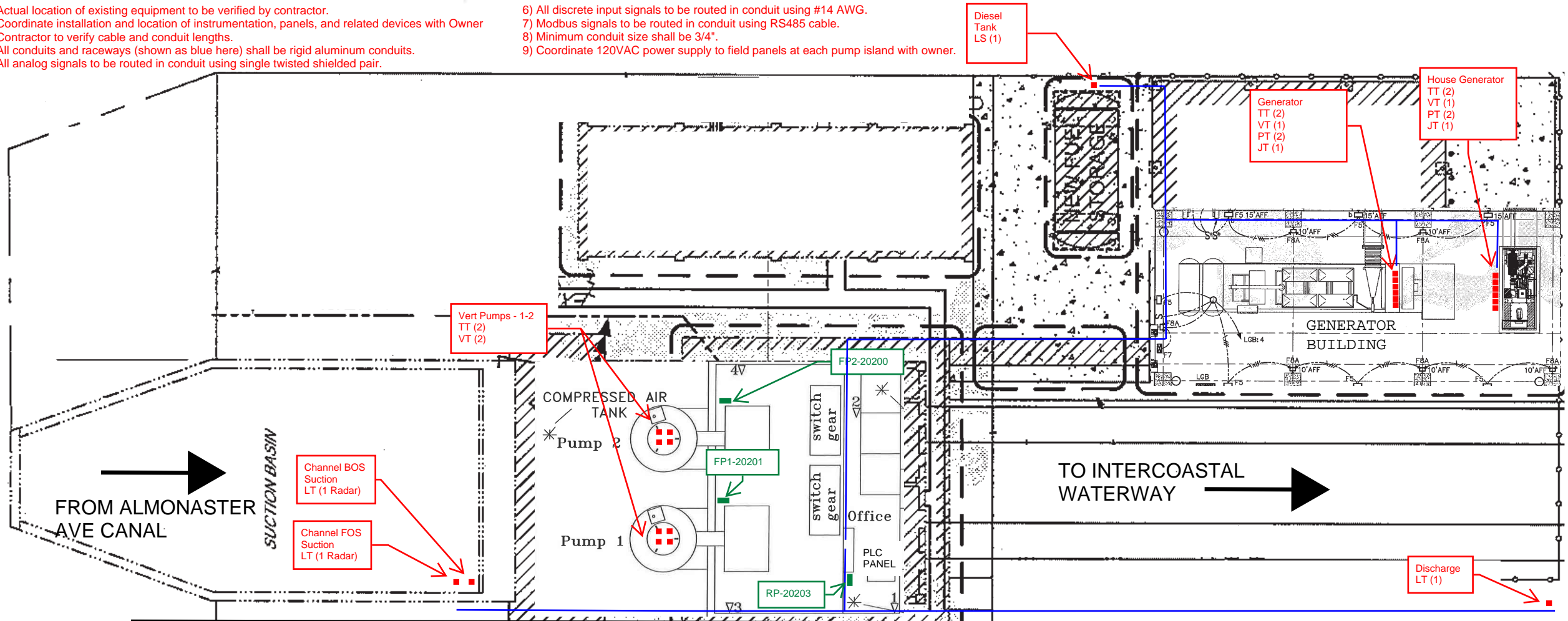
FACILITY PLC INPUT-OUTPUT LIST

48	TI	DPS19-VP2-TT-19201	Vert. Pump 2 Radial Bearing Temperature	PLC-DPS19	AI						0-221	DEG F	
49	VI	DPS19-VP2-VT-19202	Vert. Pump 2 Thrust Bearing Vibration	PLC-DPS19	AI						0-1.8	IN/SEC RMS	
50	VI	DPS19-VP2-VT-19203	Vert. Pump 2 Radial Bearing Vibration	PLC-DPS19	AI						0-1.8	IN/SEC RMS	
51	TI	DPS19-VAP1-TT-19300	Vacuum Pump 1 Temperature	PLC-DPS19	AI						0-221	DEG F	
52	VI	DPS19-VAP1-VT-19251	Vacuum Pump 1 Vibration	PLC-DPS19	AI						0-1.8	IN/SEC RMS	
53	PI	DPS19-VAP1-PT-19252	Vacuum Pump 1 Pressure	PLC-DPS19	AI						-15-0	PSI	
54	TI	DPS19-VAP2-TT-19300	Vacuum Pump 2 Temperature	PLC-DPS19	AI						0-221	DEG F	
55	VI	DPS19-VAP2-VT-19301	Vacuum Pump 2 Vibration	PLC-DPS19	AI						0-1.8	IN/SEC RMS	
56	PI	DPS19-VAP2-PT-19302	Vacuum Pump 2 Pressure	PLC-DPS19	AI						-15-0	PSI	
57	TI	DPS19-VAP3-TT-19350	Vacuum Pump 3 Temperature	PLC-DPS19	AI						0-221	DEG F	
58	VI	DPS19-VAP3-VT-19351	Vacuum Pump 3 Vibration	PLC-DPS19	AI						0-1.8	IN/SEC RMS	
59	PI	DPS19-VAP3-PT-19352	Vacuum Pump 3 Pressure	PLC-DPS19	AI						-15-0	PSI	
60	JI	DPS19-GENA-JT-19400	Generator A Power	PLC-DPS19	AI						0-4160	VOLTS	
61	PI	DPS19-GENA-PT-19401	Generator A Fuel Pressure	PLC-DPS19	AI						0-100	PSI	Signal derived from generator control panel.
62	PI	DPS19-GENA-PT-19402	Generator A Oil Pressure	PLC-DPS19	AI						0-100	PSI	Signal derived from generator control panel.
63	TI	DPS19-GENA-TT-19403	Generator A Oil Temperature	PLC-DPS19	AI						0-221	DEG F	Signal derived from generator control panel.
64	VI	DPS19-GENA-VT-19404	Generator A Vibration	PLC-DPS19	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
65	TI	DPS19-GENA-TT-19405	Generator A Temperature	PLC-DPS19	AI						0-221	DEG F	Signal derived from generator control panel.
66	LS	DPS19-TNK1-LS-19450	Diesel Day Tank 1 Level	PLC-DPS19	DI						N/A	N/A	
67	JI	DPS19-GENB-JT-19500	Generator B Power	PLC-DPS19	AI						0-4160	VOLTS	
68	PI	DPS19-GENB-PT-19501	Generator B Fuel Pressure	PLC-DPS19	AI						0-100	PSI	Signal derived from generator control panel.
69	PI	DPS19-GENB-PT-19502	Generator B Oil Pressure	PLC-DPS19	AI						0-100	PSI	Signal derived from generator control panel.
70	TI	DPS19-GENB-TT-19503	Generator B Oil Temperature	PLC-DPS19	AI						0-221	DEG F	Signal derived from generator control panel.
71	VI	DPS19-GENB-VT-19504	Generator B Vibration	PLC-DPS19	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
72	TI	DPS19-GENB-TT-19505	Generator B Temperature	PLC-DPS19	AI						0-221	DEG F	Signal derived from generator control panel.
73	LS	DPS19-TNK2-LS-19550	Diesel Day Tank 2 Level	PLC-DPS19	DI						N/A	N/A	
74	LI	DPS19-SCT-LT-19600	FOS Suction Water Level 1	PLC-DPS19	AI						0-50	FT	
75	LI	DPS19-SCT-LT-19601	BOS Suction Water Level 2	PLC-DPS19	AI						0-50	FT	
76	LI	DPS19-DSC-LT-19602	Channel Discharge Basin Level	PLC-DPS19	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.

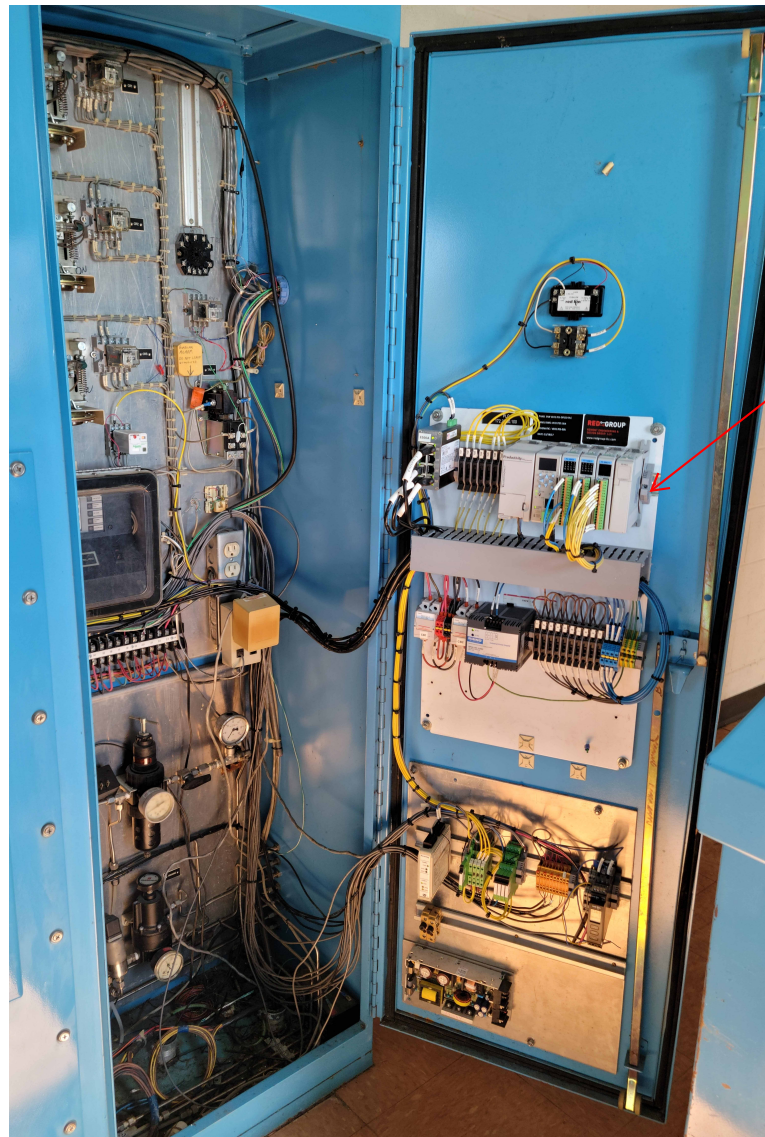


Pump No. 1 - 6': 250 CFS, 600 HP
 Pump No. 2 - 6': 250 CFS, 600 HP
TOTAL CAPACITY = 500 CFS
 ALL 60HZ

▽ Represents location of Fire Extinguisher(s)

▶ Benchmark El. = 23.381 CD

04/07/2022 7:30:15 AM	
SEWERAGE AND WATER BOARD OF NEW ORLEANS	
DPS 20 (AMID)	
DATE: 6-15-98	OPERATIONS DEPARTMENT
	DR.: B. Moeinian



Existing PLC

NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.



SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

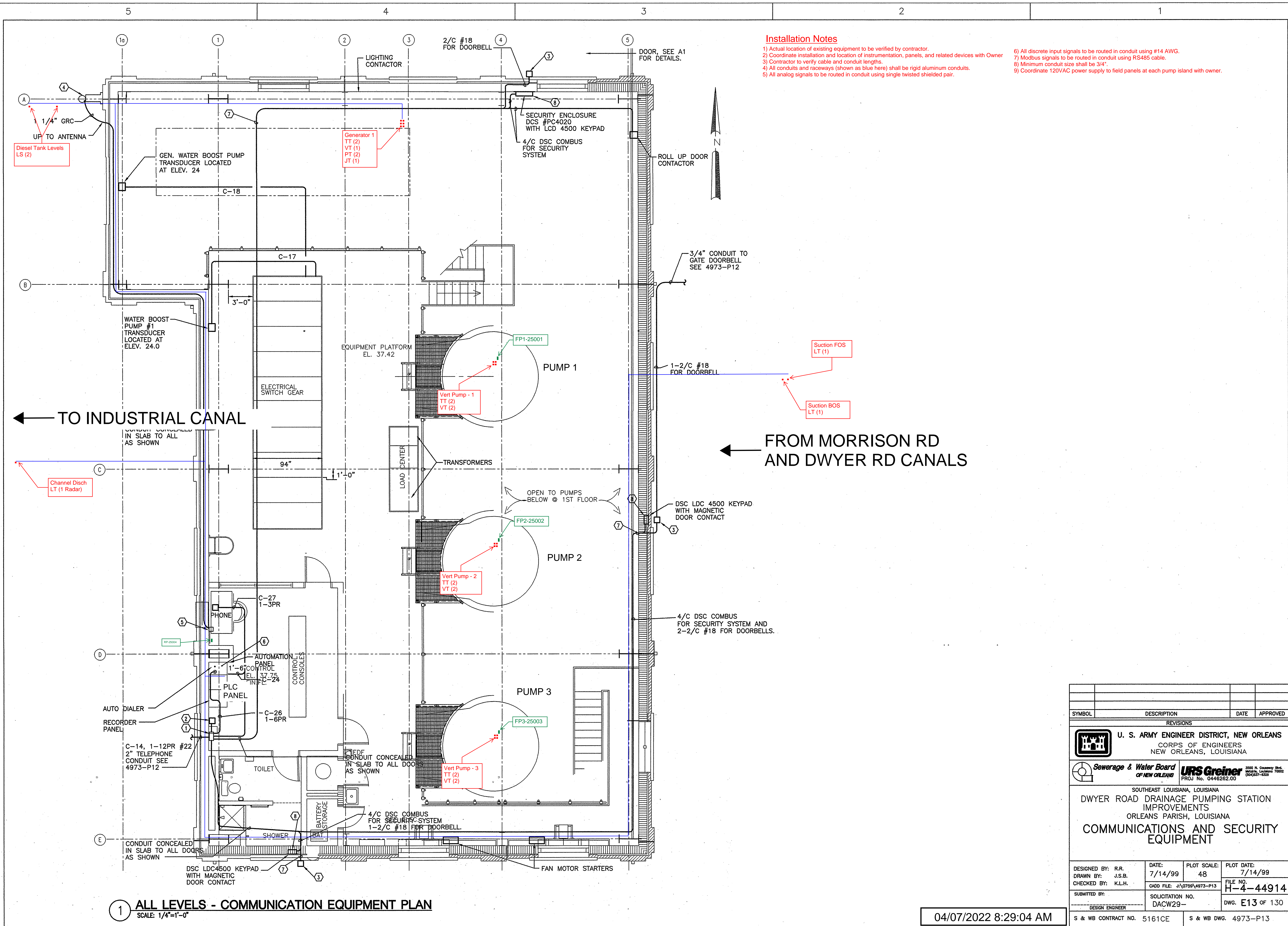
SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	TI	DPS20-VP1-TT-20100	Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
2	TI	DPS20-VP1-TT-20101	Pump 1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
3	VI	DPS20-VP1-VT-20102	Pump 1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPS20-VP1-VT-20103	Pump 1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
7	TI	DPS20-VP2-TT-20200	Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
8	TI	DPS20-VP2-TT-20201	Pump 2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
9	VI	DPS20-VP2-VT-20202	Pump 2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
10	VI	DPS20-VP2-VT-20203	Pump 2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
11	JI	DPS20-GEN-JT-20300	Generator Power	SEL		0-4160	VOLTS	AI					
12	LS	DPS20-TNK-LS-20400	Diesel Tank Level	Ashcroft		N/A	N/A	DI					
13	JI	DPS20-HG-JT-20500	House Generator Power	SEL		0-480	VOLTS	AI					
14	LI	DPS20-SCT1-LT-20600	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
15	LI	DPS20-SCT2-LT-20601	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
16	LI	DPS20-DSC-LT-20602	Discharge Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

PREPARED BY: JMJ

CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	TI	DPS20-VP1-TT-20100	Pump 1 Thrust Bearing Temperature	PLC-DPS20	AI						0-221	DEG F	
2	TI	DPS20-VP1-TT-20101	Pump 1 Radial Bearing Temperature	PLC-DPS20	AI						0-221	DEG F	
3	VI	DPS20-VP1-VT-20102	Pump 1 Thrust Bearing Vibration	PLC-DPS20	AI						0-1.8	IN/SEC RMS	
4	VI	DPS20-VP1-VT-20103	Pump 1 Radial Bearing Vibration	PLC-DPS20	AI						0-1.8	IN/SEC RMS	
7	TI	DPS20-VP2-TT-20200	Pump 2 Thrust Bearing Temperature	PLC-DPS20	AI						0-221	DEG F	
8	TI	DPS20-VP2-TT-20201	Pump 2 Radial Bearing Temperature	PLC-DPS20	AI						0-221	DEG F	
9	VI	DPS20-VP2-VT-20202	Pump 2 Thrust Bearing Vibration	PLC-DPS20	AI						0-1.8	IN/SEC RMS	
10	VI	DPS20-VP2-VT-20203	Pump 2 Radial Bearing Vibration	PLC-DPS20	AI						0-1.8	IN/SEC RMS	
13	JI	DPS20-GEN1-JT-20300	Generator Power	PLC-DPS20	AI						0-4160	VOLTS	
14	PI	DPS20-GEN1-PT-20301	Generator Fuel Pressure	PLC-DPS20	AI						0-100	PSI	Signal derived from generator control panel.
15	PI	DPS20-GEN1-PT-20302	Generator Oil Pressure	PLC-DPS20	AI						0-100	PSI	Signal derived from generator control panel.
16	TI	DPS20-GEN1-TT-20303	Generator Oil Temperature	PLC-DPS20	AI						0-221	DEG F	Signal derived from generator control panel.
17	VI	DPS20-GEN1-VT-20304	Generator Vibration	PLC-DPS20	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
18	TI	DPS20-GEN1-TT-20305	Generator Temperature	PLC-DPS20	AI						0-221	DEG F	Signal derived from generator control panel.
19	LS	DPS20-TNK-LS-20400	Diesel Tank Level	PLC-DPS20	DI						N/A	N/A	
20	JI	DPS20-HG2-JT-20500	House Generator Power	PLC-DPS20	AI						0-480	VOLTS	
21	PI	DPS20-HG2-PT-20501	House Generator Fuel Pressure	PLC-DPS20	AI						0-100	PSI	Signal derived from generator control panel.
22	PI	DPS20-HG2-PT-20502	House Generator Oil Pressure	PLC-DPS20	AI						0-100	PSI	Signal derived from generator control panel.
23	TI	DPS20-HG2-TT-20503	House Generator Oil Temperature	PLC-DPS20	AI						0-221	DEG F	Signal derived from generator control panel.
24	VI	DPS20-HG2-VT-20504	House Generator Vibration	PLC-DPS20	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
25	TI	DPS20-HG2-TT-20505	House Generator Temperature	PLC-DPS20	AI						0-221	DEG F	Signal derived from generator control panel.
26	LI	DPS20-SCT1-LT-20600	FOS Suction Water Level 1	PLC-DPS20	AI						0-50	FT	
27	LI	DPS20-SCT2-LT-20601	BOS Suction Water Level 2	PLC-DPS20	AI						0-50	FT	
28	LI	DPS20-DSC-LT-20602	Discharge Water Level	PLC-DPS20	AI						0-50	FT	



Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.

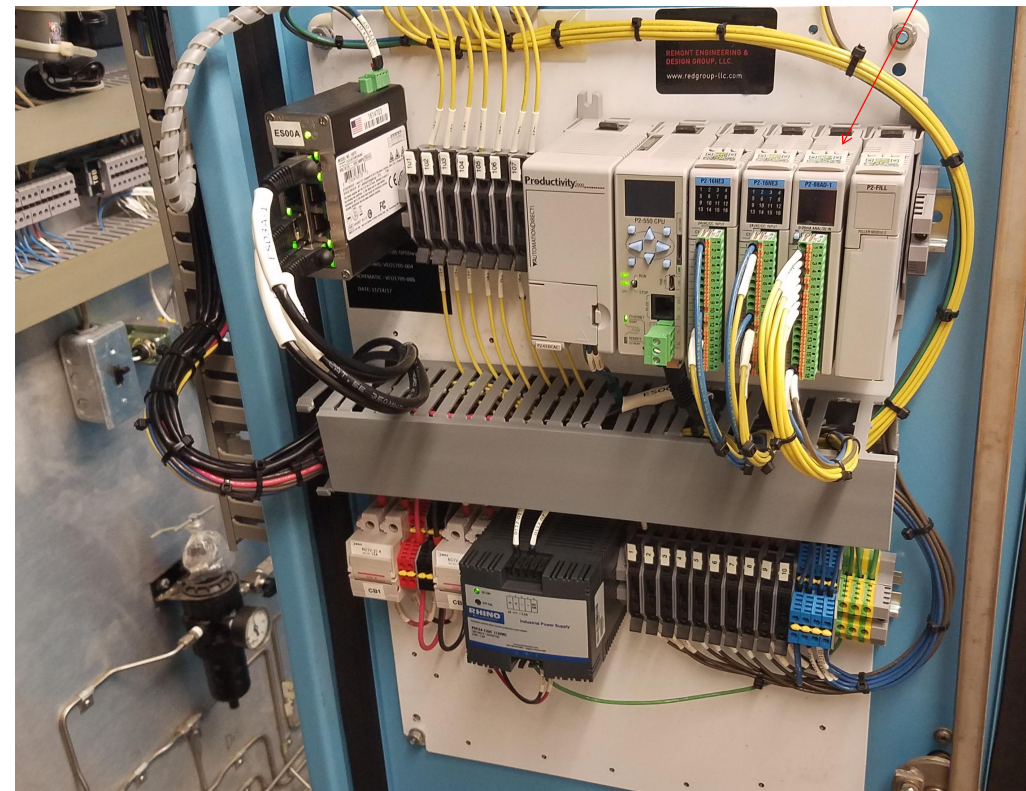
1 ALL LEVELS - COMMUNICATION EQUIPMENT PLAN
SCALE: 1/4"=1'-0"

04/07/2022 8:29:04 AM

SYMBOL	DESCRIPTION	DATE	APPROVED
REVISIONS			
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS CORPS OF ENGINEERS NEW ORLEANS, LOUISIANA			
Sewerage & Water Board OF NEW ORLEANS		URS Greiner PROJ. No. 0446262.00	
SOUTHEAST LOUISIANA, LOUISIANA DWYER ROAD DRAINAGE PUMPING STATION IMPROVEMENTS ORLEANS PARISH, LOUISIANA COMMUNICATIONS AND SECURITY EQUIPMENT			
DESIGNED BY: R.R.	DATE: 7/14/99	PLOT SCALE: 48	PLOT DATE: 7/14/99
DRAWN BY: J.S.B.	CADD FILE: J:\0759\4973-P13	FILE NO. H-4-44914	
CHECKED BY: K.L.H.	SOLICITATION NO. DACW29-	DWG. E13 OF 130	
DESIGN ENGINEER			
S & WB CONTRACT NO. 5161CE		S & WB DWG. 4973-P13	



Existing PLC



NOTES:

1. Contractor to demo existing bubbler system equipment in PLC cabinet. Use space for additional PLC equipment. Coordinate demo work with Owner.
2. Install DIN rail to accommodate and incorporate new IO Modules as necessary.
3. Install a new P2-SCM module in slot 4
4. Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
5. Install wireless receiver enclosure and connect to existing PLC via new communication module.
6. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
7. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTE
1	TI	DPSDWY-VP1-VT-25000	Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
2	TI	DPSDWY-VP1-TT-25001	Pump 1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
3	VI	DPSDWY-VP1-VT-25002	Pump 1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPSDWY-VP1-VT-25003	Pump 1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	TI	DPSDWY-VP2-TT-25100	Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPSDWY-VP2-TT-25101	Pump 2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	VI	DPSDWY-VP2-VT-25102	Pump 2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	VI	DPSDWY-VP2-VT-25103	Pump 2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
9	TI	DPSDWY-VP3-TT-25200	Pump 3 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
10	TI	DPSDWY-VP3-TT-25201	Pump 3 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPSDWY-VP3-VT-25202	Pump 3 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPSDWY-VP3-VT-25203	Pump 3 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	J1	DPSDWY-GEN-JT-25300	Generator Power	SEL		0-4160	VOLTS	AI					
14	LS	DPSDWY-TNK1-LS-25400	Diesel Tank 1 Level	Ashcroft		N/A	N/A	DI					
15	LS	DPSDWY-TNK2-LS-25500	Diesel Tank 2 Level	Ashcroft		N/A	N/A	DI					
16	LI	DPSDWY-SCT1-LT-25600	FOS Suction Water Level 1	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
17	LI	DPSDWY-SCT2-LT-25601	BOS Suction Water Level 2	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
18	LI	DPSDWY-DSC-LT-25602	Channel Discharge Basin Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

REVISION: IFB
Rev. DATE: 4/7/2022

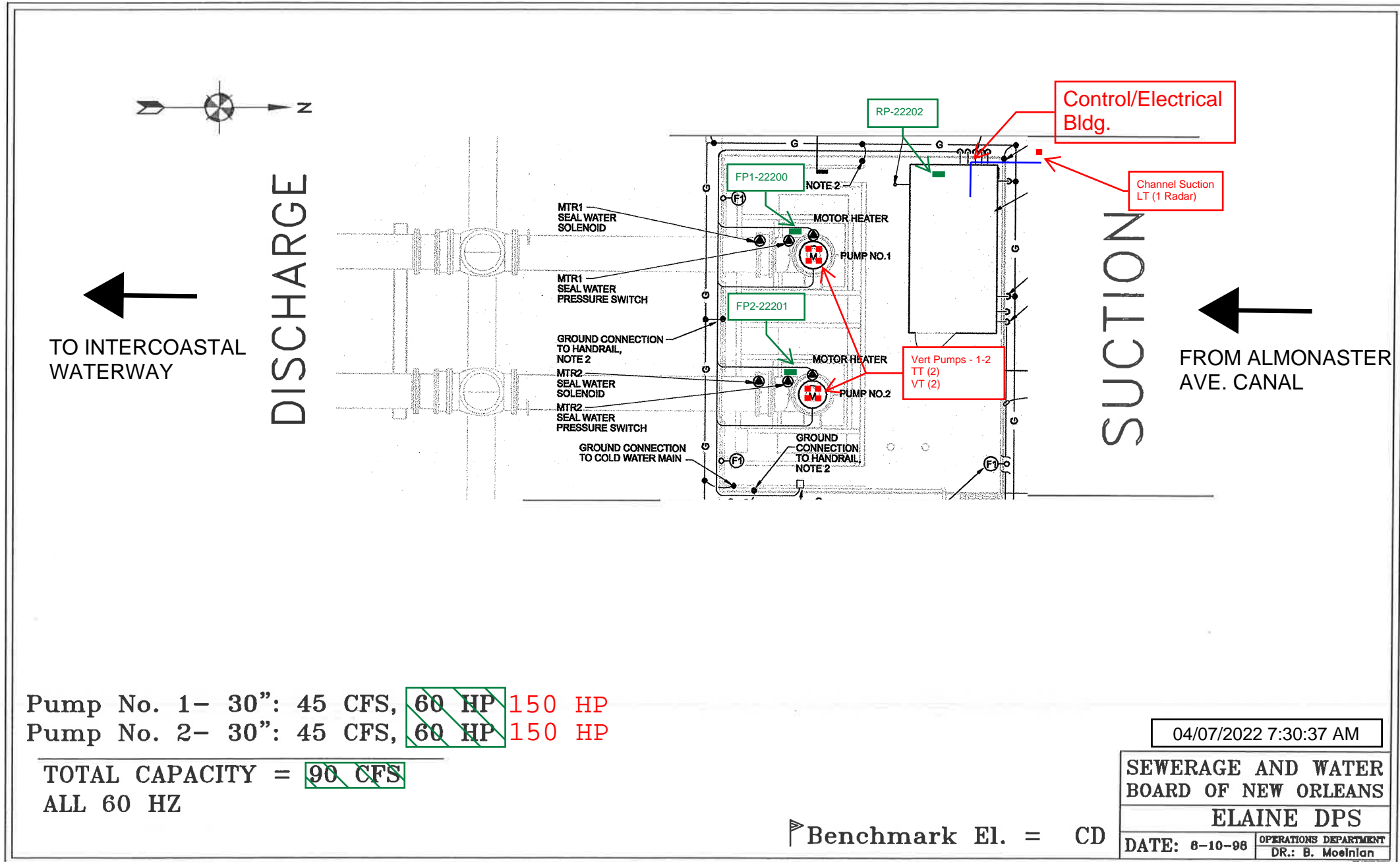
PREPARED BY: JMJ
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	TI	DPSDWY-VP1-TT-25000	Pump 1 Thrust Bearing Temperature	PLC-DPSDWY	AI						0-221	DEG F	
2	TI	DPSDWY-VP1-TT-25001	Pump 1 Radial Bearing Temperature	PLC-DPSDWY	AI						0-221	DEG F	
3	VI	DPSDWY-VP1-VT-25002	Pump 1 Thrust Bearing Vibration	PLC-DPSDWY	AI						0-1.8	IN/SEC RMS	
4	VI	DPSDWY-VP1-VT-25003	Pump 1 Radial Bearing Vibration	PLC-DPSDWY	AI						0-1.8	IN/SEC RMS	
5	TI	DPSDWY-VP2-TT-25100	Pump 2 Thrust Bearing Temperature	PLC-DPSDWY	AI						0-221	DEG F	
6	TI	DPSDWY-VP2-TT-25101	Pump 2 Radial Bearing Temperature	PLC-DPSDWY	AI						0-221	DEG F	
7	VI	DPSDWY-VP2-VT-25102	Pump 2 Thrust Bearing Vibration	PLC-DPSDWY	AI						0-1.8	IN/SEC RMS	
8	VI	DPSDWY-VP2-VT-25103	Pump 2 Radial Bearing Vibration	PLC-DPSDWY	AI						0-1.8	IN/SEC RMS	
9	TI	DPSDWY-VP3-TT-25200	Pump 3 Thrust Bearing Temperature	PLC-DPSDWY	AI						0-221	DEG F	
10	TI	DPSDWY-VP3-TT-25201	Pump 3 Radial Bearing Temperature	PLC-DPSDWY	AI						0-221	DEG F	
11	VI	DPSDWY-VP3-VT-25202	Pump 3 Thrust Bearing Vibration	PLC-DPSDWY	AI						0-1.8	IN/SEC RMS	
12	VI	DPSDWY-VP3-VT-25203	Pump 3 Radial Bearing Vibration	PLC-DPSDWY	AI						0-1.8	IN/SEC RMS	
13	JI	DPSDWY-GEN-JT-25300	Generator Power	PLC-DPSDWY	AI						0-4160	VOLTS	
14	PI	DPSDWY-GEN-PT-25301	Generator Fuel Pressure	PLC-DPSDWY	AI						0-100	PSI	Signal derived from generator control panel.
15	PI	DPSDWY-GEN-PT-25302	Generator Oil Pressure	PLC-DPSDWY	AI						0-100	PSI	Signal derived from generator control panel.
16	TI	DPSDWY-GEN-TT-25303	Generator Oil Temperature	PLC-DPSDWY	AI						0-221	DEG F	Signal derived from generator control panel.
17	VI	DPSDWY-GEN-VT-25304	Generator Vibration	PLC-DPSDWY	AI						0-1.8	IN/SEC RMS	Signal derived from generator control panel.
18	TI	DPSDWY-GEN-TT-25305	Generator Temperature	PLC-DPSDWY	AI						0-221	DEG F	Signal derived from generator control panel.
19	LS	DPSDWY-TNK1-LS-25400	Diesel Tank 1 Level	PLC-DPSDWY	DI						N/A	N/A	
20	LS	DPSDWY-TNK2-LS-25500	Diesel Tank 2 Level	PLC-DPSDWY	DI						N/A	N/A	
21	LI	DPSDWY-SCT1-LT-25600	FOS Suction Water Level 1	PLC-DPSDWY	AI						0-50	FT	
22	LI	DPSDWY-SCT2-LT-25601	BOS Suction Water Level 2	PLC-DPSDWY	AI						0-50	FT	
23	LI	DPSDWY-DSC-LT-25602	Channel Discharge Basin Level	PLC-DPSDWY	AI						0-50	FT	

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.
- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Pump No. 1- 30": 45 CFS, ~~60 HP~~ 150 HP
 Pump No. 2- 30": 45 CFS, ~~60 HP~~ 150 HP

TOTAL CAPACITY = ~~90 CFS~~
 ALL 60 HZ

Benchmark El. = CD

04/07/2022 7:30:37 AM	
SEWERAGE AND WATER BOARD OF NEW ORLEANS	
ELAINE DPS	
DATE: 8-10-98	OPERATIONS DEPARTMENT DR.: B. Moelinan



NOTES:

1) Contractor to furnish a new PLC system to match PLC systems at other existing Drainage Pump Stations.

2) The new PLC system will include all appurtenances for stand alone operation and integration into existing networked SCADA/HMI system.

3) Contractor to locate new PLC in enclosure within the control room on a wall location to be coordinated with Owner.

4) Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"

6. Install wireless receiver enclosure and connect to new PLC via a communication module.

7. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.

8. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS NDR GRANT
ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	LOCATION	EQ_Type	EQ_Tag	Instr_Type	Num_ID	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	TI	DPSELN	VP	1	TT	22100	DPSELN-VP1-TT-22100	Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
2	TI	DPSELN	VP	1	TT	22101	DPSELN-VP1-TT-22101	Pump 1 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
3	VI	DPSELN	VP	1	VT	22102	DPSELN-VP1-VT-22102	Pump 1 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPSELN	VP	1	VT	22103	DPSELN-VP1-VT-22103	Pump 1 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	TI	DPSELN	VP	2	TT	22200	DPSELN-VP2-TT-22200	Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPSELN	VP	2	TT	22201	DPSELN-VP2-TT-22201	Pump 2 Radial Bearing Temperature	Banner	QM30VT2-SS-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	VI	DPSELN	VP	2	VT	22202	DPSELN-VP2-VT-22202	Pump 2 Thrust Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	VI	DPSELN	VP	2	VT	22203	DPSELN-VP2-VT-22203	Pump 2 Radial Bearing Vibration	Banner	QM30VT2-SS-QP	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
9	LI	DPSELN	SCT		LT	22300	DPSELN-SCT-LT-22300	Suction Water Level	Vega/Flowline	PSC21 OR EQUAL	0-50	FT	AI					
10																		

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

REVISION: IFB
Rev. DATE: 4/7/2022

PREPARED BY: JMJ
CHECKED BY: AJS

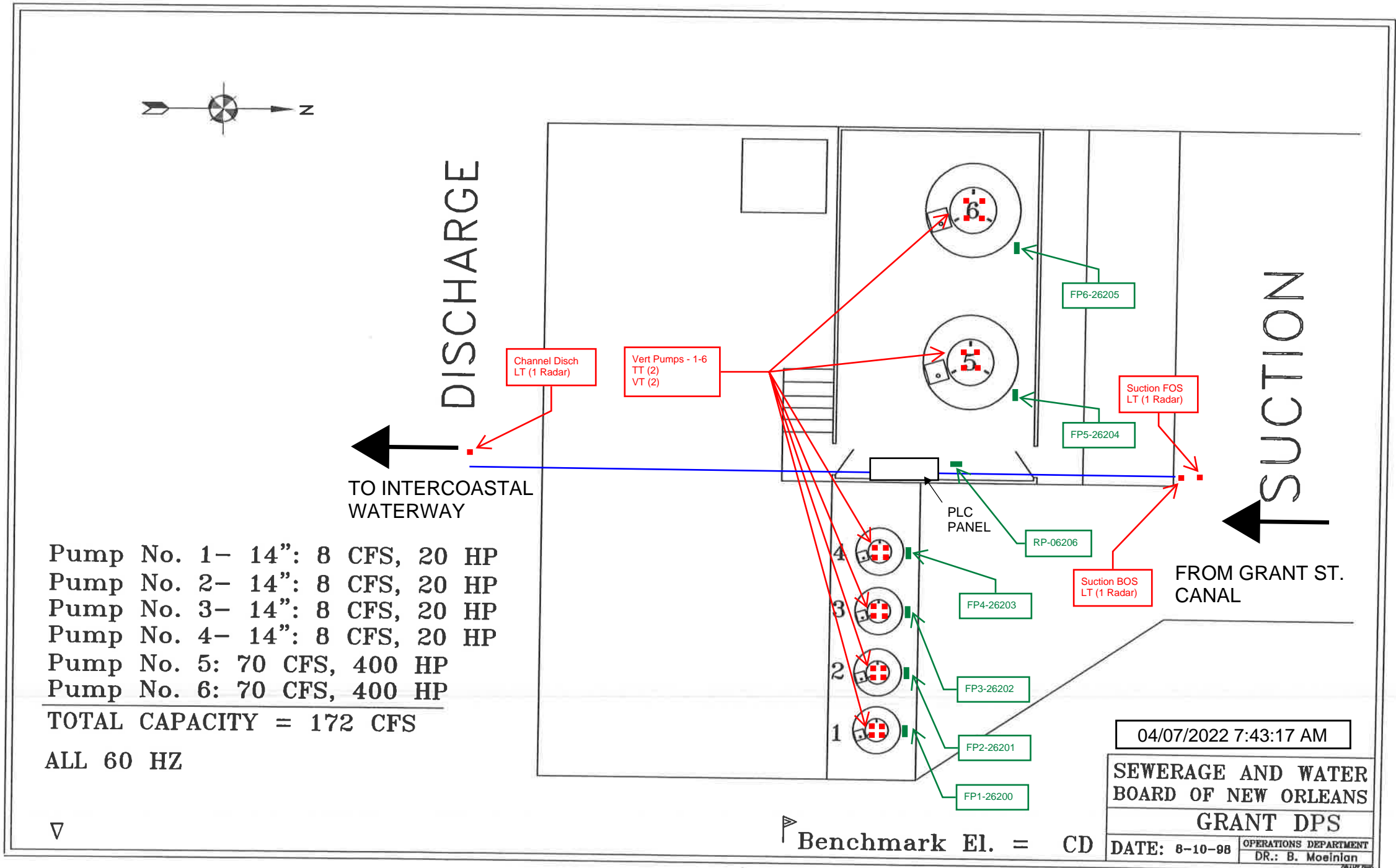
FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	TI	DPSELN-VP1-TT-22100	Pump 1 Thrust Bearing Temperature	PLC-DPSELN	AI						0-221	DEG F	
2	TI	DPSELN-VP1-TT-22101	Pump 1 Radial Bearing Temperature	PLC-DPSELN	AI						0-221	DEG F	
3	VI	DPSELN-VP1-VT-22102	Pump 1 Thrust Bearing Vibration	PLC-DPSELN	AI						0-1.8	IN/SEC RMS	
4	VI	DPSELN-VP1-VT-22103	Pump 1 Radial Bearing Vibration	PLC-DPSELN	AI						0-1.8	IN/SEC RMS	
5	TI	DPSELN-VP2-TT-22200	Pump 2 Thrust Bearing Temperature	PLC-DPSELN	AI						0-221	DEG F	
6	TI	DPSELN-VP2-TT-22201	Pump 2 Radial Bearing Temperature	PLC-DPSELN	AI						0-221	DEG F	
7	VI	DPSELN-VP2-VT-22202	Pump 2 Thrust Bearing Vibration	PLC-DPSELN	AI						0-1.8	IN/SEC RMS	
8	VI	DPSELN-VP2-VT-22203	Pump 2 Radial Bearing Vibration	PLC-DPSELN	AI						0-1.8	IN/SEC RMS	
9	LI	DPSELN-SCT-LT-22300	Suction Water Level	PLC-DPSELN	AI						0-50	FT	
10													

Installation Notes

- 1) Actual location of existing equipment to be verified by contractor.
- 2) Coordinate installation and location of instrumentation, panels, and related devices with Owner
- 3) Contractor to verify cable and conduit lengths.
- 4) All conduits and raceways (shown as blue here) shall be rigid aluminum conduits.
- 5) All analog signals to be routed in conduit using single twisted shielded pair.

- 6) All discrete input signals to be routed in conduit using #14 AWG.
- 7) Modbus signals to be routed in conduit using RS485 cable.
- 8) Minimum conduit size shall be 3/4".
- 9) Coordinate 120VAC power supply to field panels at each pump island with owner.



Pump No. 1- 14": 8 CFS, 20 HP
 Pump No. 2- 14": 8 CFS, 20 HP
 Pump No. 3- 14": 8 CFS, 20 HP
 Pump No. 4- 14": 8 CFS, 20 HP
 Pump No. 5: 70 CFS, 400 HP
 Pump No. 6: 70 CFS, 400 HP
TOTAL CAPACITY = 172 CFS
ALL 60 HZ

04/07/2022 7:43:17 AM
SEWERAGE AND WATER BOARD OF NEW ORLEANS
GRANT DPS
 DATE: 8-10-98 OPERATIONS DEPARTMENT
 DR.: B. Moenian



NOTES:

- 1) Contractor to furnish a new PLC system to match PLC systems at other existing Drainage Pump Stations.
- 2) The new PLC system will include all appurtenances for stand alone operation and integration into existing networked SCADA/HMI system.
- 3) Contractor to locate new PLC in enclosure within the control room on a wall location to be coordinated with Owner.
- 4) Add a new nameplate to the front of the existing PLC cabinet. Nameplate shall have white lettering on black background. The nameplate shall be of sufficient durability to withstand the environment. Nameplate shall be centered and as close to eye level as defined by ISO standards (5'2") as possible. Nameplate shall be standard 1" by 3.5"
6. Install wireless receiver enclosure and connect to new PLC via a communication module.
7. Power for the new PLC modifications shall be derived from existing UPS system. Contractor to verify existing UPS size and replace.
8. See specifications for additional installation instructions.

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

PREPARED BY: JMJ
CHECKED BY: AJS

REVISION: IFB
Rev. DATE: 4/7/2022

FACILITY INSTRUMENT INDEX

SEQ #	TYPE	TAG_NO	DESCRIPT	MANUFACTR	DEVICE MODEL	RANGE	ENG_UNIT	IO_TYPE	POWER SOURCE	VOLTAGE	DATASHEET	INSTALL_DETAIL	NOTES
1	TI	DPSGNT-VP1-TT-26100	Pump 1 Thrust Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
2	TI	DPSGNT-VP1-TT-26101	Pump 1 Radial Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
3	VI	DPSGNT-VP1-VT-26102	Pump 1 Thrust Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
4	VI	DPSGNT-VP1-VT-26103	Pump 1 Radial Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
5	TI	DPSGNT-VP2-TT-26200	Pump 2 Thrust Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
6	TI	DPSGNT-VP2-TT-26201	Pump 2 Radial Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
7	VI	DPSGNT-VP2-VT-26202	Pump 2 Thrust Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
8	VI	DPSGNT-VP2-VT-26203	Pump 2 Radial Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
9	TI	DPSGNT-VP3-TT-26300	Pump 3 Thrust Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
10	TI	DPSGNT-VP3-TT-26301	Pump 3 Radial Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
11	VI	DPSGNT-VP3-VT-26302	Pump 3 Thrust Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
12	VI	DPSGNT-VP3-VT-26303	Pump 3 Radial Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
13	TI	DPSGNT-VP4-TT-26400	Pump 4 Thrust Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
14	TI	DPSGNT-VP4-TT-26401	Pump 4 Radial Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
15	VI	DPSGNT-VP4-VT-26402	Pump 4 Thrust Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
16	VI	DPSGNT-VP4-VT-26403	Pump 4 Radial Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
17	TI	DPSGNT-VP5-TT-26500	Pump 5 Thrust Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
18	TI	DPSGNT-VP5-TT-26501	Pump 5 Radial Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
19	VI	DPSGNT-VP5-VT-26502	Pump 5 Thrust Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
20	VI	DPSGNT-VP5-VT-26503	Pump 5 Radial Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
21	TI	DPSGNT-VP6-TT-26600	Pump 6 Thrust Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
22	TI	DPSGNT-VP6-TT-26601	Pump 6 Radial Bearing Temperature	Banner	QM30VT2-QP	0-221	DEG F	AI					May be combined with vibration sensor
23	VI	DPSGNT-VP6-VT-26602	Pump 6 Thrust Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
24	VI	DPSGNT-VP6-VT-26603	Pump 6 Radial Bearing Vibration	Metrix	MX8030	0-1.8	IN/SEC RMS	AI					May be combined with temperature sensor
25	LI	DPSGNT-SCT1-LT-26700	FOS Suction Water Level 1	Vega	PSC21 OR EQUAL	0-50	FT	AI					
26	LI	DPSGNT-SCT2-LT-26701	BOS Suction Water Level 2	Vega	PSC21 OR EQUAL	0-50	FT	AI					
27	LI	DPSGNT-DSC-LT-26702	Channel Discharge Basin Level	Vega	PSC21 OR EQUAL	0-50	FT	AI					
28													

SEWERAGE WATER BOARD, NEW ORLEANS (LA)
DRAINAGE PUMP STATIONS
NDR GRANT ADDITIONAL INSTRUMENTATION

REVISION: IFB
Rev. DATE: 4/7/2022

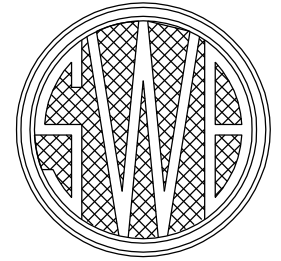
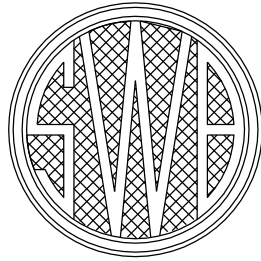
PREPARED BY: JMJ
CHECKED BY: AJS

FACILITY PLC INPUT-OUTPUT LIST

SEQ #	TYPE	TAG_NO	DESCRIPT	PLC	IO_TYPE	SIGNAL_POWER	PLC_TAG	RACK	MODULE	CHANNEL	RANGE	UNITS	NOTES
1	TI	DPSGNT-VP1-TT-26100	Pump 1 Thrust Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
2	TI	DPSGNT-VP1-TT-26101	Pump 1 Radial Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
3	VI	DPSGNT-VP1-VT-26102	Pump 1 Thrust Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
4	VI	DPSGNT-VP1-VT-26103	Pump 1 Radial Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
5	TI	DPSGNT-VP2-TT-26200	Pump 2 Thrust Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
6	TI	DPSGNT-VP2-TT-26201	Pump 2 Radial Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
7	VI	DPSGNT-VP2-VT-26202	Pump 2 Thrust Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
8	VI	DPSGNT-VP2-VT-26203	Pump 2 Radial Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
9	TI	DPSGNT-VP3-TT-26300	Pump 3 Thrust Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
10	TI	DPSGNT-VP3-TT-26301	Pump 3 Radial Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
11	VI	DPSGNT-VP3-VT-26302	Pump 3 Thrust Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
12	VI	DPSGNT-VP3-VT-26303	Pump 3 Radial Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
13	TI	DPSGNT-VP4-TT-26400	Pump 4 Thrust Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
14	TI	DPSGNT-VP4-TT-26401	Pump 4 Radial Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
15	VI	DPSGNT-VP4-VT-26402	Pump 4 Thrust Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
16	VI	DPSGNT-VP4-VT-26403	Pump 4 Radial Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
17	TI	DPSGNT-VP5-TT-26500	Pump 5 Thrust Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
18	TI	DPSGNT-VP5-TT-26501	Pump 5 Radial Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
19	VI	DPSGNT-VP5-VT-26502	Pump 5 Thrust Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
20	VI	DPSGNT-VP5-VT-26503	Pump 5 Radial Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
21	TI	DPSGNT-VP6-TT-26600	Pump 6 Thrust Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
22	TI	DPSGNT-VP6-TT-26601	Pump 6 Radial Bearing Temperature	PLC-DPSGNT	AI						0-221	DEG F	
23	VI	DPSGNT-VP6-VT-26602	Pump 6 Thrust Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
24	VI	DPSGNT-VP6-VT-26603	Pump 6 Radial Bearing Vibration	PLC-DPSGNT	AI						0-1.8	IN/SEC RMS	
25	LI	DPSGNT-SCT1-LT-26700	FOS Suction Water Level 1	PLC-DPSGNT	AI						0-50	FT	
26	LI	DPSGNT-SCT2-LT-26701	BOS Suction Water Level 2	PLC-DPSGNT	AI						0-50	FT	
27	LI	DPSGNT-DSC-LT-26702	Channel Discharge Basin Level	PLC-DPSGNT	AI						0-50	FT	
28													

SEWERAGE AND WATER BOARD OF NEW ORLEANS

ENGINEERING DEPARTMENT

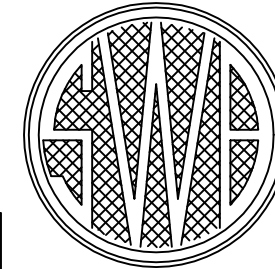
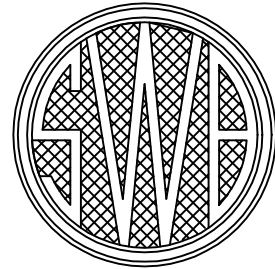


DRAINAGE PUMP STATIONS NDR GRANT— ADDITIONAL INSTRUMENTATION PROJECT APPENDIX C

EXISTING PLC SCHEMATICS

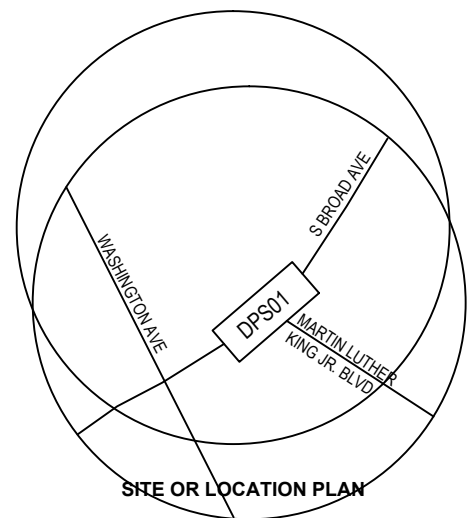
MAJOR STATIONS			MINOR STATIONS		
SERIAL NO.	STATION NAME	TITLE	SERIAL NO.	STATION NAME	TITLE
1	DPS-01	DRAINAGE PUMP STATION 1	1	DPS-14	DRAINAGE PUMP STATION 14
2	DPS-02	DRAINAGE PUMP STATION 2	2	DPS-15	DRAINAGE PUMP STATION 15
3	DPS-03	DRAINAGE PUMP STATION 3	3	DPS-16	DRAINAGE PUMP STATION 16
4	DPS-04	DRAINAGE PUMP STATION 4	4	DPS-19	DRAINAGE PUMP STATION 19
5	DPS-05	DRAINAGE PUMP STATION 5	5	DPS-20	DRAINAGE PUMP STATION AMID (20)
6	DPS-06	DRAINAGE PUMP STATION 6	6	DPS-I10	DRAINAGE PUMP STATION I-10
7	DPS-07	DRAINAGE PUMP STATION 7	7	DPS-PRT	DRAINAGE PUMP STATION PRITCHARD
8	DPS-10	DRAINAGE PUMP STATION 10	8	DPS-DWY	DRAINAGE PUMP STATION DWYER
9	DPS-11	DRAINAGE PUMP STATION 11			
10	DPS-12	DRAINAGE PUMP STATION 12			
11	DPS-13	DRAINAGE PUMP STATION 13			

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 1



SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS	14	CONSOLE 12 POWER DISTRIBUTION
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 04 LAYOUT		
10	CONSOLE 04 POWER DISTRIBUTION		
11	CONSOLE 06 LAYOUT		
12	CONSOLE 06 POWER DISTRIBUTION		
13	CONSOLE 12 LAYOUT		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

RED GROUP
REMONT ENGINEERING & DESIGN GROUP, LLC

2484 Jefferson Hwy - Suite J Phone: 504.729.5000
 Elmwood, LA 70123 Fax: 504.617.6704
www.redgroupllc.com

RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS 0 - CONTROL CONSOLES
 DRAINAGE STATION 1

INDEX OF SHEETS

DR: JMB
 TJC: JMB
 CK: DAD
 AP: JLR
 SCALE: NONE

DWG. No. **5107-P1**

DATE: 03/19/18 SHEET NO. 0-15

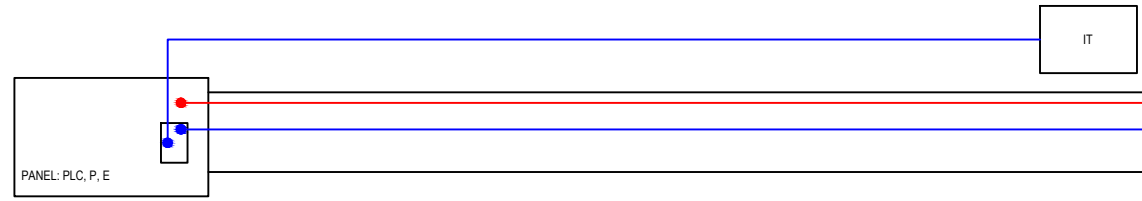
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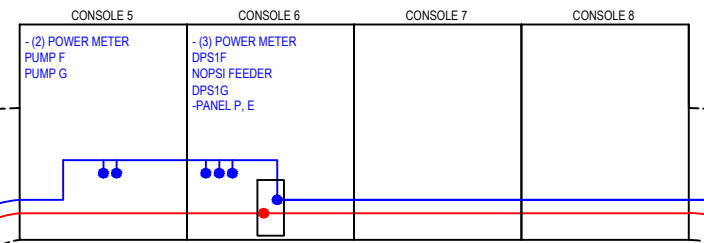
LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

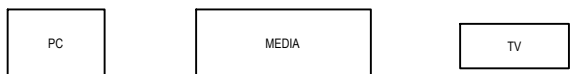
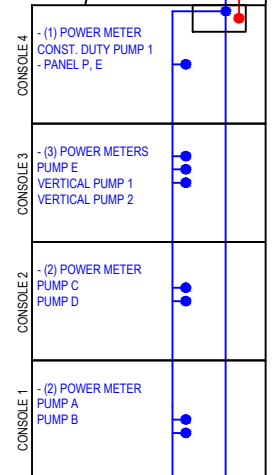
PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU



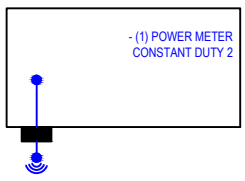
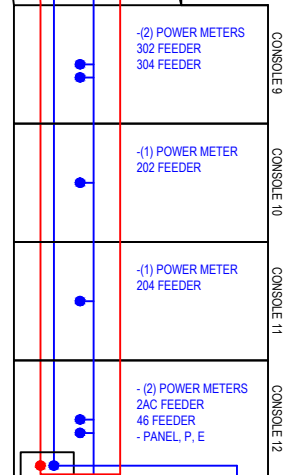
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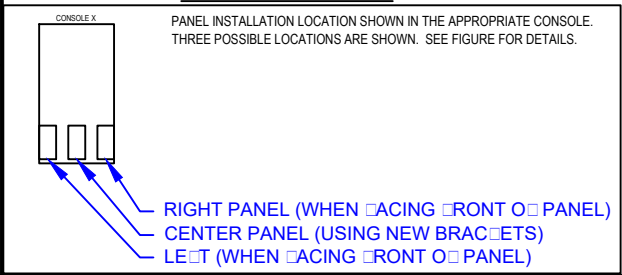
CABINET 1



CABINET 3



PANEL LOCATION



RED GROUP
 REMONT ENGINEERING & DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

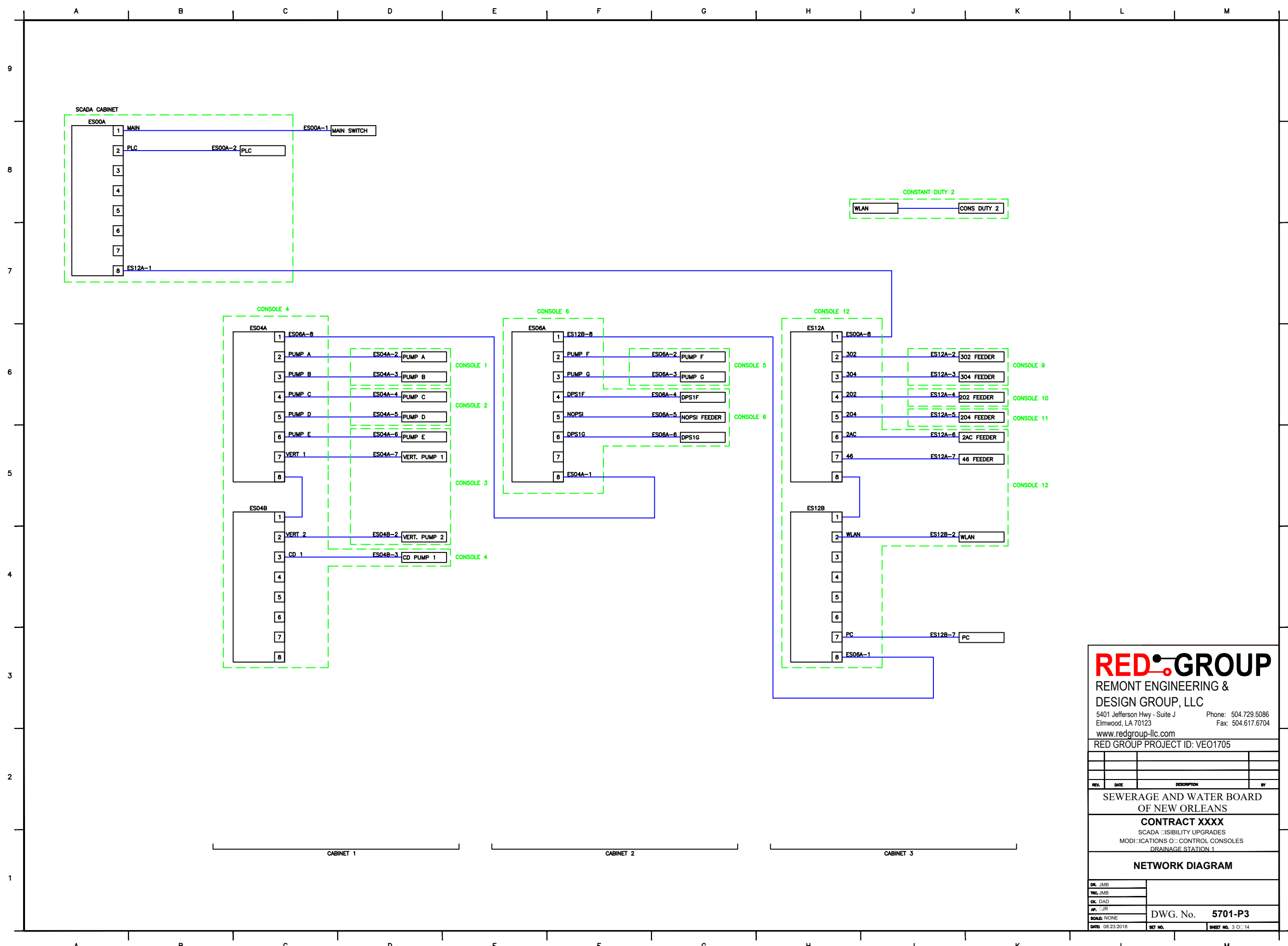
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 1

PLAN VIEW

DR: JMB	DWG. No. 5701-P2
TNG: JMB	
CK: DAD	
AP: JJR	
SCALE: NONE	SET NO.
DATE: 08/23/2018	SHEET NO. 2 OF 14

A B C D E F G H J K L M

1 2 3 4 5 6 7 8 9



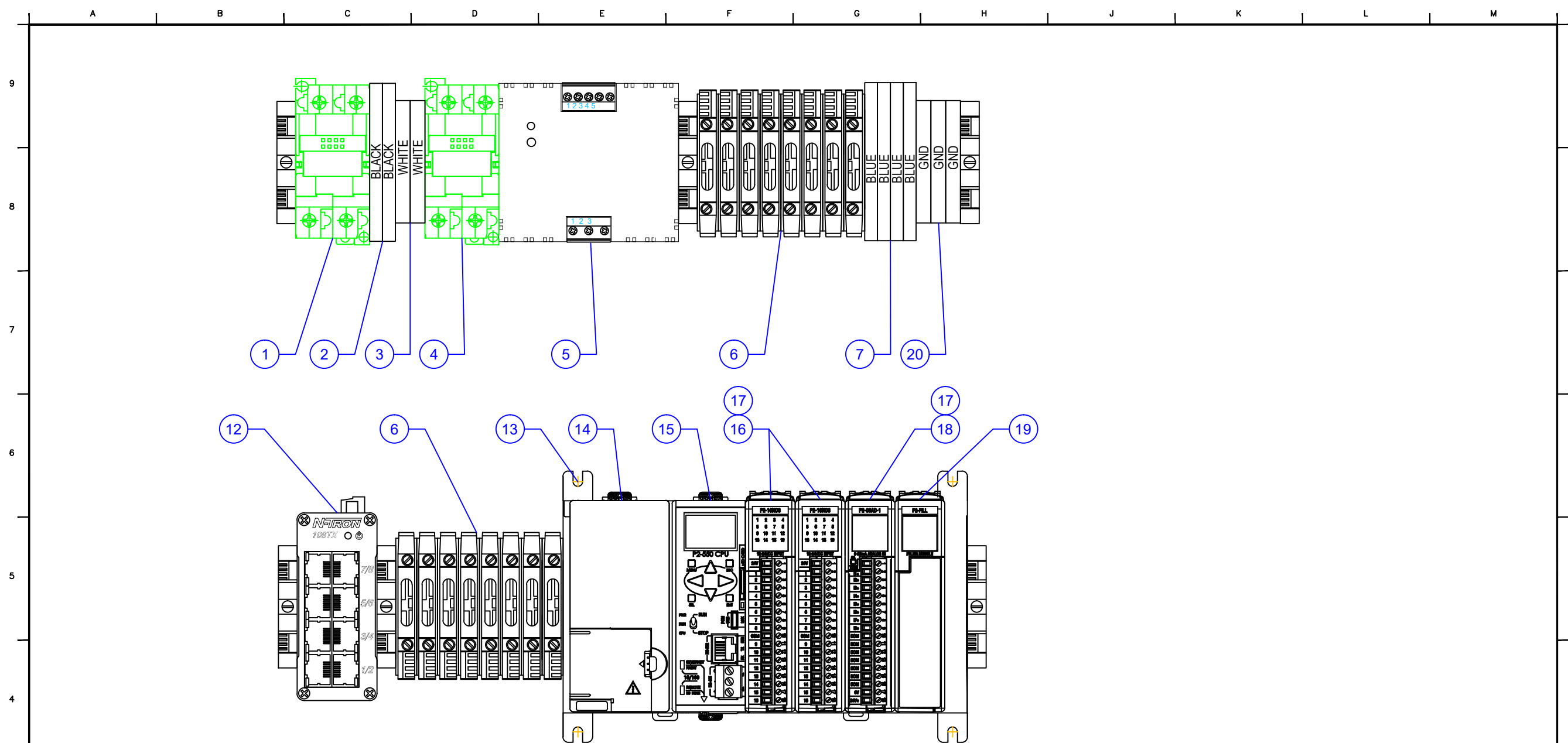
RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 1

NETWORK DIAGRAM

DR: JMB	
TNG: JMB	
CK: DAD	
AP: JJR	
SCALE: NONE	DWG. No. 5701-P3
DATE: 08/23/2018	SET NO. SHEET NO. 3 OF 14



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A,Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
3	2	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A,Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	1	Productivity2000 discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 1 isolated common(s)	7800451	Automation Direct	P2-16ND3
17	2	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	2	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV. DATE DESCRIPTION BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

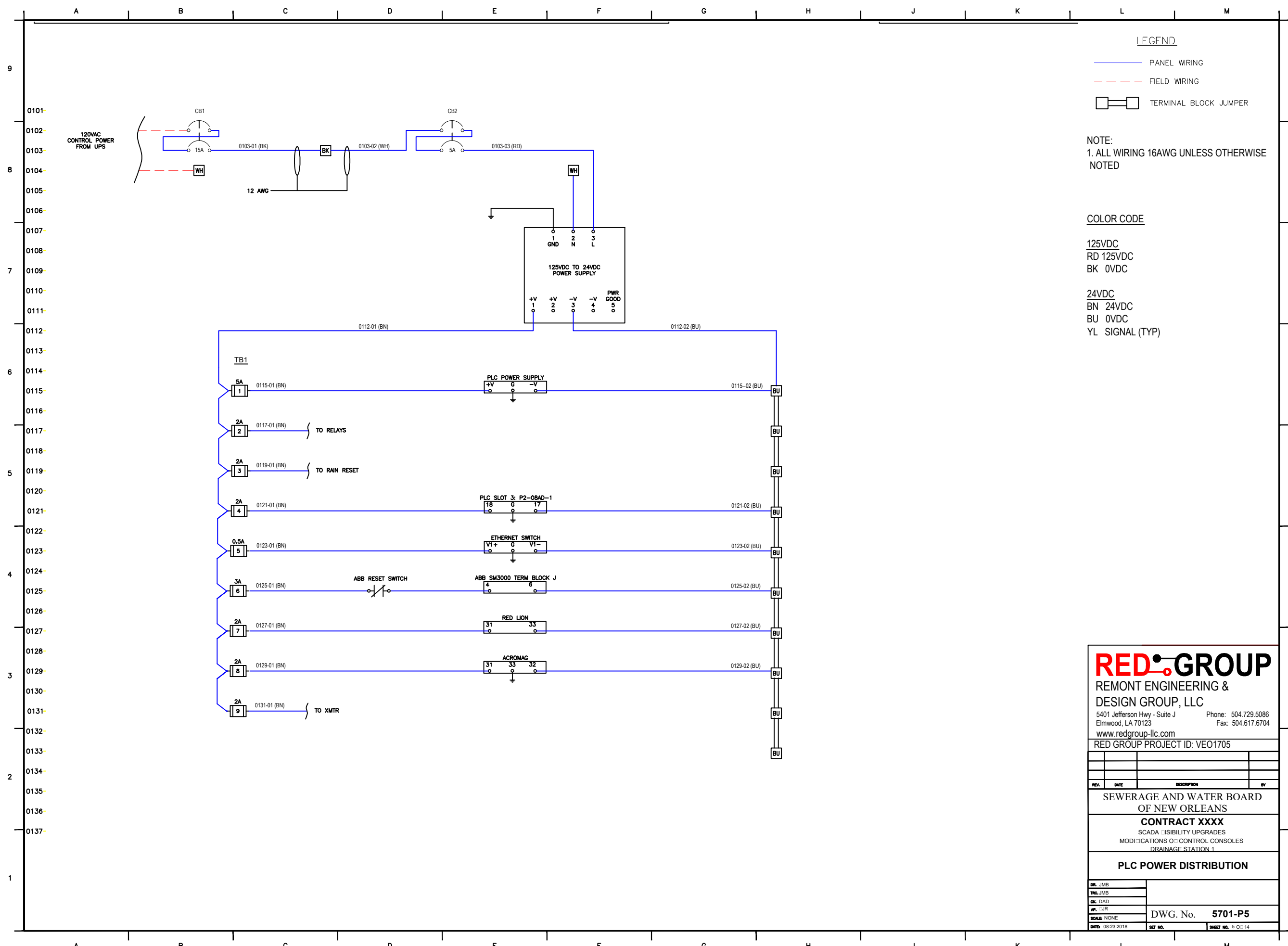
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 1

PLC LAYOUT

DR. JMB
 TRG. JMB
 CK. DAD
 AP. JJR
 SCALE: NONE
 DATE: 08/23/2018

DWG. No. **5701-P4**

SET NO. SHEET NO. 4 OF 14



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

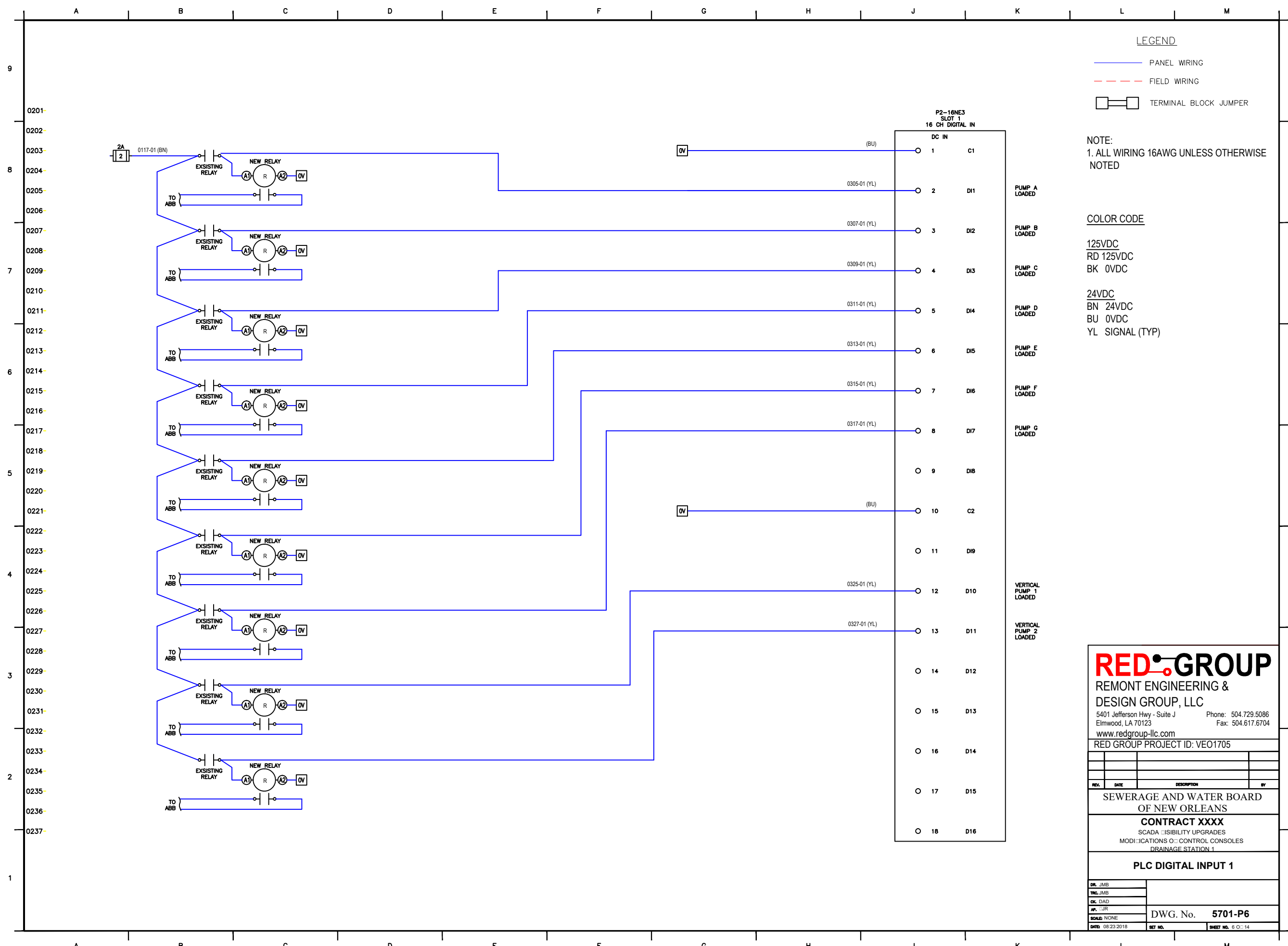
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 1

PLC POWER DISTRIBUTION

DR. JMB	
TRC. JMB	
CK. DAD	
AP. JJR	
SCALE: NONE	DWG. No. 5701-P5
DATE: 08/23/2018	SET NO. SHEET NO. 5 OF 14



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

P2-16NE3 SLOT 1 16 CH DIGITAL IN		
DC IN		
1	C1	
2	D1	PUMP A LOADED
3	D2	PUMP B LOADED
4	D3	PUMP C LOADED
5	D4	PUMP D LOADED
6	D5	PUMP E LOADED
7	D6	PUMP F LOADED
8	D7	PUMP G LOADED
9	D8	
10	C2	
11	D9	
12	D10	VERTICAL PUMP 1 LOADED
13	D11	VERTICAL PUMP 2 LOADED
14	D12	
15	D13	
16	D14	
17	D15	
18	D16	

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
 OF NEW ORLEANS**

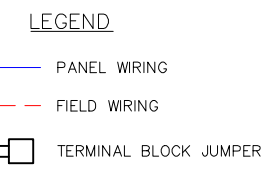
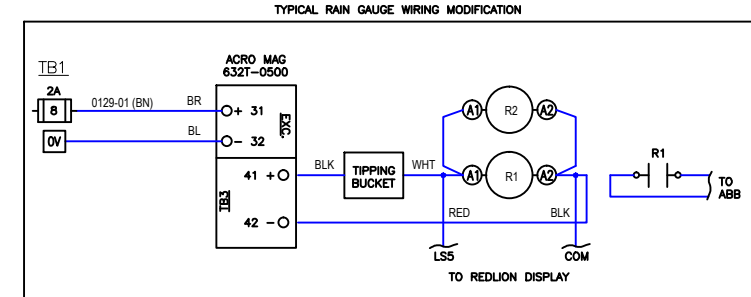
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 1

PLC DIGITAL INPUT 1

DR. JMB TRG. JMB CK. DAD AP. JR SCALE: NONE DATE: 08/23/2018	DWG. No. 5701-P6 SET NO. SHEET NO. 6 OF 14
---	---

A B C D E F G H J K L M

9
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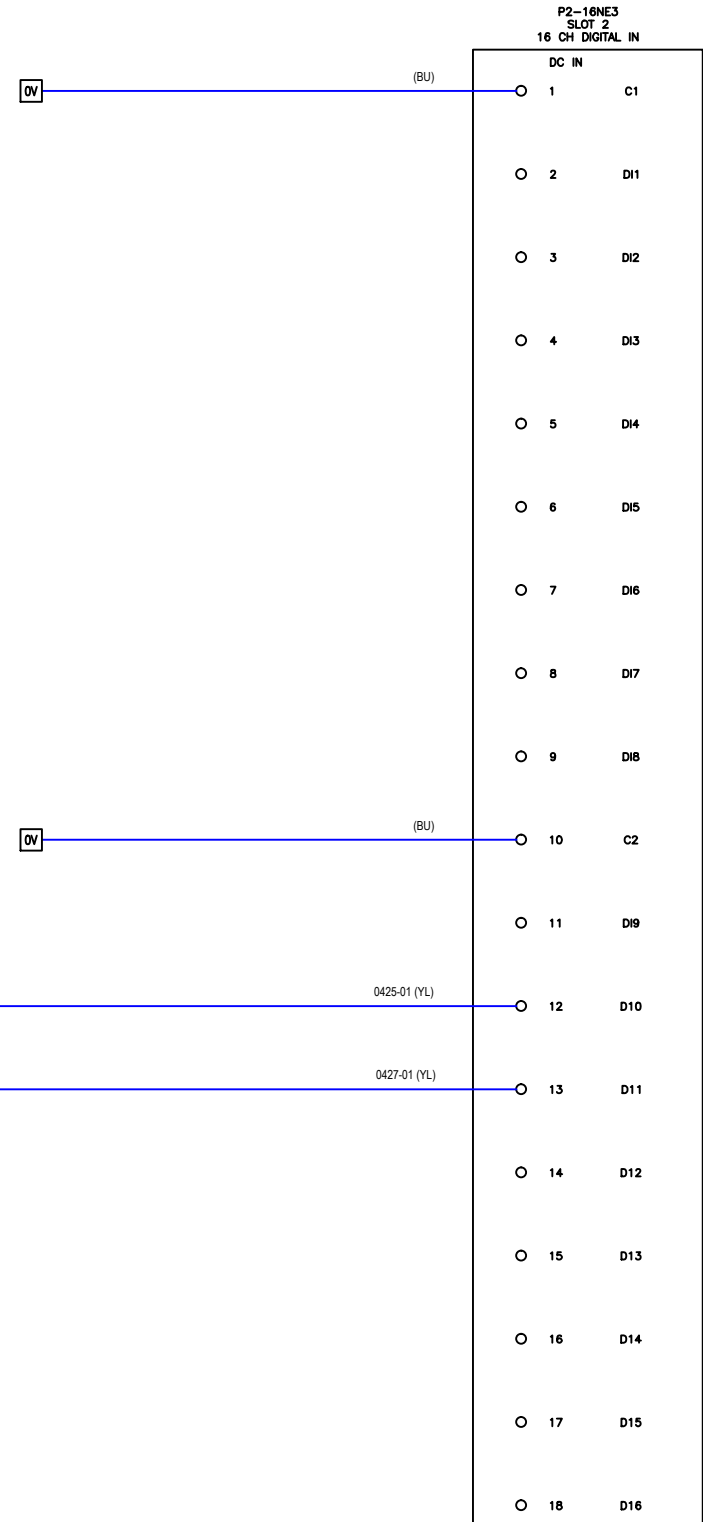


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



RAIN GAUGE TIP SIGNAL
RAIN GAUGE RESET SWITCH

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RED GROUP PROJECT ID: VEO1705

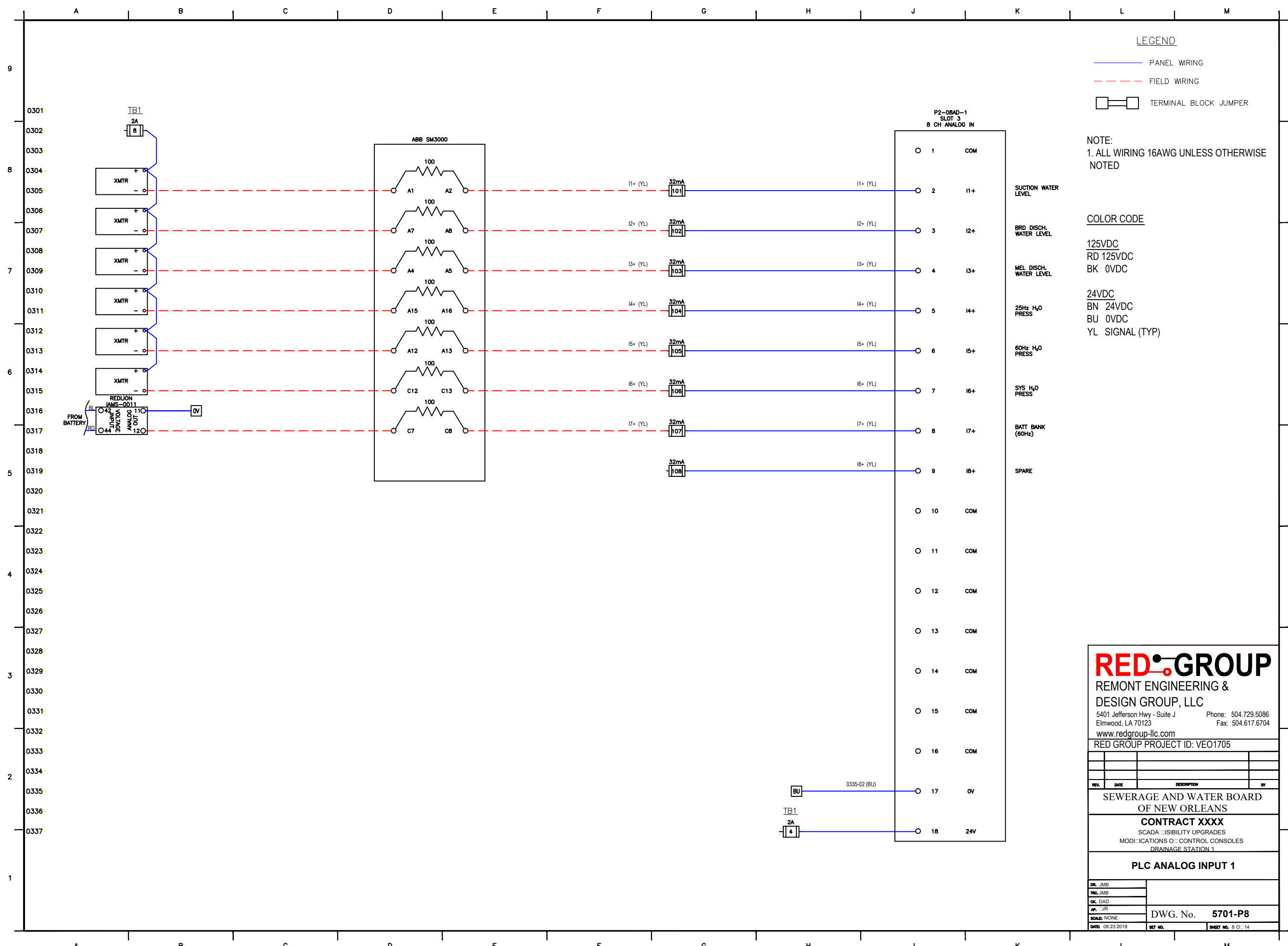
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 1

PLC DIGITAL INPUT 2

DR. JMB	
TRG. JMB	
CK. DAD	
AP. IJR	
SCALE: NONE	DWG. No. 5701-P7
DATE: 08/23/2018	SET NO. SHEET NO. 7 OF 14

A B C D E F G H J K L M



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

P2-08AD-1 SLOT 3 8 CH ANALOG IN	
1	COM
2	11+
3	12+
4	13+
5	14+
6	15+
7	16+
8	17+
9	18+
10	COM
11	COM
12	COM
13	COM
14	COM
15	COM
16	COM
17	0V
18	24V

- SUCTION WATER LEVEL
- BRD DISCH. WATER LEVEL
- MEL DISCH. WATER LEVEL
- 25Hz H₂O PRESS
- 60Hz H₂O PRESS
- SYS H₂O PRESS
- BATT BANK (60Hz)
- SPARE

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REV.	DATE	DESCRIPTION	BY

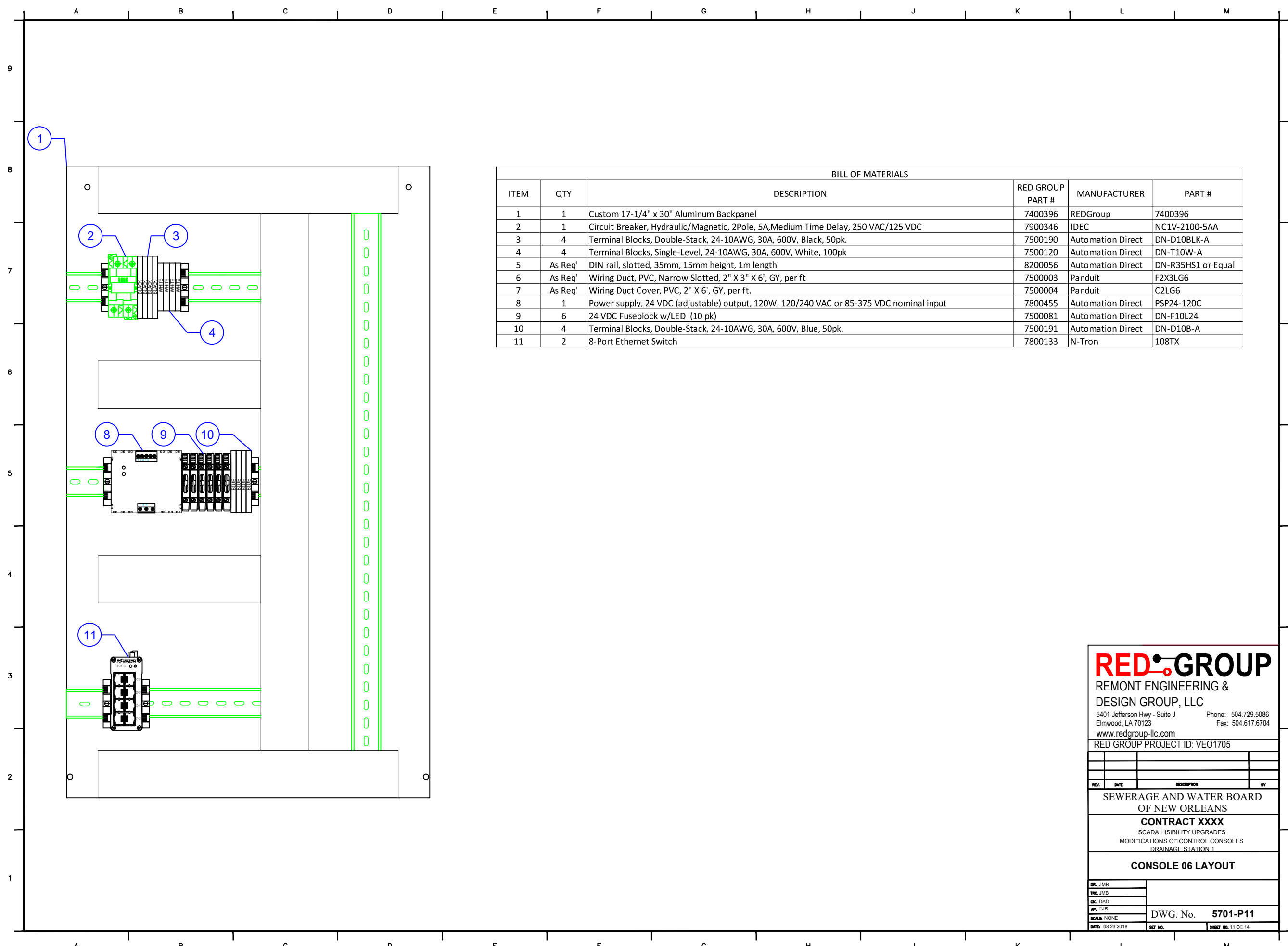
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 1

PLC ANALOG INPUT 1

DR. JMB	
TRG. JMB	
CK. DAD	
AP. JJR	
SCALE: NONE	DWG. No. 5701-P8
DATE: 08/23/2018	SET NO. SHEET NO. 8 OF 14



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX

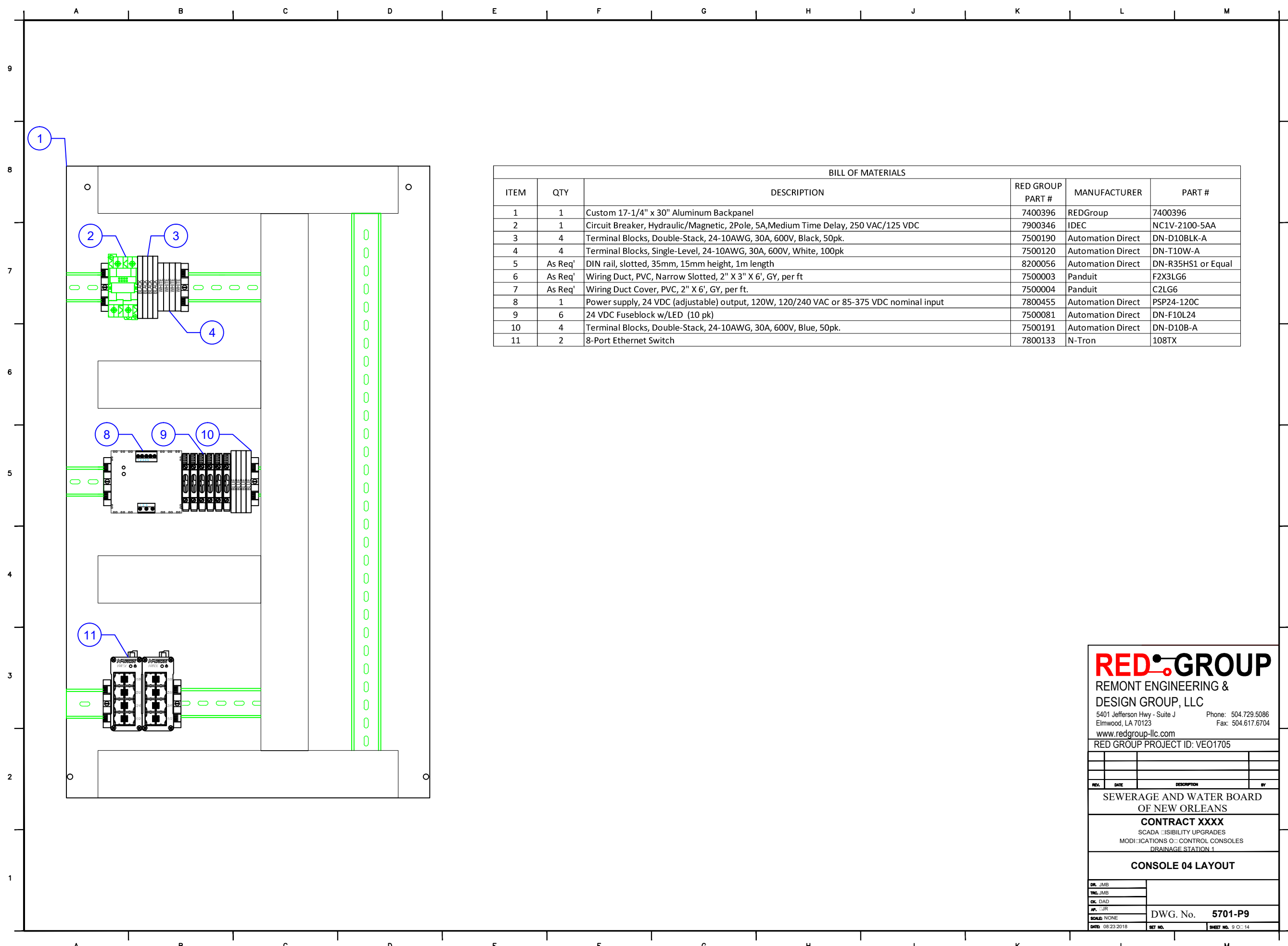
RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 1

CONSOLE 06 LAYOUT

DR. JMB	
TNG. JMB	
CK. DAD	
AP. JR	
SCALE: NONE	DWG. No. 5701-P11
DATE: 08/23/2018	SET NO. SHEET NO. 11 OF 14



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX

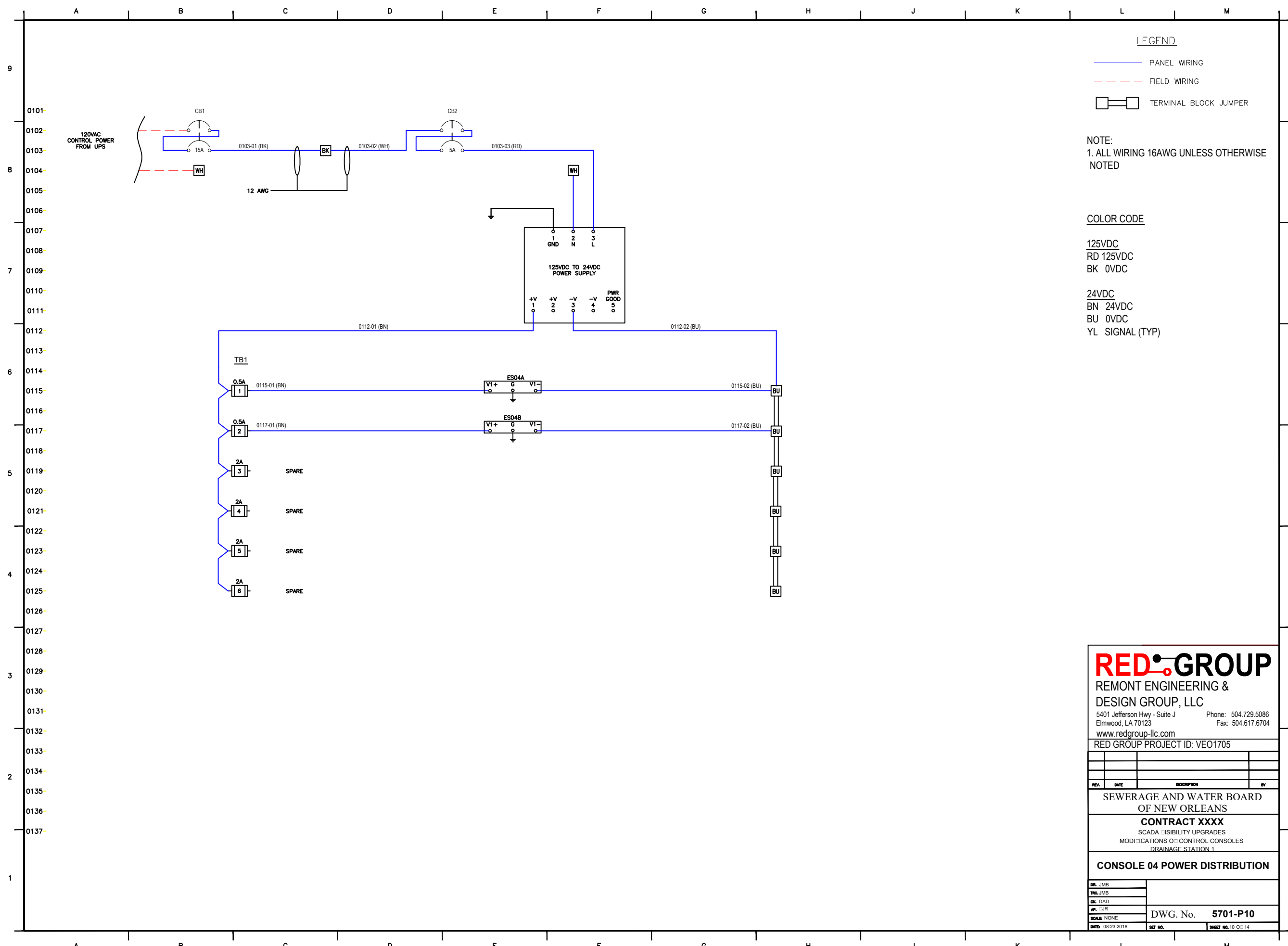
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 1

CONSOLE 04 LAYOUT

DR. JMB	
TNG. JMB	
CK. DAD	
AP. -JR	
SCALE: NONE	DWG. No. 5701-P9
DATE: 08/23/2018	SHEET NO. SHEET NO. 9 OF 14



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

RED GROUP

REMONT ENGINEERING &
DESIGN GROUP, LLC

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Elmwood, LA 70123 Fax: 504.617.6704

www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

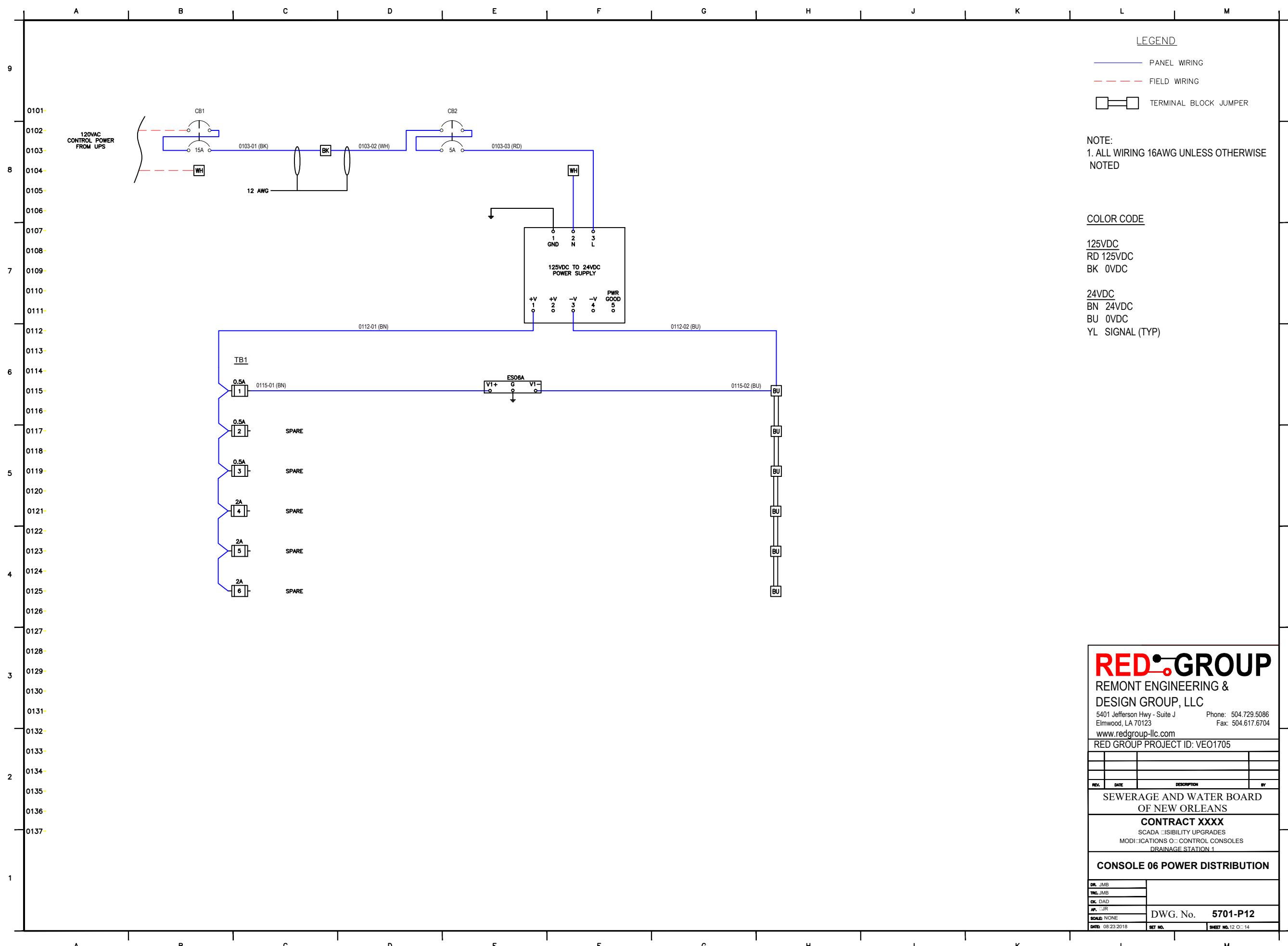
**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 1

CONSOLE 04 POWER DISTRIBUTION

DR: JMB	
TRC: JMB	
CK: DAD	
AP: JJR	
SCALE: NONE	DWG. No. 5701-P10
DATE: 08/23/2018	SHEET NO. 10 OF 14



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

RED GROUP

REMONT ENGINEERING &
DESIGN GROUP, LLC

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Elmwood, LA 70123 Fax: 504.617.6704

www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

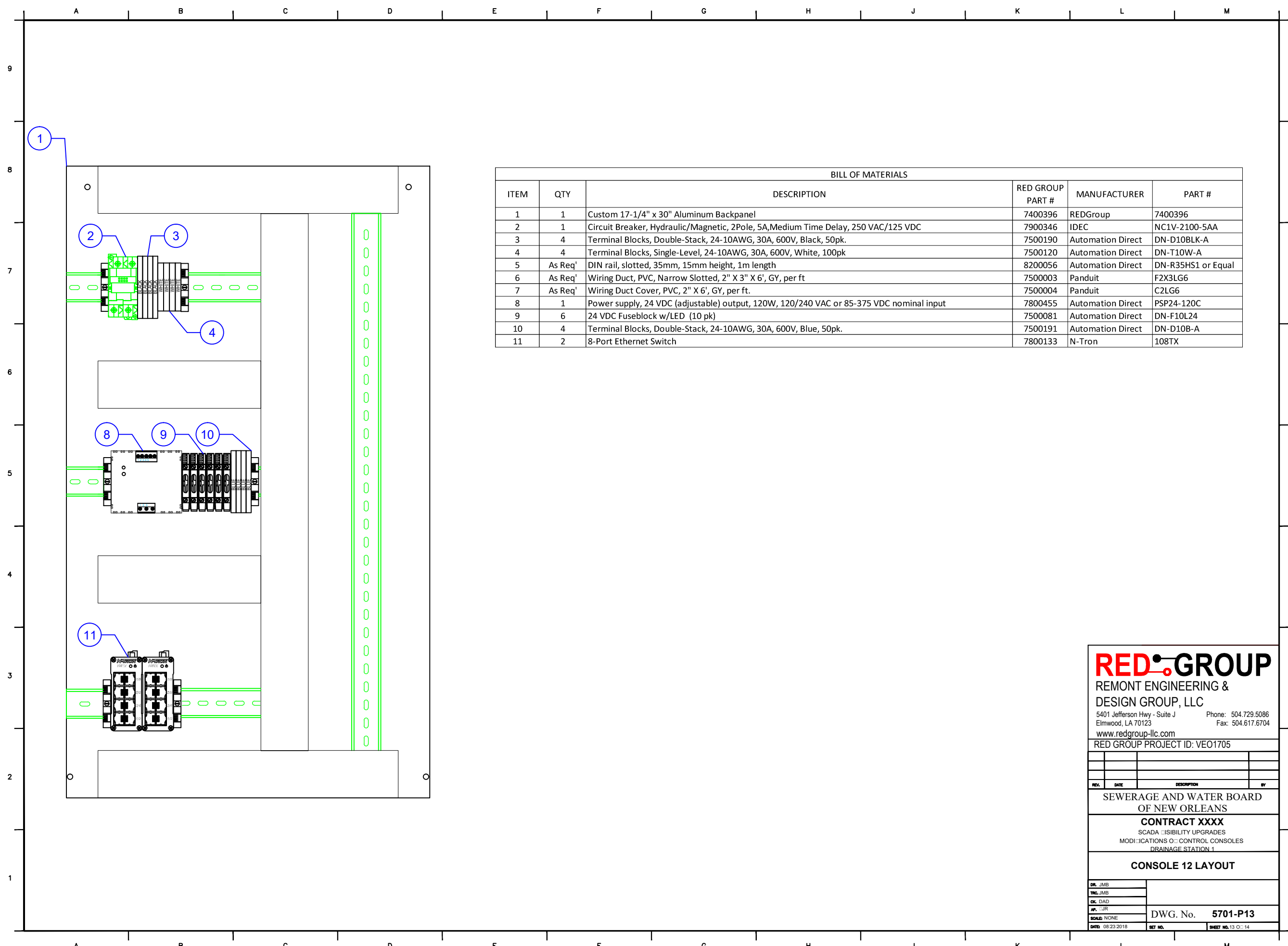
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 1

CONSOLE 06 POWER DISTRIBUTION

DR: JMB	
TNC: JMB	
CK: DAD	
AP: JJR	
SCALE: NONE	DWG. No. 5701-P12
DATE: 08/23/2018	SET NO. SHEET NO. 12 OF 14



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX

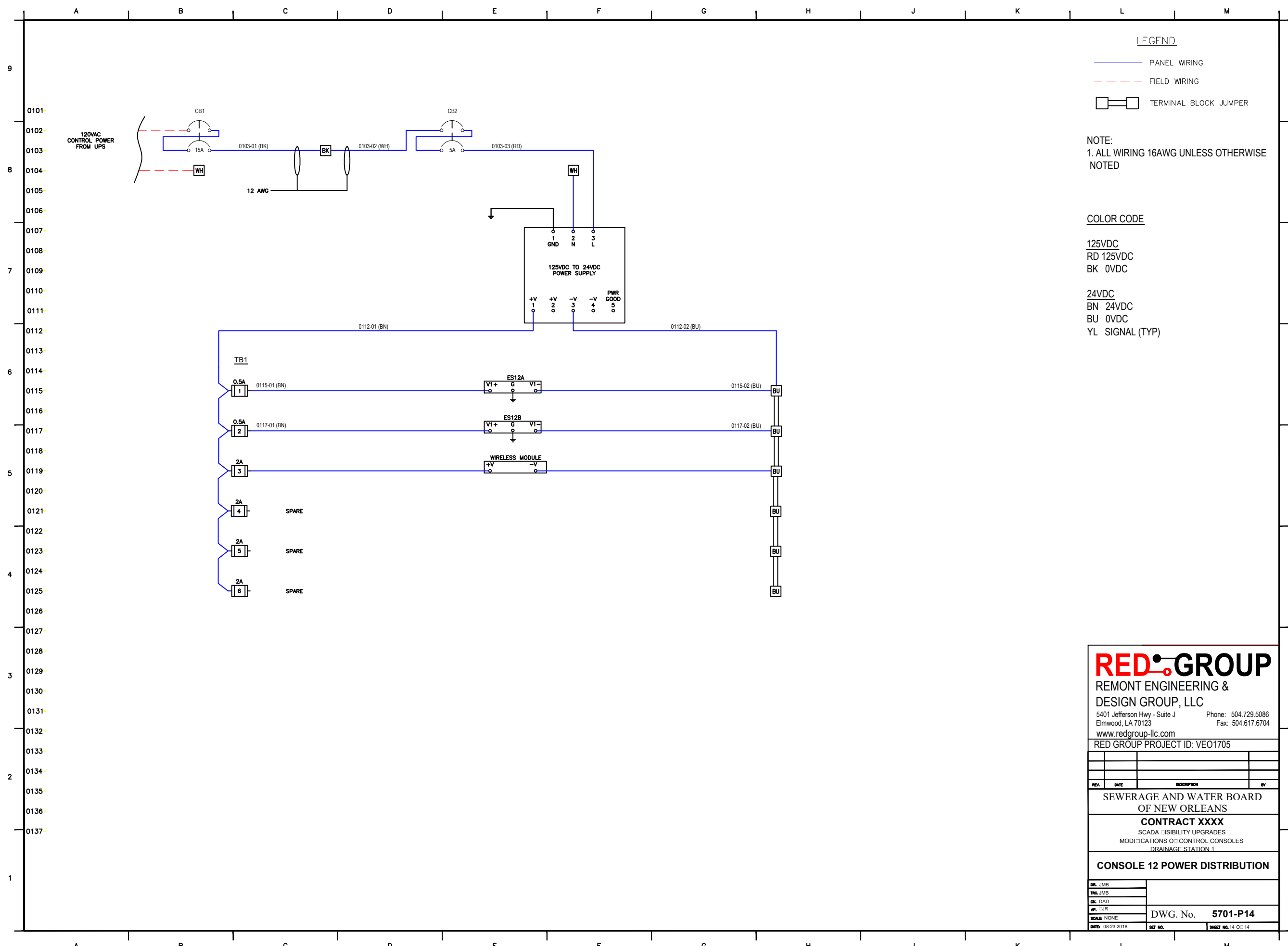
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 REMONT ENGINEERING &
 DESIGN GROUP, LLC
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 1

CONSOLE 12 LAYOUT

DR. JMB	
TNG. JMB	
CK. DAD	
AP. JJR	
SCALE: NONE	DWG. No. 5701-P13
DATE: 08/23/2018	SHEET NO. 13 OF 14



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

RED GROUP

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DESIGN GROUP, LLC

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Elmwood, LA 70123 Fax: 504.617.6704

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

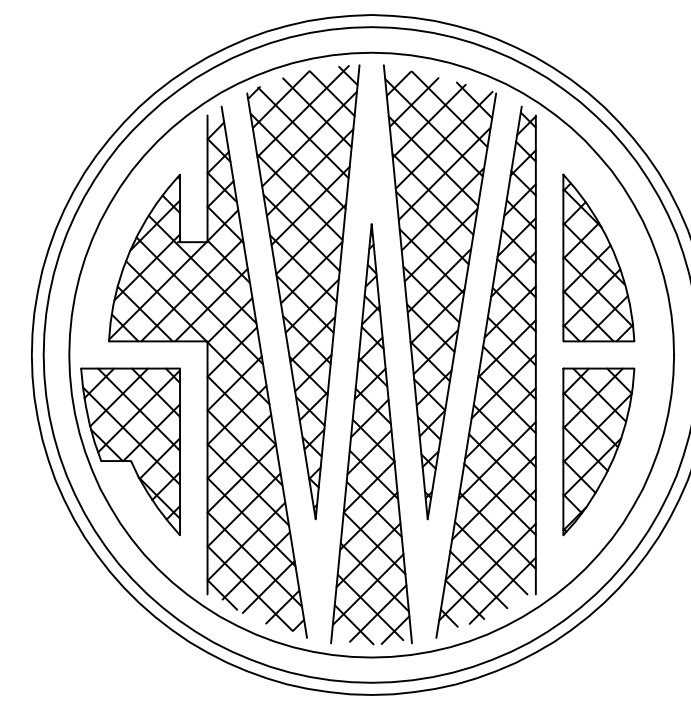
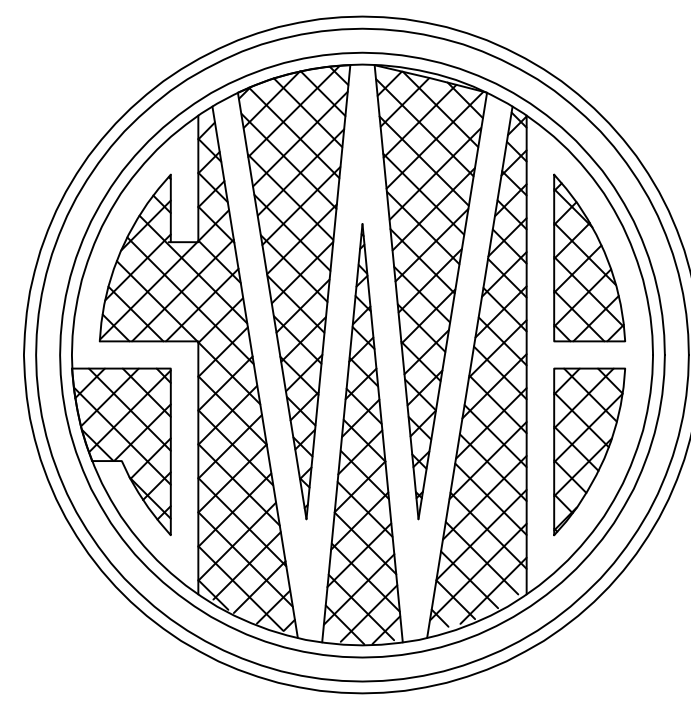
CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 1

CONSOLE 12 POWER DISTRIBUTION

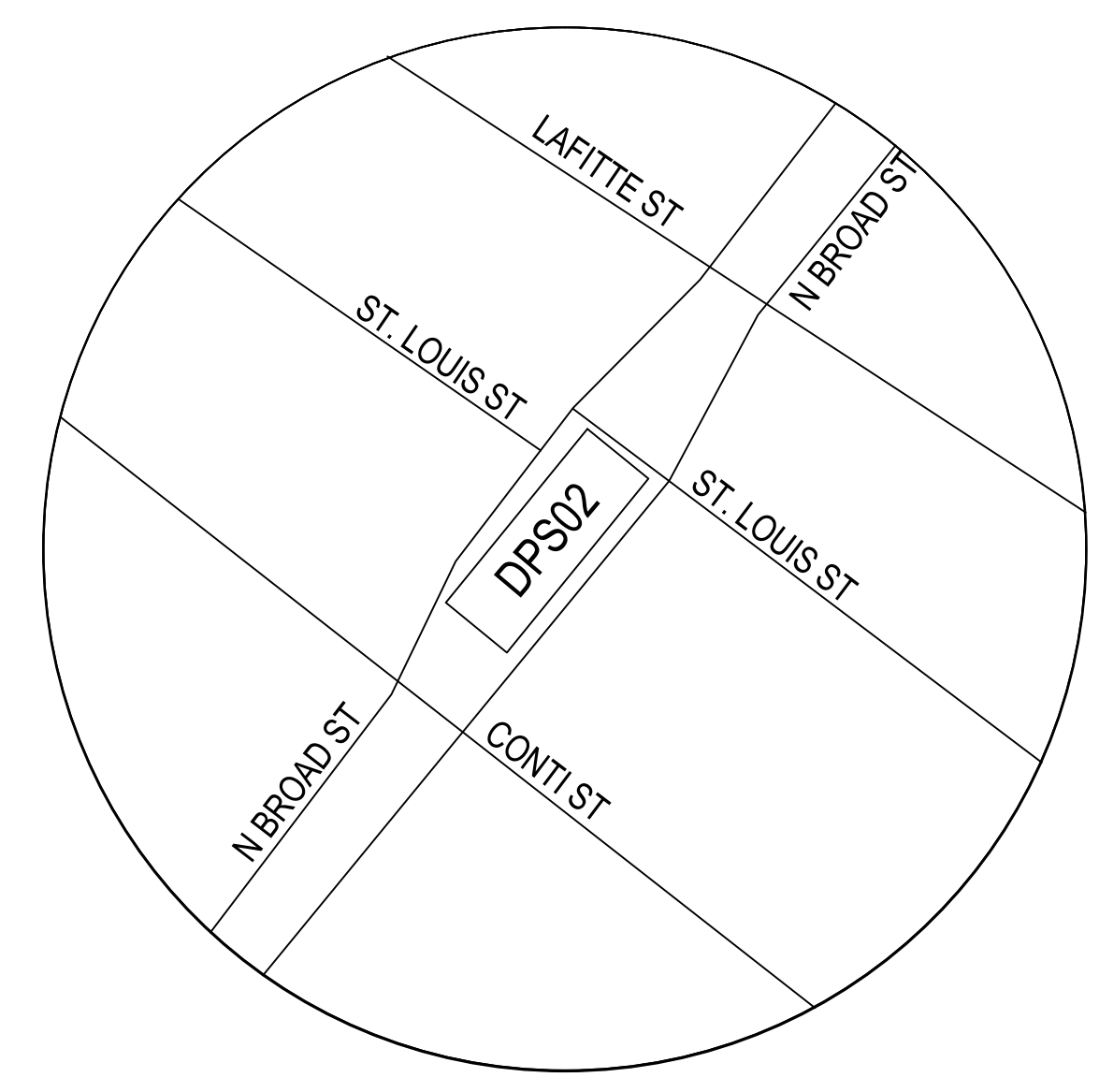
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TNC: JMB	
CK: DAD	
AP: JJR	
SCALE: NONE	DWG. No. 5701-P14
DATE: 08/23/2018	SHEET NO. 14 OF 14

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 2



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 04 LAYOUT		
10	CONSOLE 04 POWER DISTRIBUTION		
11	CONSOLE 08 LAYOUT		
12	CONSOLE 08 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

RED GROUP

REMONT ENGINEERING & DESIGN GROUP, LLC

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Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 2

INDEX OF SHEETS

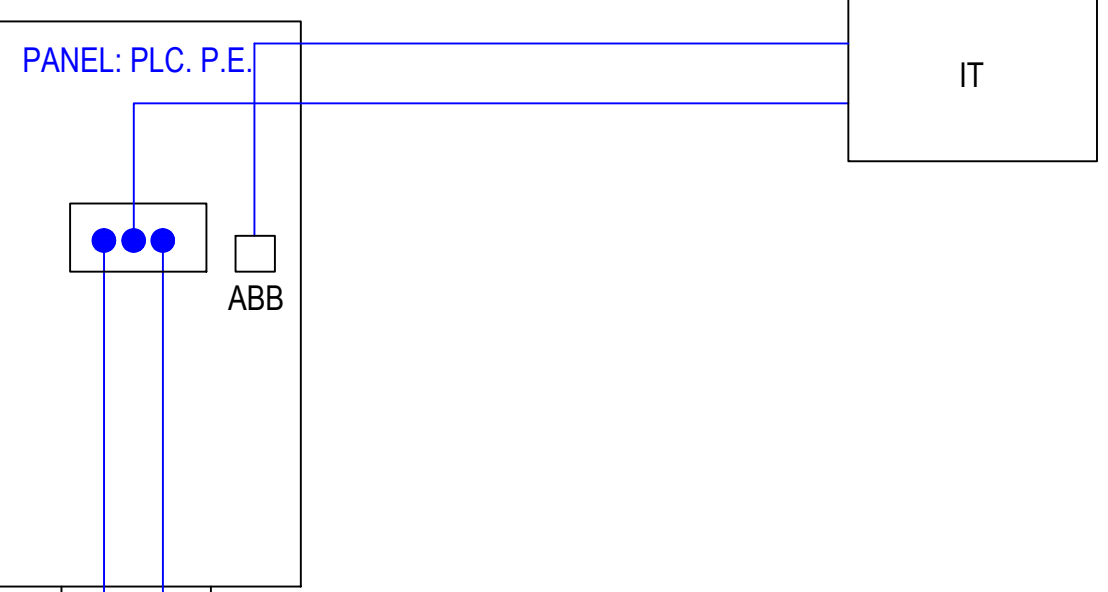
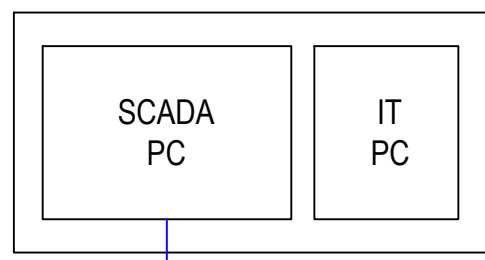
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TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5108-P1
DATE: 03/21/2018	SET NO. SHEET NO. 1 OF 15

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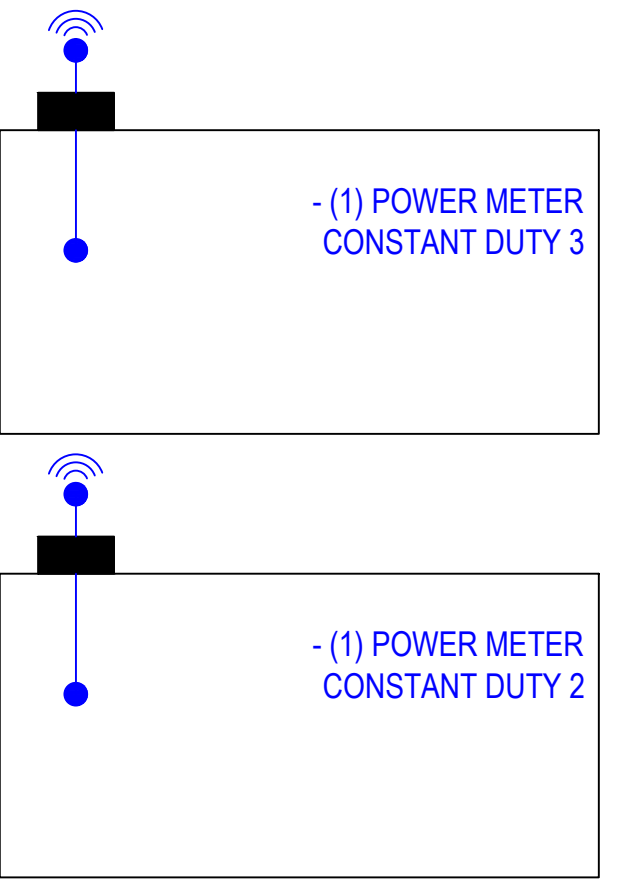
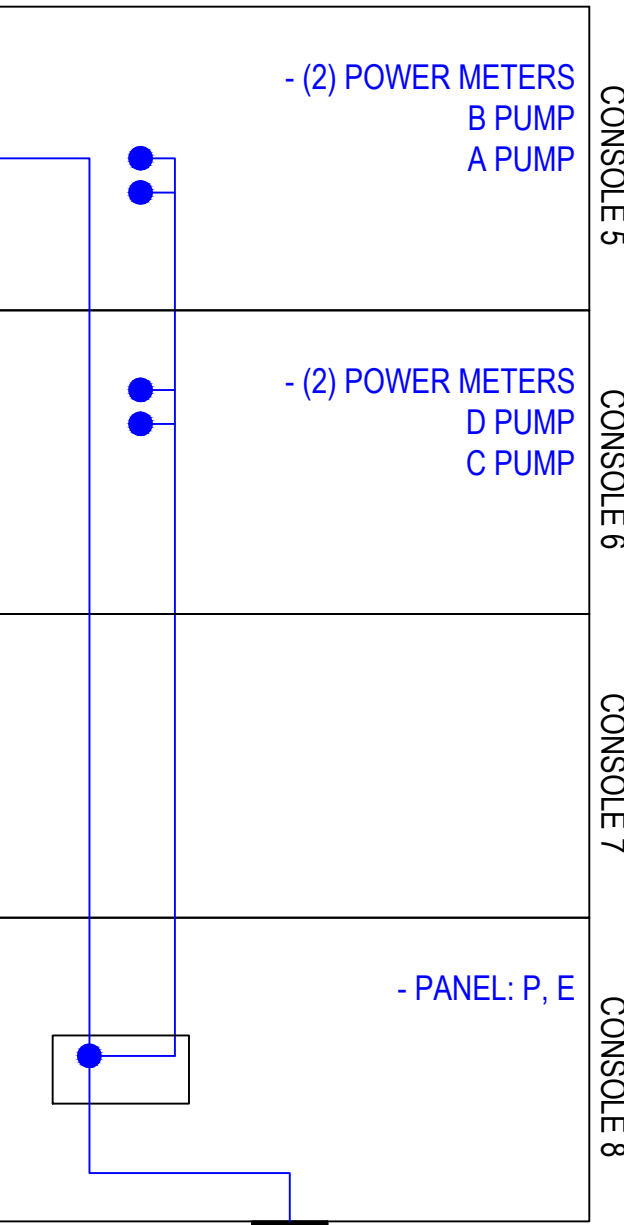
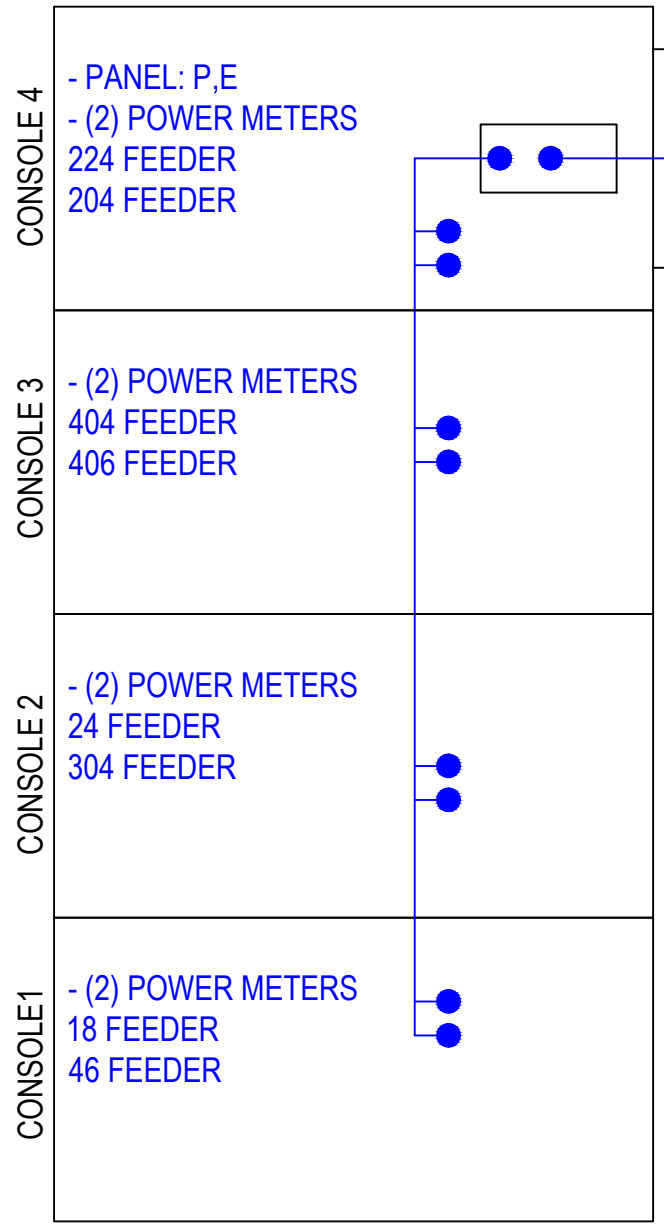
LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

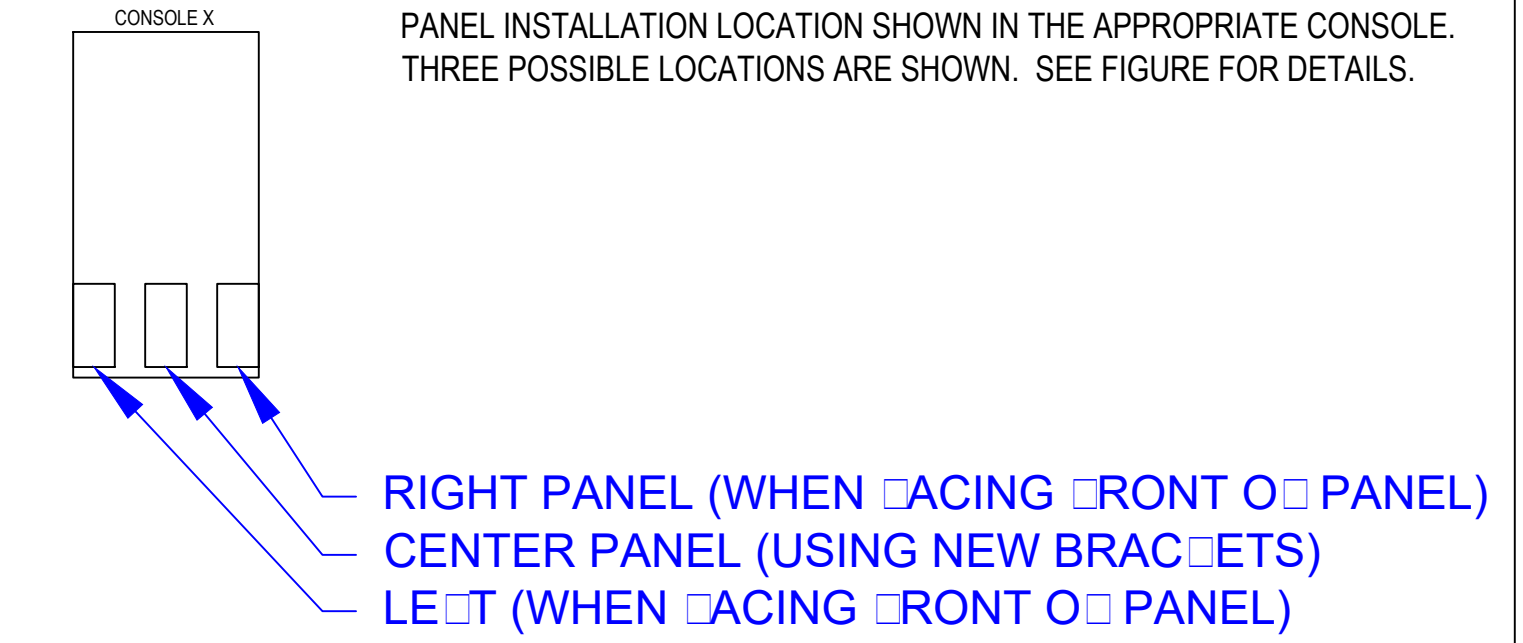
PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU



EXISTING CONDUIT
 PULL BAC SLC WIRES



PANEL LOCATION



RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 2

PLAN VIEW

DR: BMP	DWG. No. 5108-P2
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08.22.2018	SET NO. SHEET NO. 2 OF 12

A B C D E F G H J K L M

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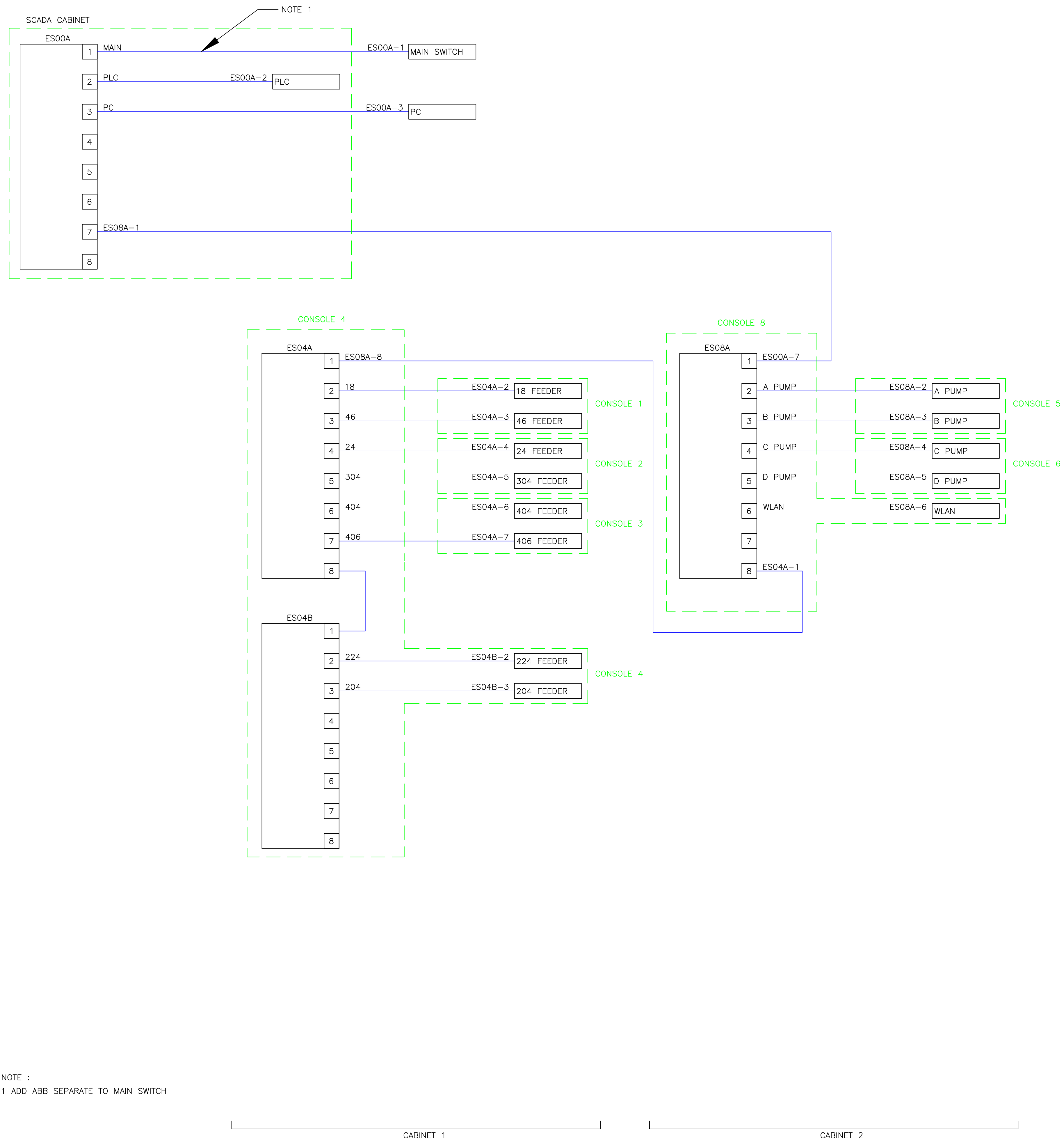
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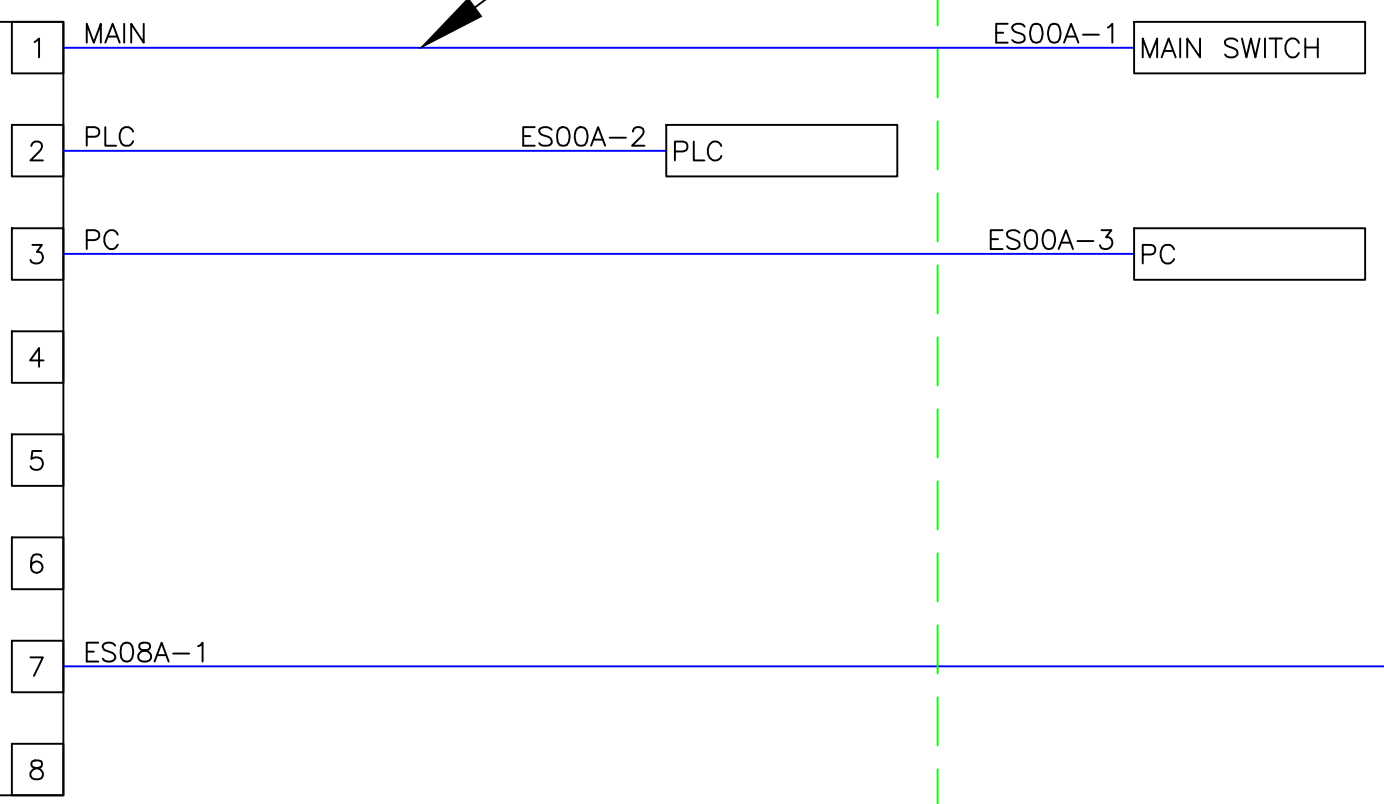
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NOTE 1

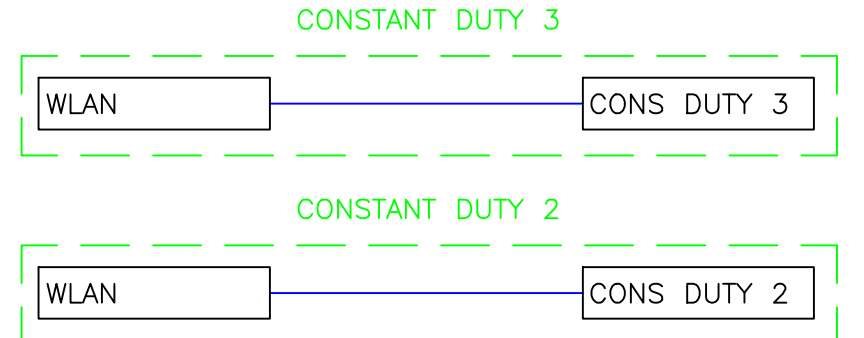
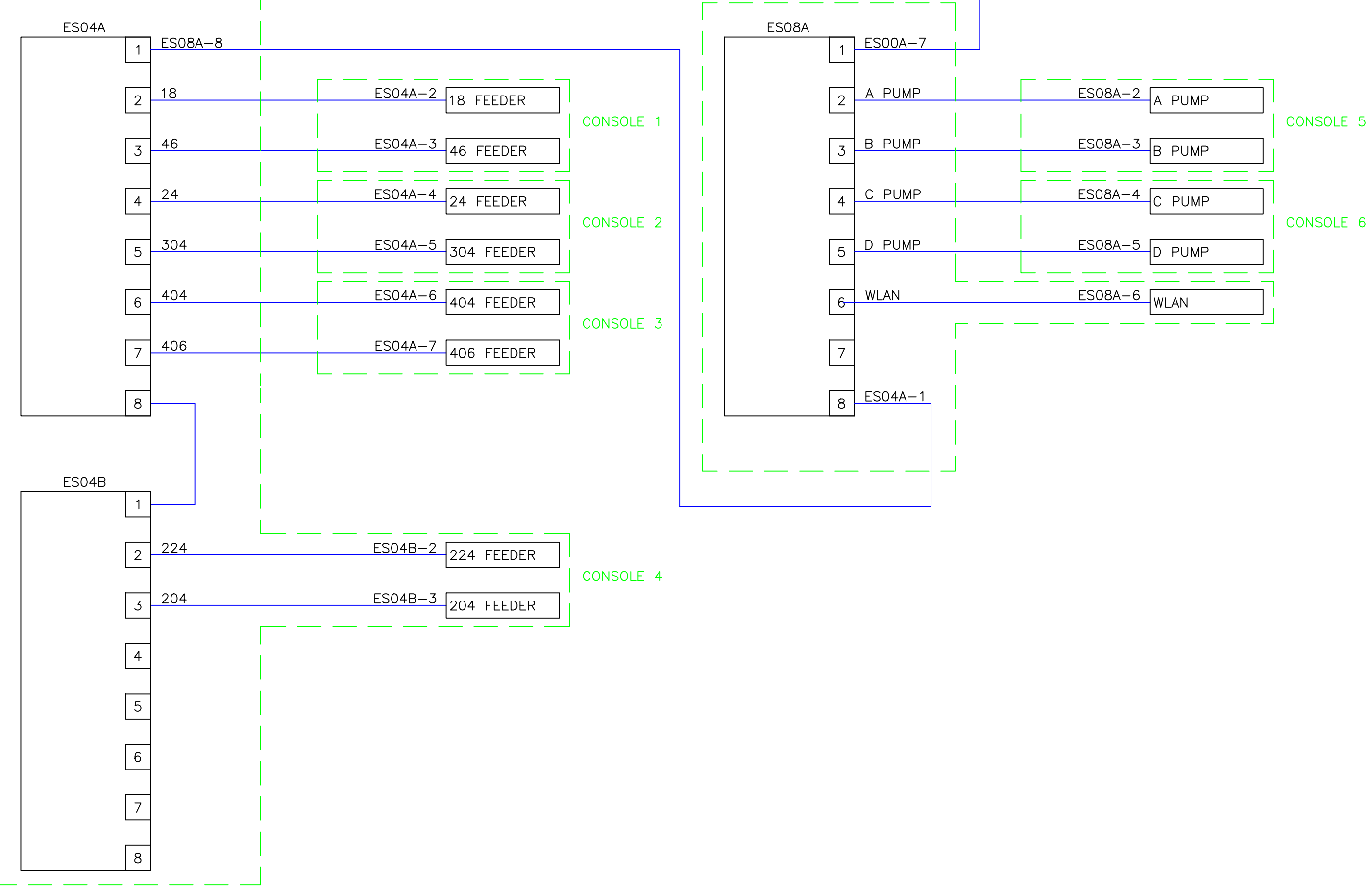
SCADA CABINET

ES00A



CONSOLE 4

CONSOLE 8



NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

CABINET 1

CABINET 2

RED GROUP

REMONT ENGINEERING & DESIGN GROUP, LLC

5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

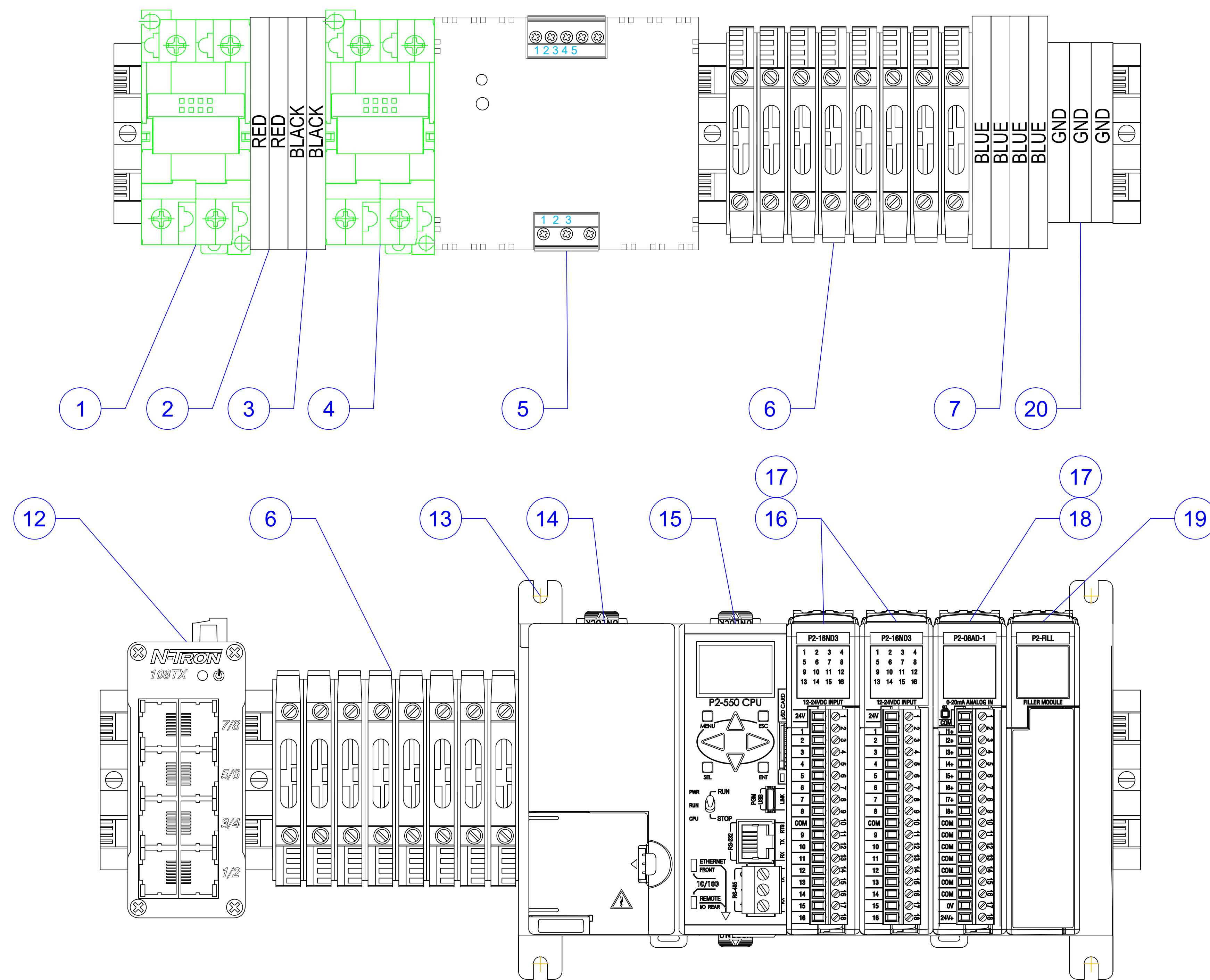
SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 2

NETWORK DIAGRAM

DR: BMP	DWG. No. 5108-P3
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08/22/2018	SET NO. SHEET NO. 3 OF 12

A B C D E F F G H J K L M



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	1	Productivity2000 discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 1 isolated	7800451	Automation Direct	P2-16ND3
17	2	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	2	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY
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SEWERAGE AND WATER BOARD OF NEW ORLEANS

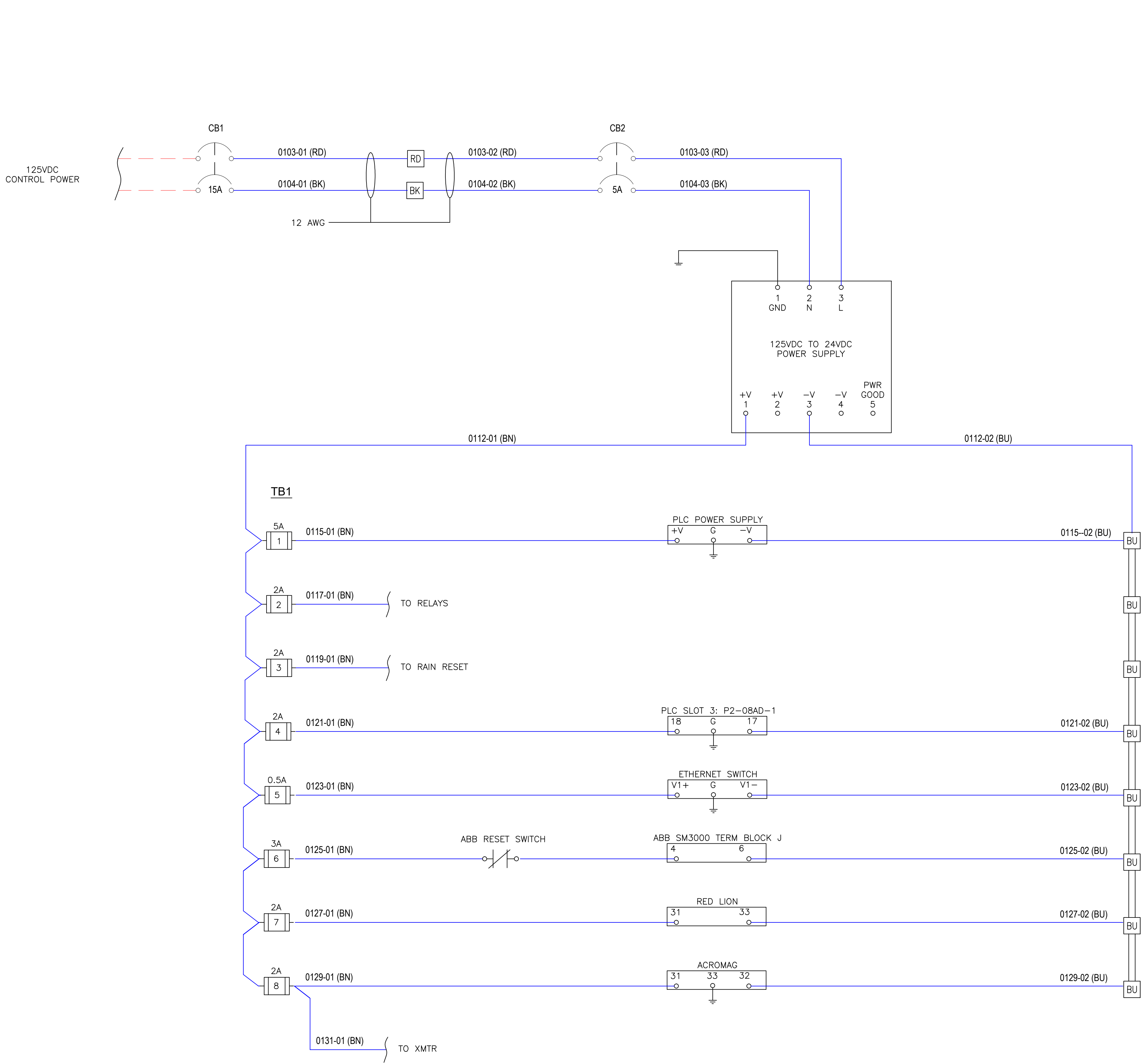
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 2

PLC LAYOUT

DR: BMP	
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5108-P4
DATE: 08/22/2018	SET NO. SHEET NO. 4 OF 12

A B C D E F G H J K L M

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LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 2
PLC POWER DISTRIBUTION

DR: BMP	DWG. No. 5108-P5
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08.22.2018	SET NO. SHEET NO. 5 OF 12

A B C D E F G H J K L M

A B C D E F G H J K L M

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LEGEND

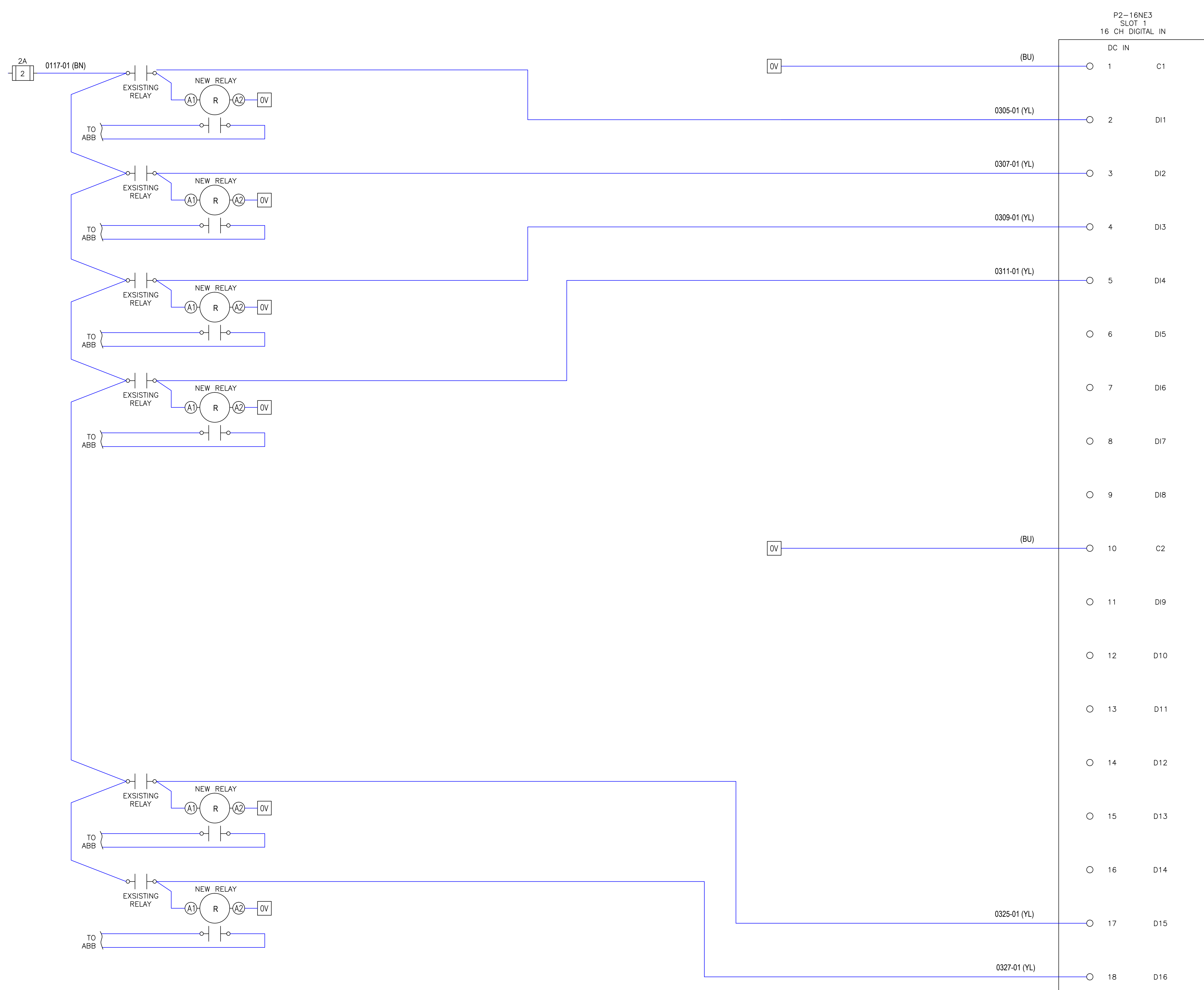
- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



P2-16NE3 SLOT 1 16 CH DIGITAL IN	
DC IN	
1	C1
2	D11
3	D12
4	D13
5	D14
6	D15
7	D16
8	D17
9	D18
10	C2
11	D19
12	D10
13	D11
14	D12
15	D13
16	D14
17	D15
18	D16

PUMP A LOADED
PUMP B LOADED
PUMP C LOADED
PUMP D LOADED
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
SPARE
CONST. DUTY PUMP 2 LOADED
CONST. DUTY PUMP 3 LOADED

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RED GROUP PROJECT ID: VEO1705

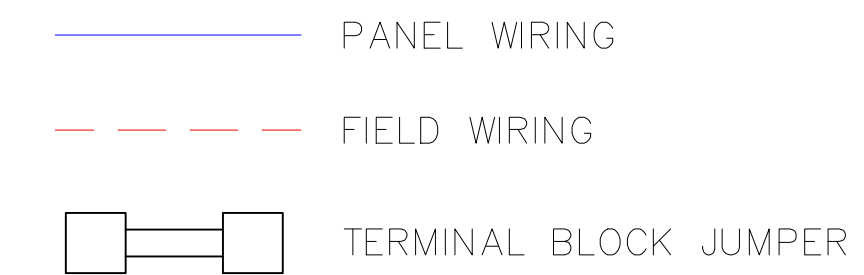
SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 2

PLC DIGITAL INPUT 1

DR: BMP	
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5108-P6
DATE: 08.22.2018	SET NO. SHEET NO. 6 OF 12

A B C D E F F G H J K L M

LEGEND

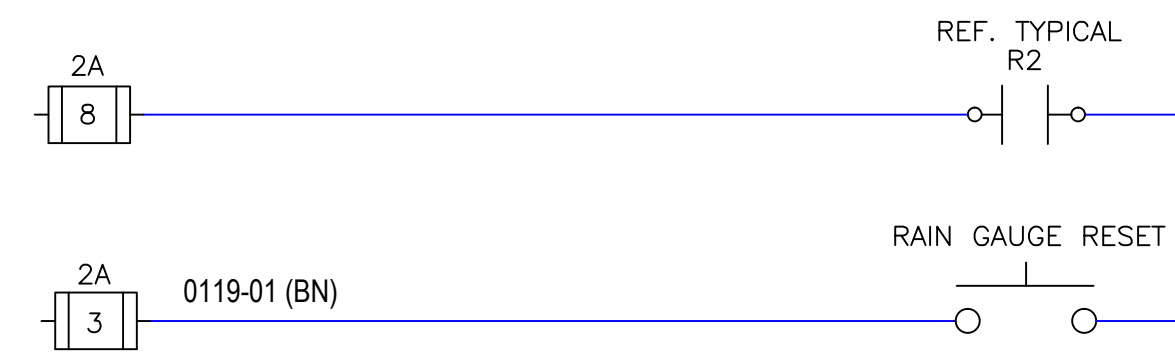
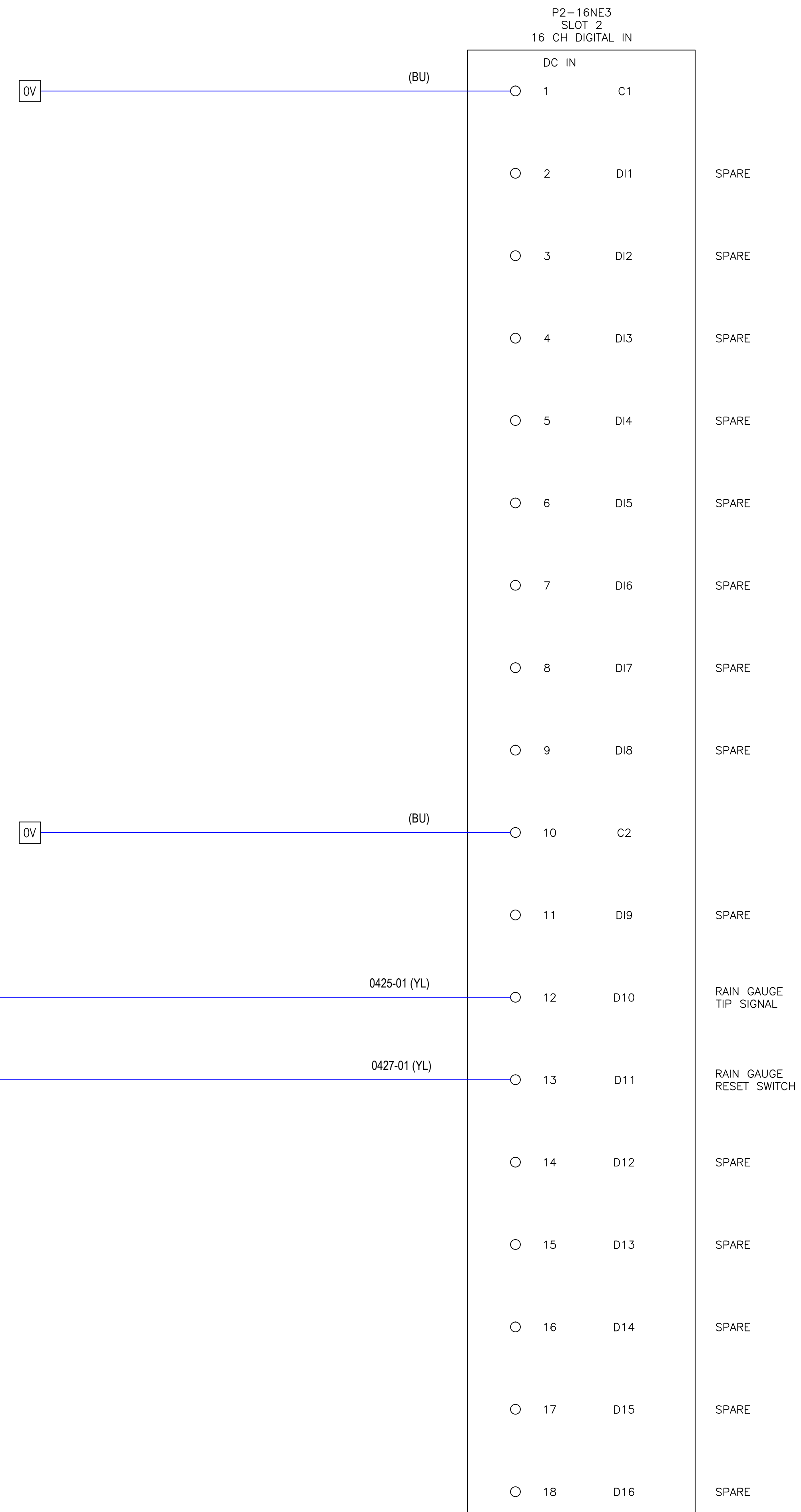
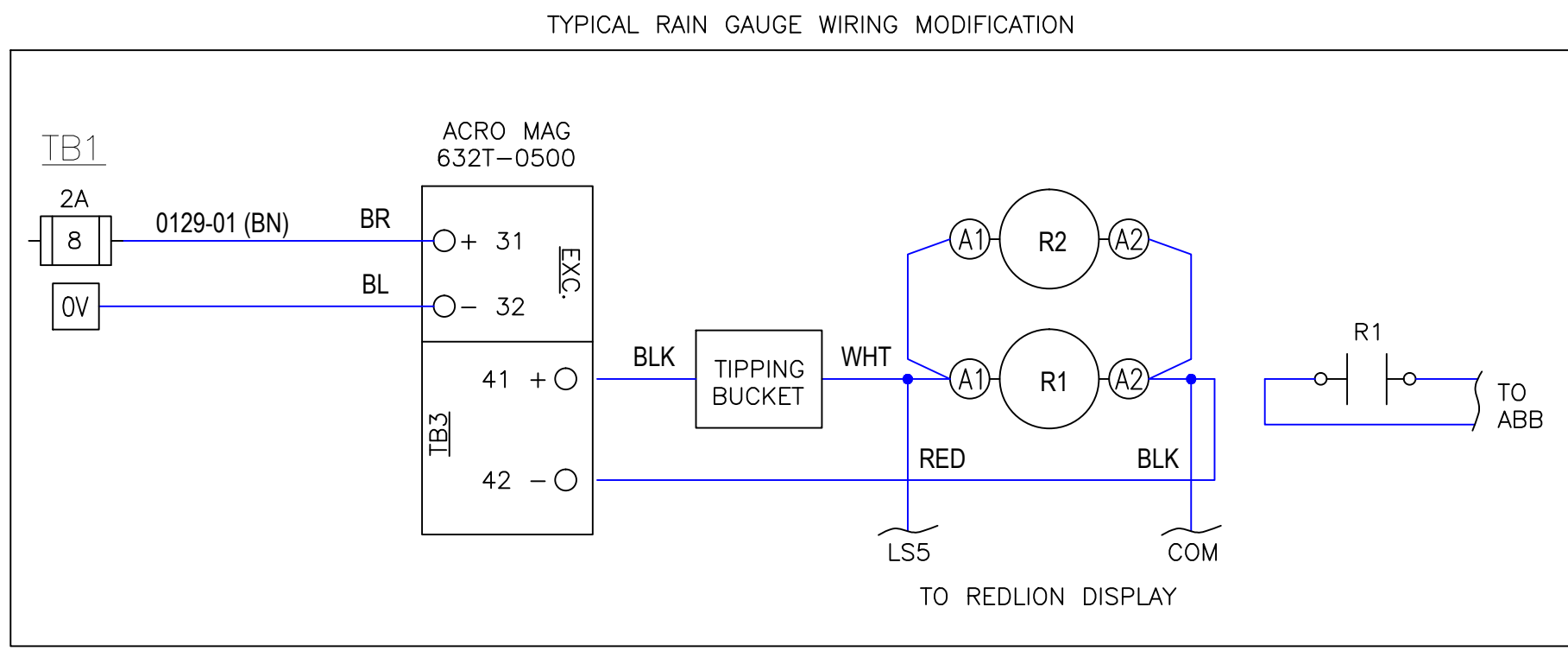


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 2

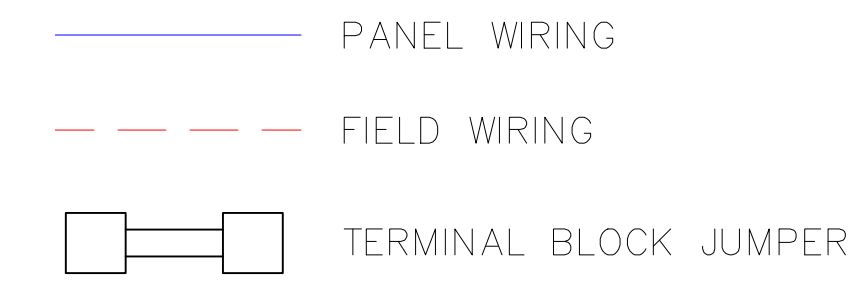
PLC DIGITAL INPUT 2

DR: BMP	
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5108-P7
DATE: 08/22/2018	SET NO. SHEET NO. 7 OF 12

A B C D E F G H J K L M

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LEGEND

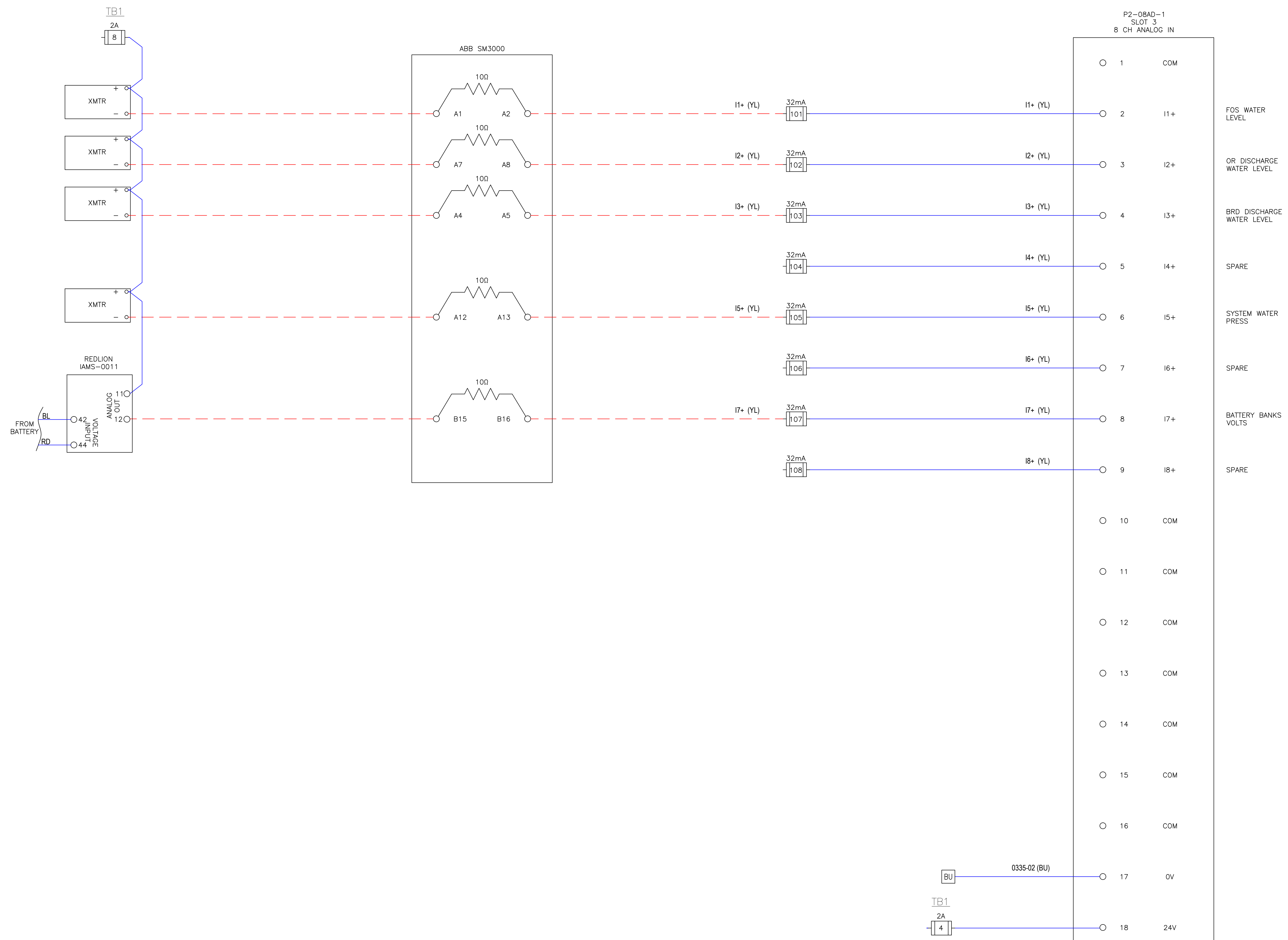


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



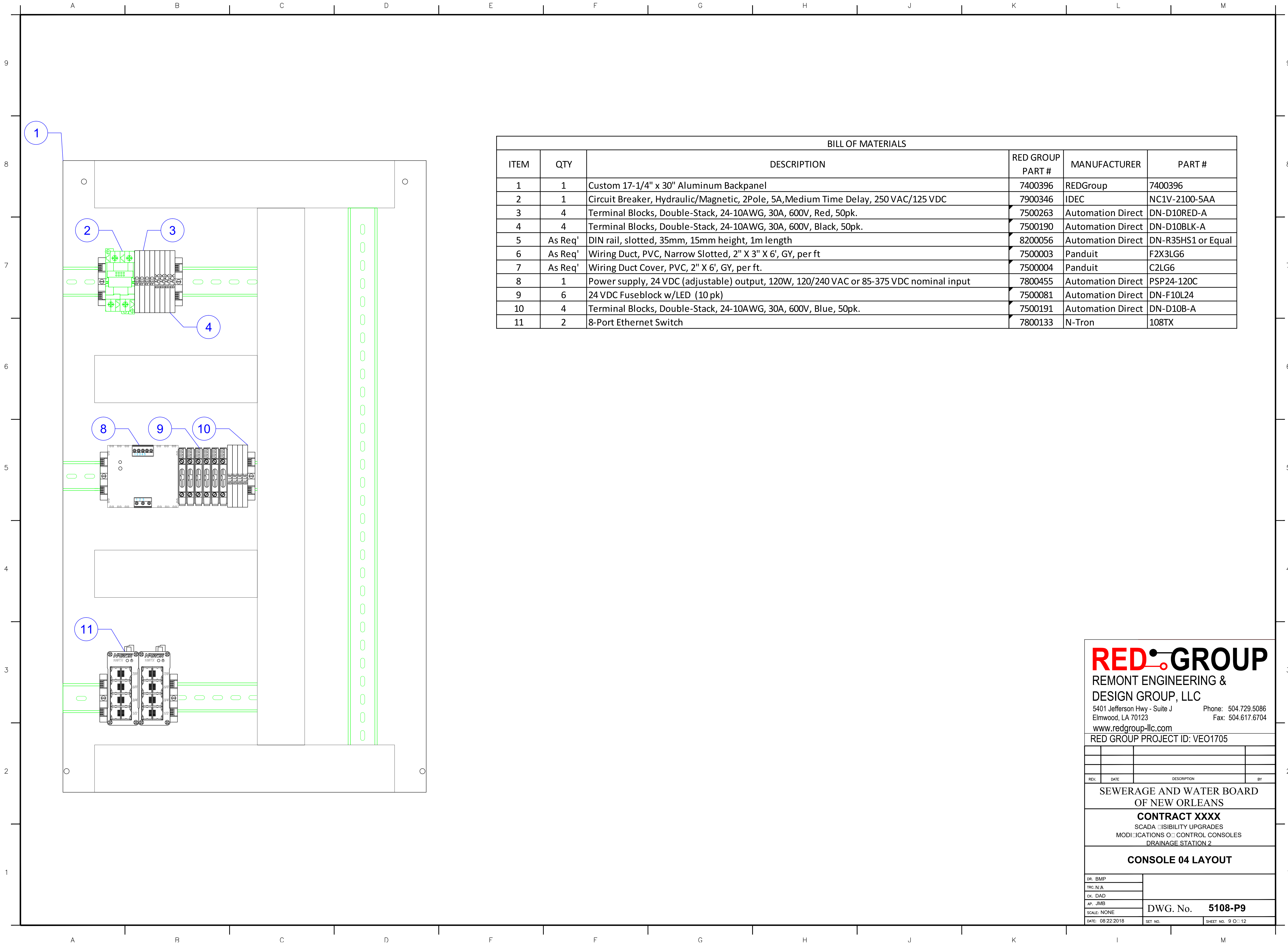
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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA □ ISIBILITY UPGRADES
 MODIFICATIONS □ CONTROL CONSOLES
 DRAINAGE STATION 2

PLC ANALOG INPUT 1

DR: BMP	
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5108-P8
DATE: 08/22/2018	SET NO. SHEET NO. 8 OF 12



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX

RED GROUP

REMONT ENGINEERING & DESIGN GROUP, LLC

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 Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

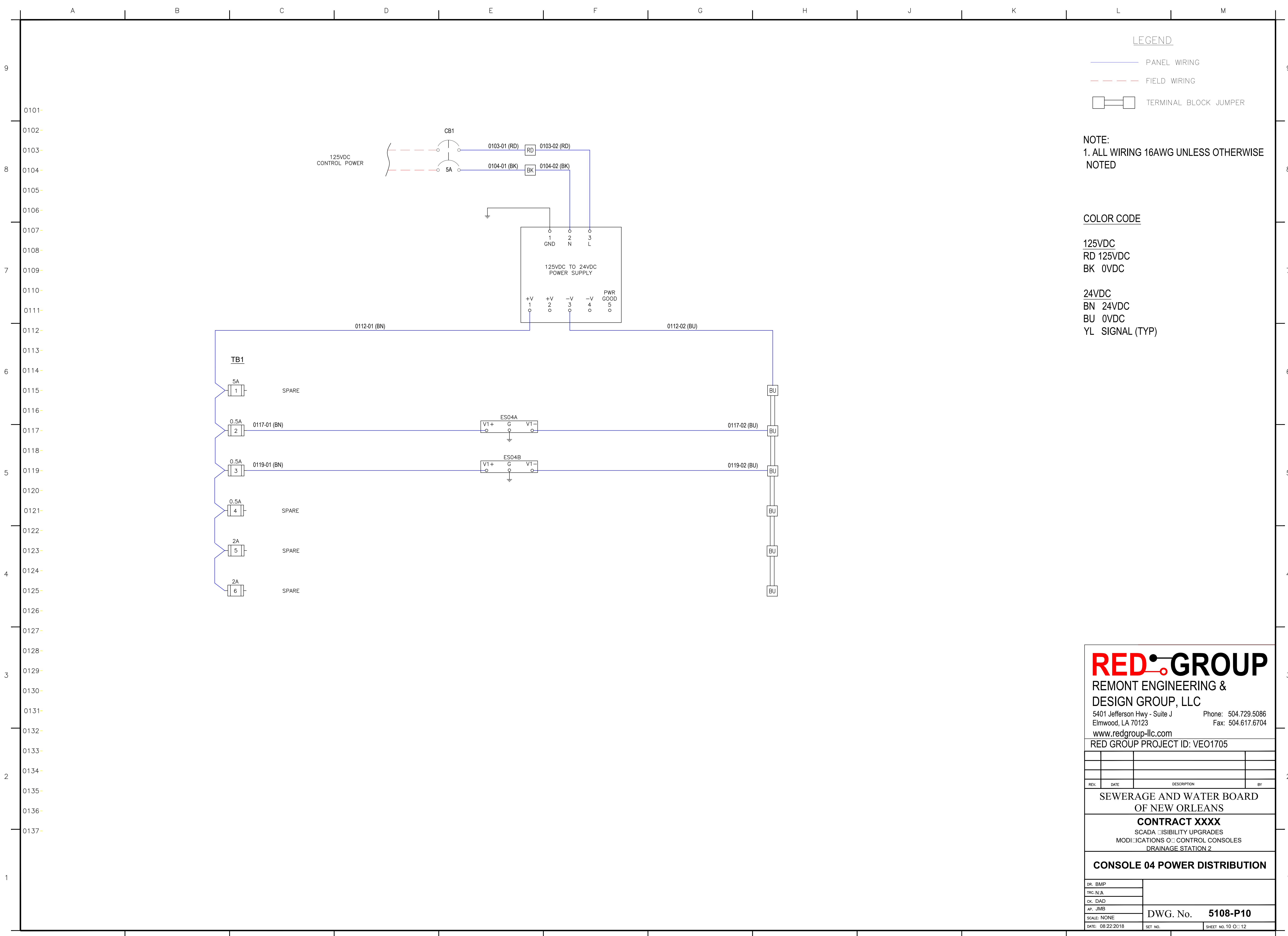
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 2

CONSOLE 04 LAYOUT

DR: BMP	DWG. No. 5108-P9
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08/22/2018	SET NO. SHEET NO. 9 OF 12



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



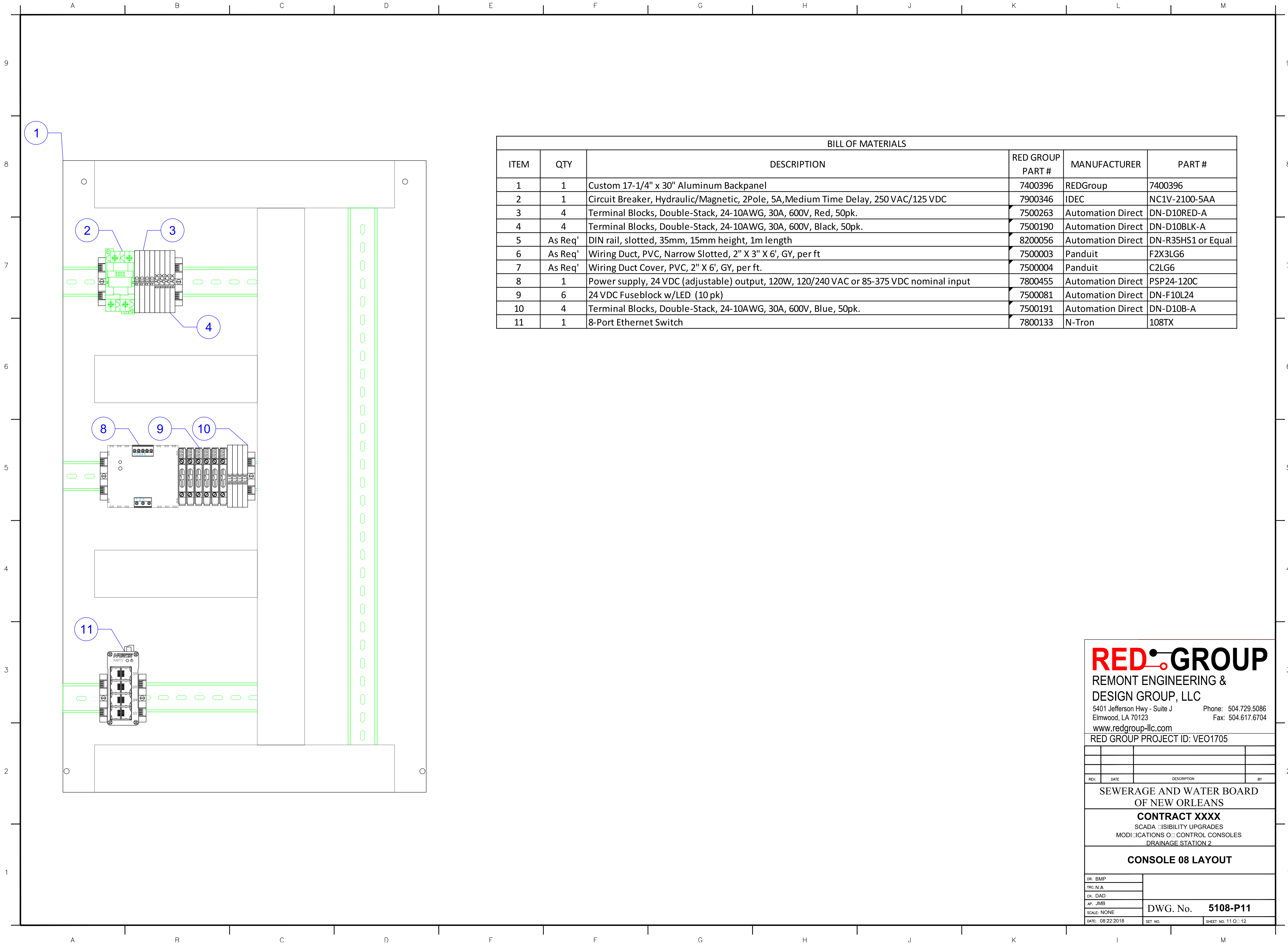
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 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 2

CONSOLE 04 POWER DISTRIBUTION

DR: BMP	DWG. No. 5108-P10
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08/22/2018	SET NO. SHEET NO. 10 OF 12

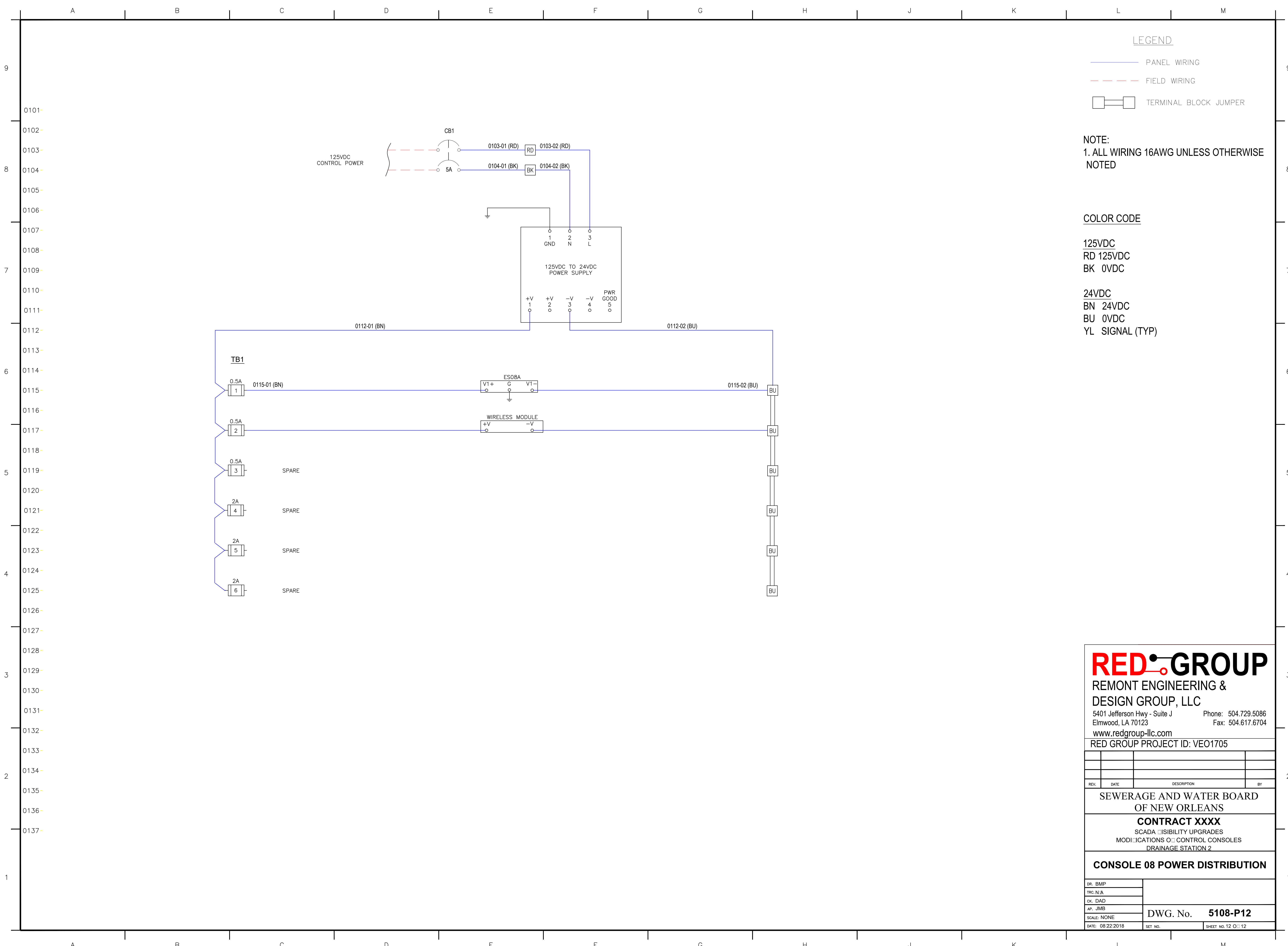


BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX

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 DESIGN GROUP, LLC
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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 2
CONSOLE 08 LAYOUT

DR: BMP	
TRC: N/A	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5108-P11
DATE: 08/22/2018	SET NO. SHEET NO. 11 OF 12



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



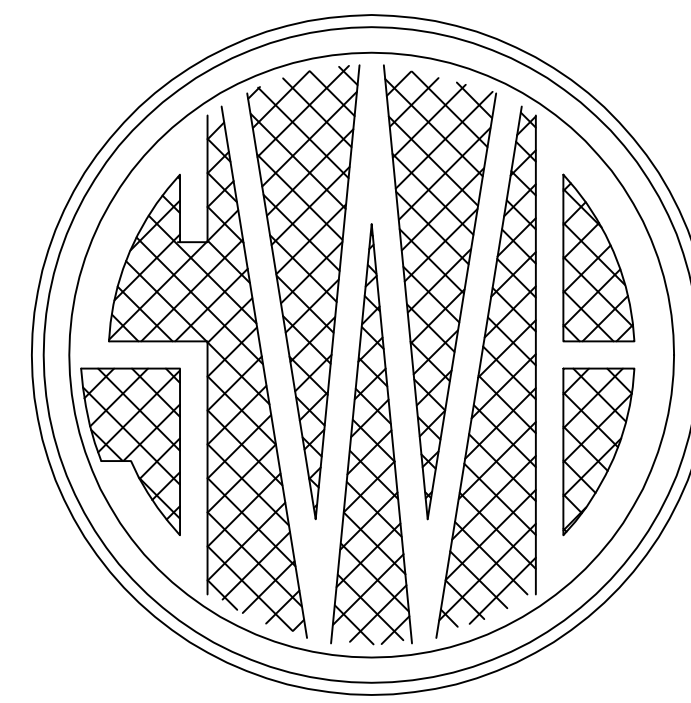
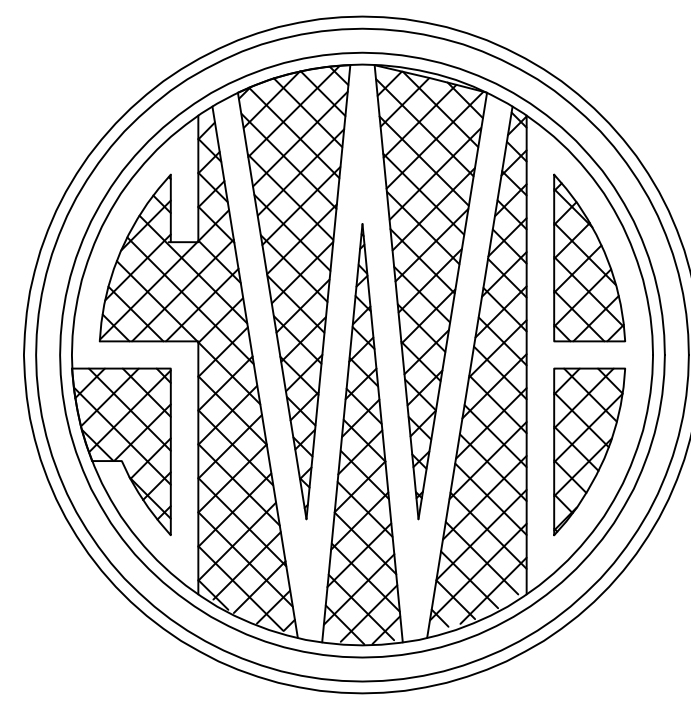
REMONT ENGINEERING & DESIGN GROUP, LLC
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 2

CONSOLE 08 POWER DISTRIBUTION

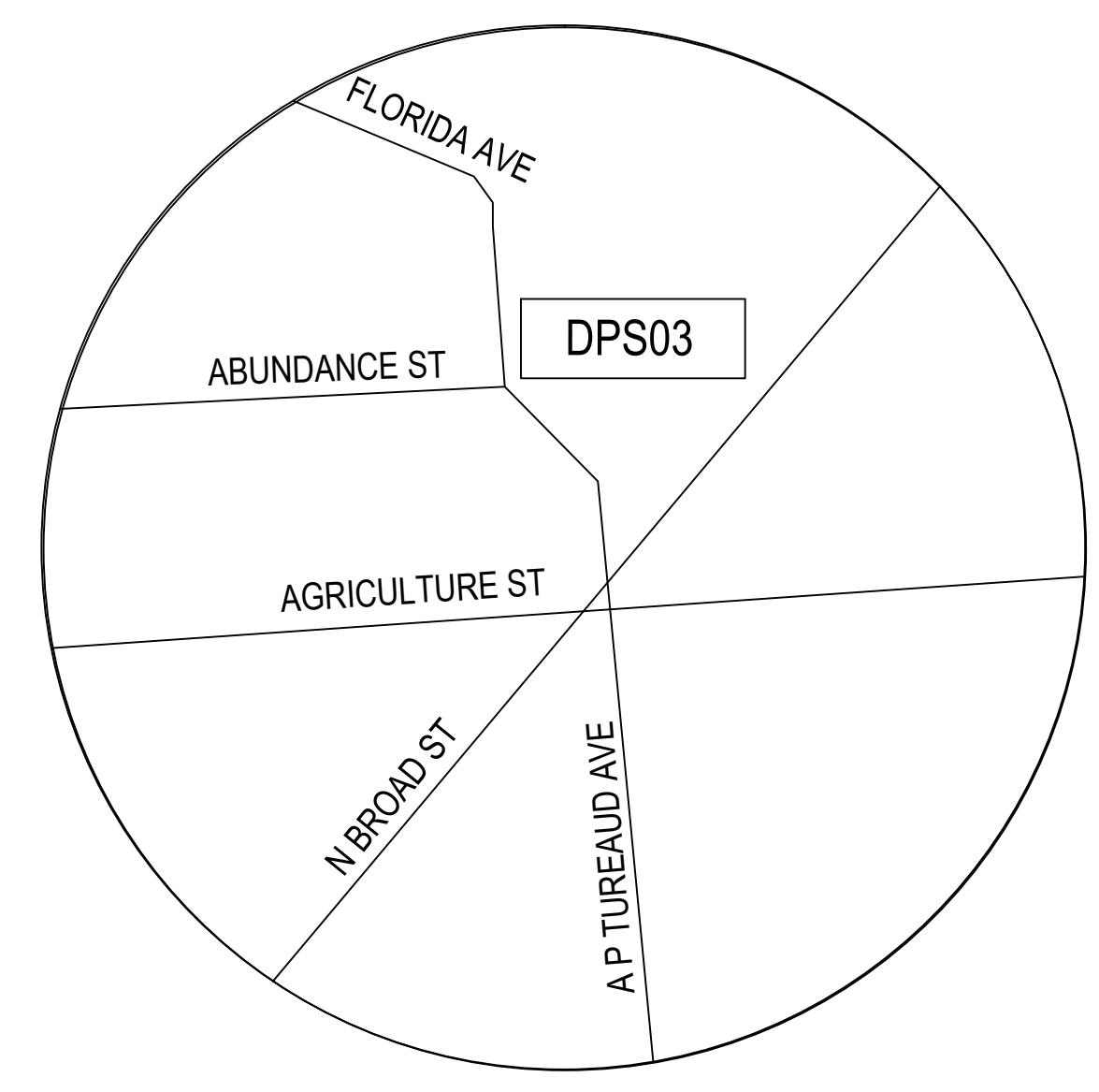
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AP: JMB	
SCALE: NONE	DWG. No. 5108-P12
DATE: 08/22/2018	SET NO. SHEET NO. 12 OF 12

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 3



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 05 LAYOUT		
10	CONSOLE 05 POWER DISTRIBUTION		
11	CONSOLE 09 LAYOUT		
12	CONSOLE 09 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

RED GROUP

REMONT ENGINEERING & DESIGN GROUP, LLC

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Elmwood, LA 70123 Fax: 504.617.6704

www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 3

INDEX OF SHEETS

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5109-P1
DATE: 03/23/2018	SET NO. SHEET NO. 1 OF 12

A B C D E F G H J K L M

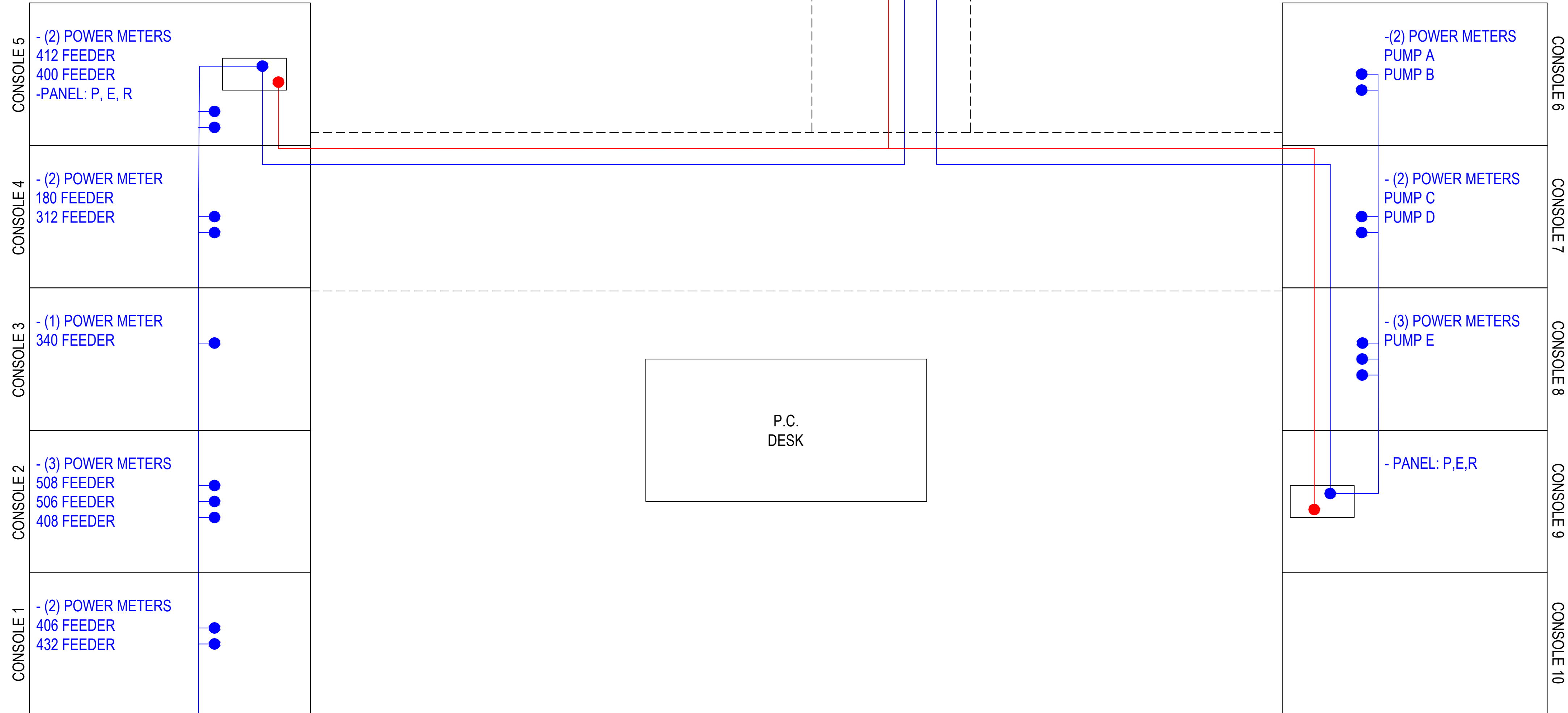
LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU

CABINET 1

CABINET 2



- CONSOLE 5: - (2) POWER METERS
412 FEEDER
400 FEEDER
-PANEL: P, E, R
- CONSOLE 4: - (2) POWER METER
180 FEEDER
312 FEEDER
- CONSOLE 3: - (1) POWER METER
340 FEEDER
- CONSOLE 2: - (3) POWER METERS
508 FEEDER
506 FEEDER
408 FEEDER
- CONSOLE 1: - (2) POWER METERS
406 FEEDER
432 FEEDER

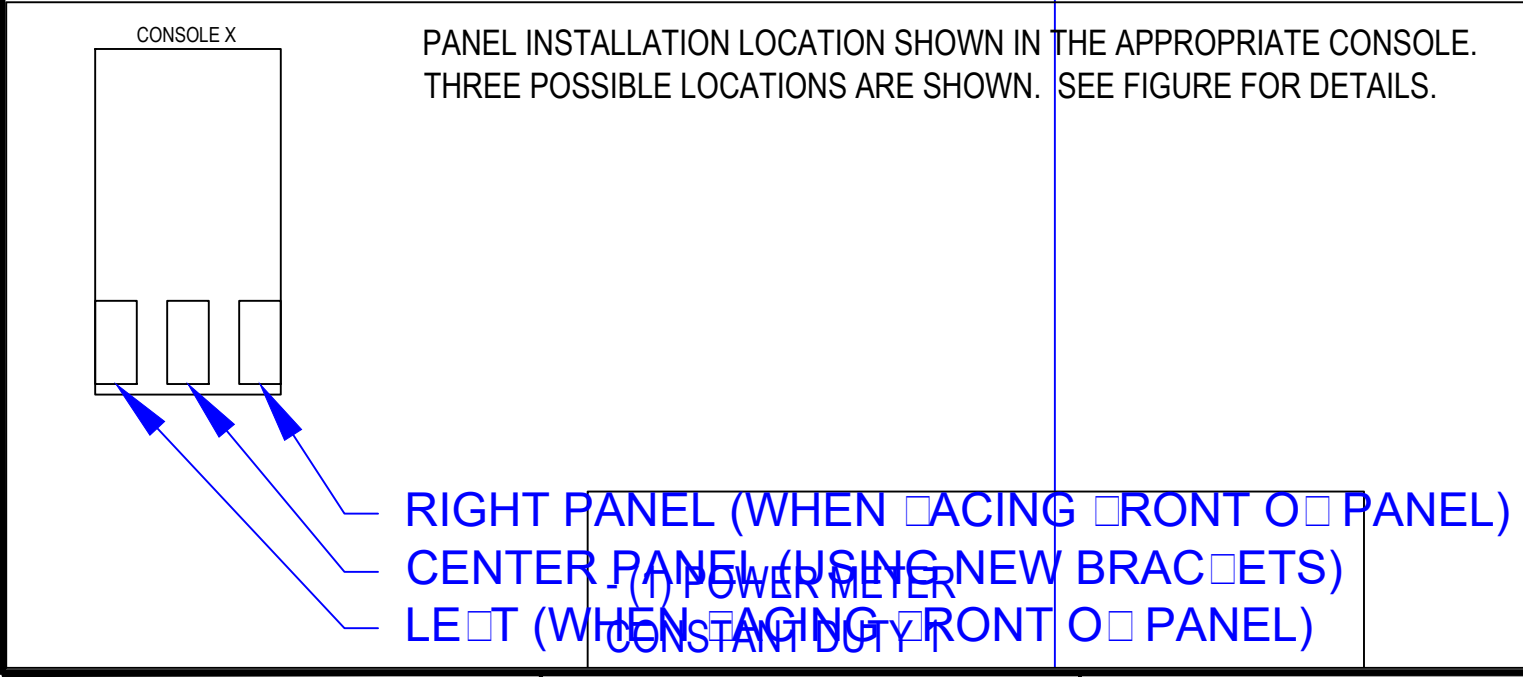
- CONSOLE 6: - (2) POWER METERS
PUMP A
PUMP B
- CONSOLE 7: - (2) POWER METERS
PUMP C
PUMP D
- CONSOLE 8: - (3) POWER METERS
PUMP E
- CONSOLE 9: - PANEL: P, E, R
- CONSOLE 10: (Empty)

P.C. DESK

TV

- (1) POWER METER
CONSTANT DUTY 2

PANEL LOCATION



RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

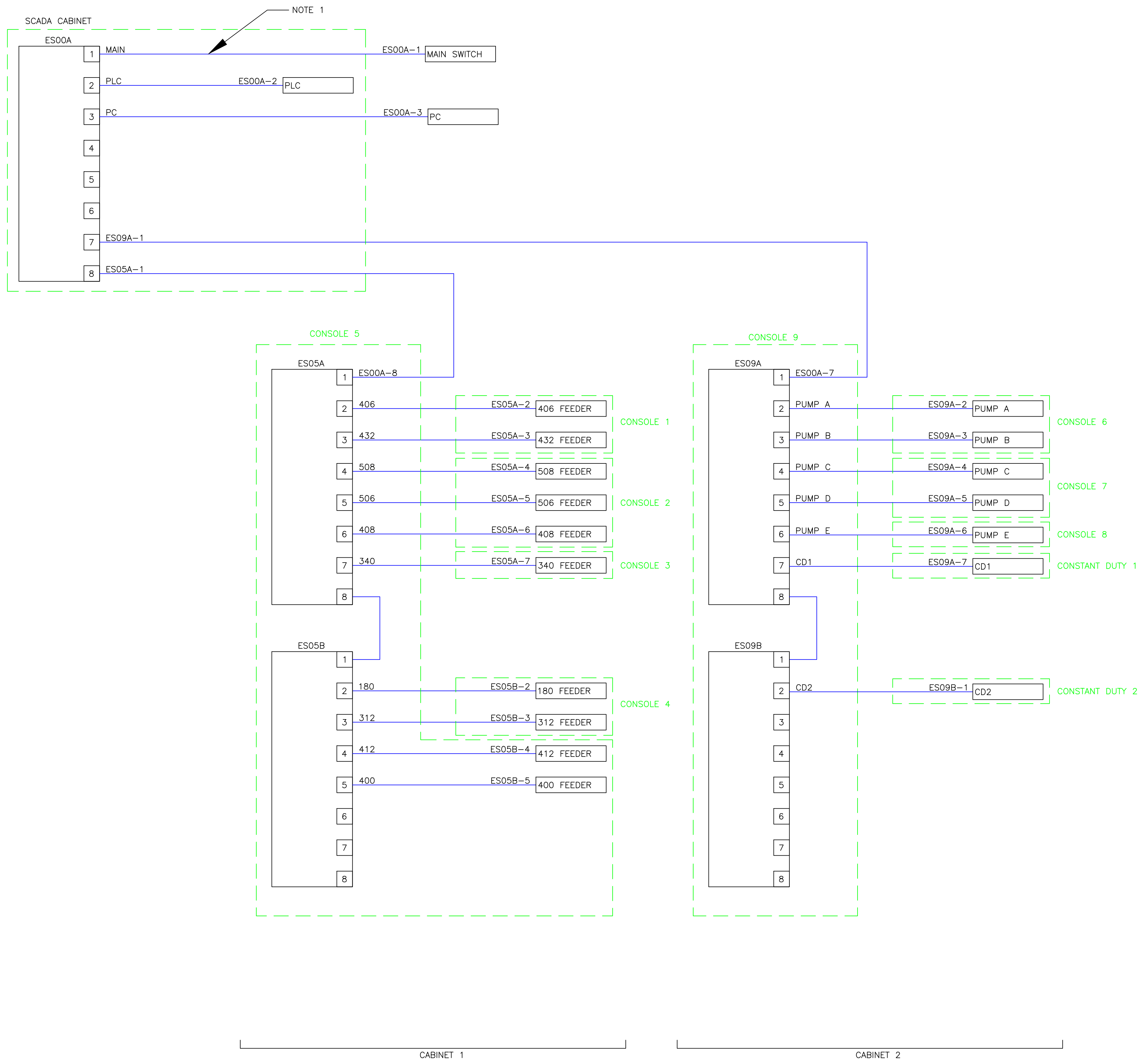
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 3

PLAN VIEW

DR: BMP	DWG. No. 5109-P2
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08/24/2018	SET NO. SHEET NO. 2 OF 12

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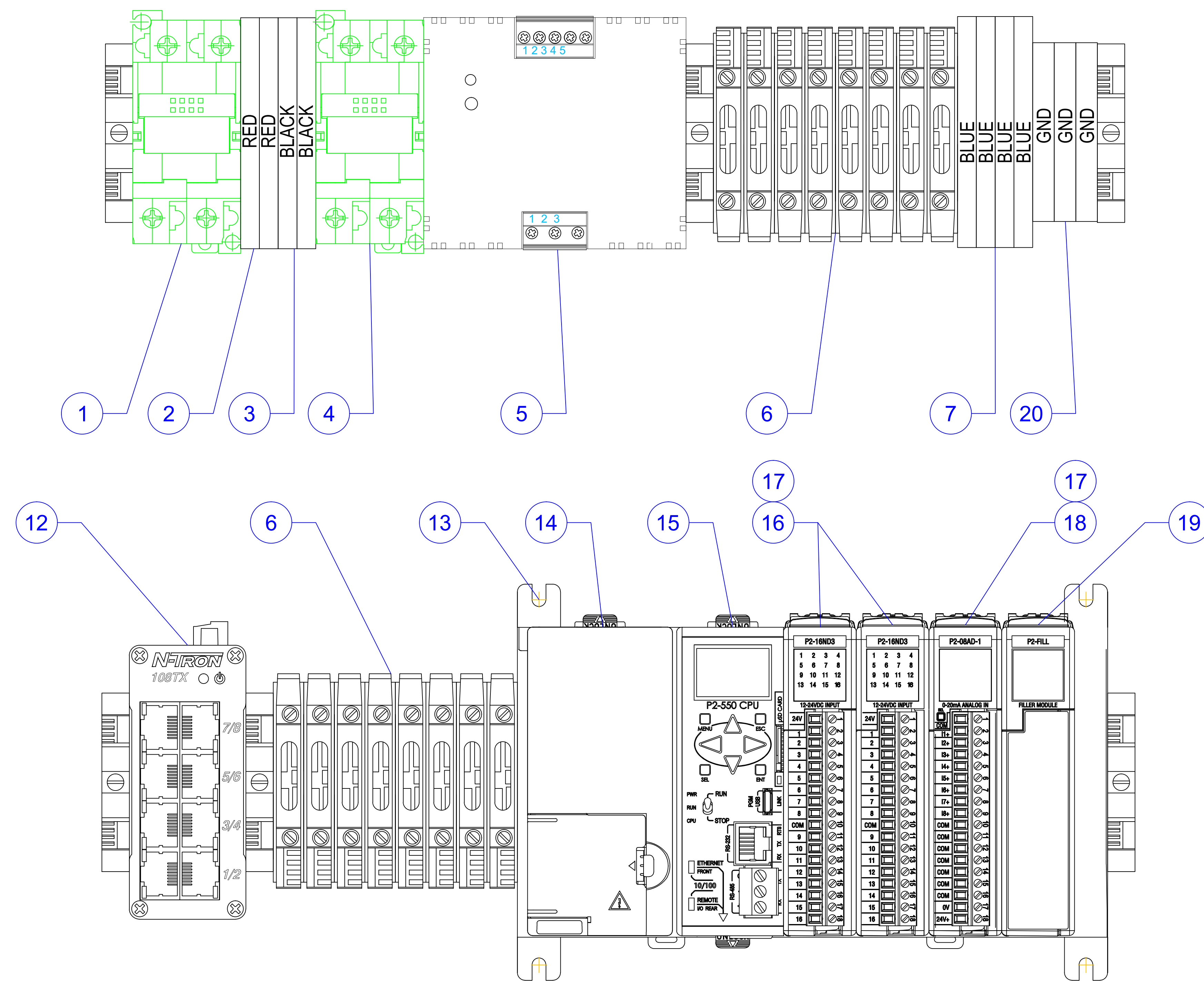


NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 3
NETWORK DIAGRAM

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5109-P3
DATE: 08/24/2018	SET NO. SHEET NO. 3 OF 12



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	1	Productivity2000 discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 1 isolated	7800451	Automation Direct	P2-16ND3
17	2	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	2	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY
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SEWERAGE AND WATER BOARD OF NEW ORLEANS

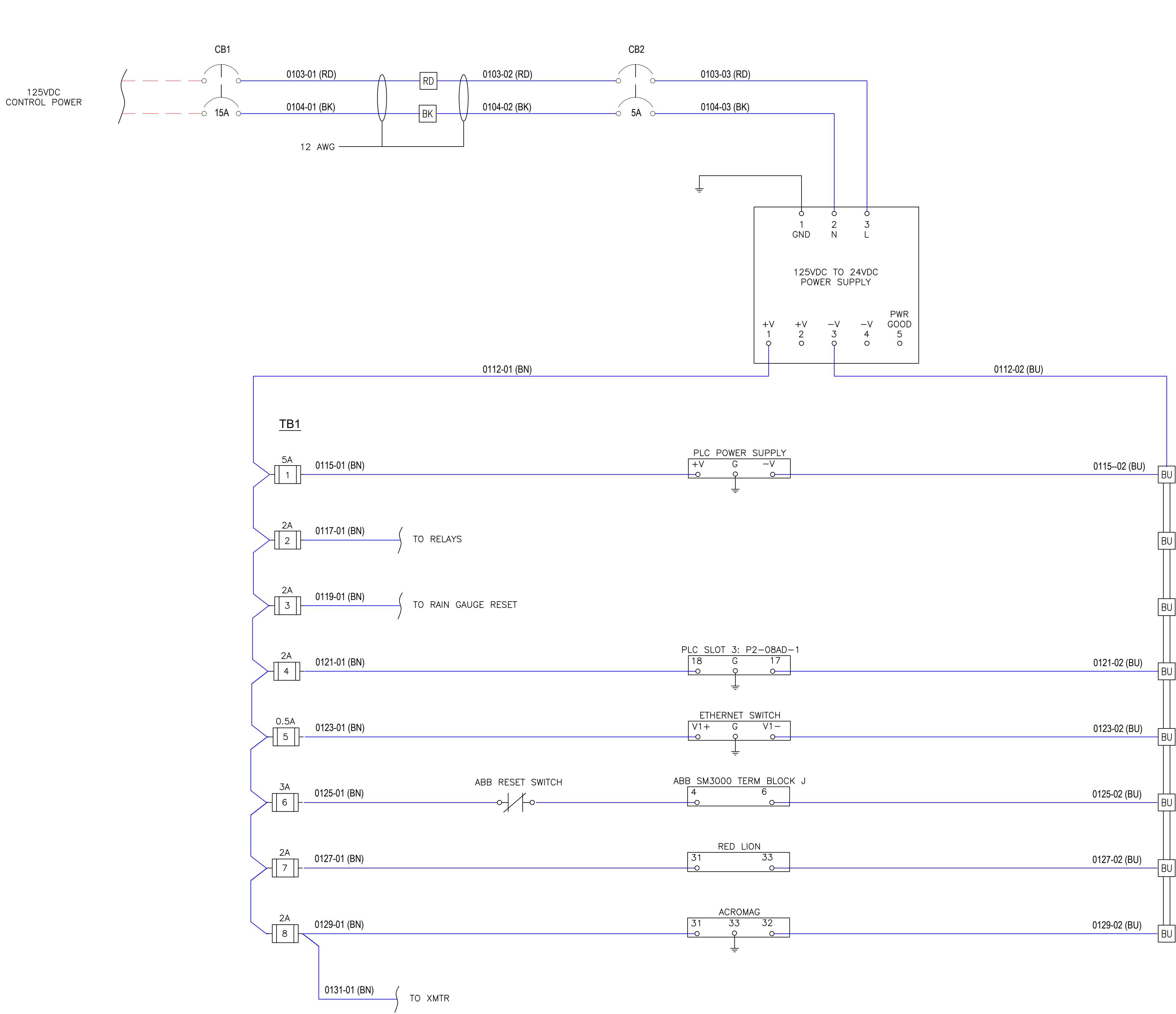
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 3

PLC LAYOUT

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5109-P4
DATE: 08/24/2018	SET NO. SHEET NO. 4 OF 12

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LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 3
PLC POWER DISTRIBUTION

DR: BMP	DWG. No. 5109-P5
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08/24/2018	SET NO. SHEET NO. 5 OF 12

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A B C D E F G H J K L M

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LEGEND

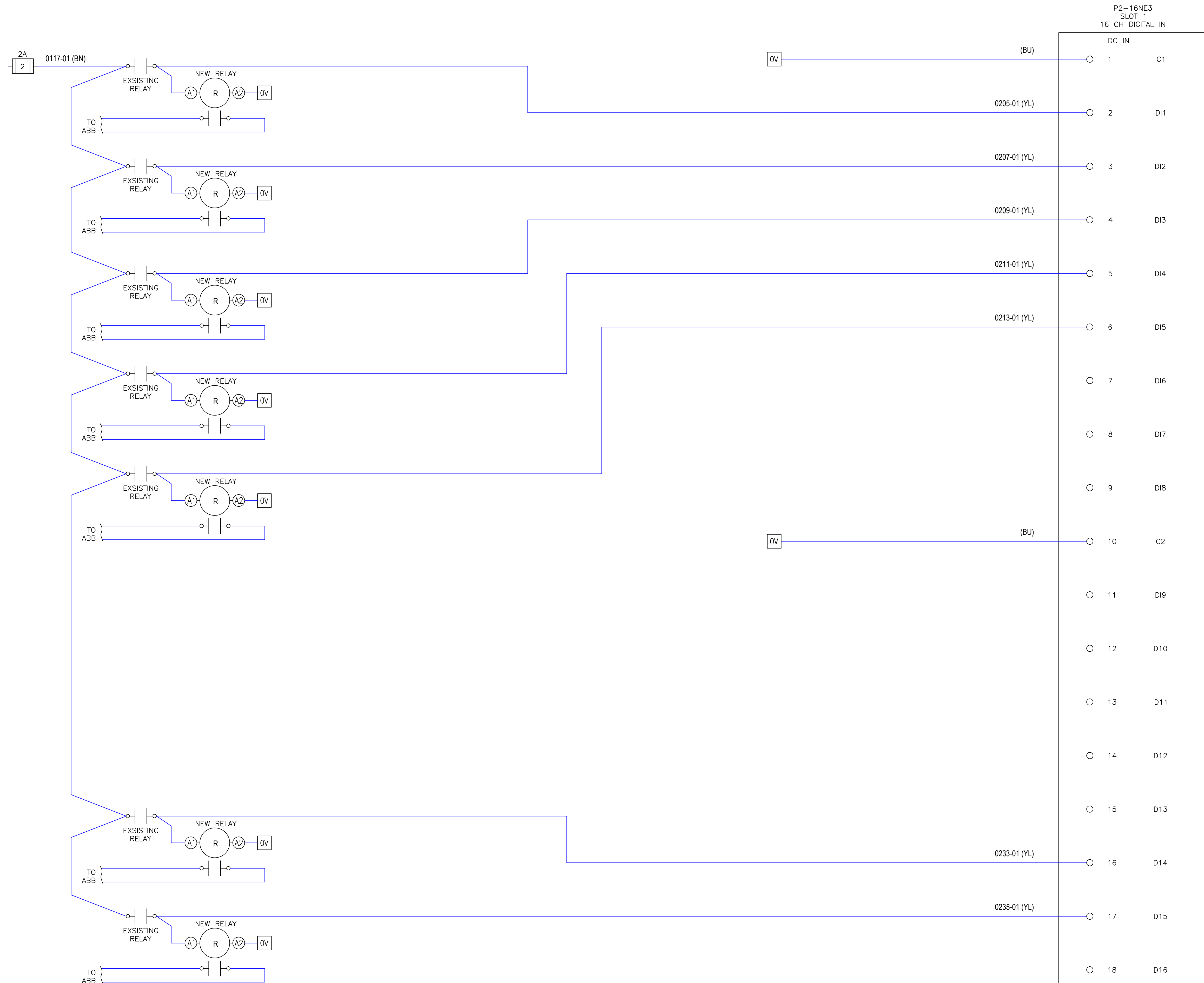
- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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RED GROUP PROJECT ID: VEO1705			
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 3

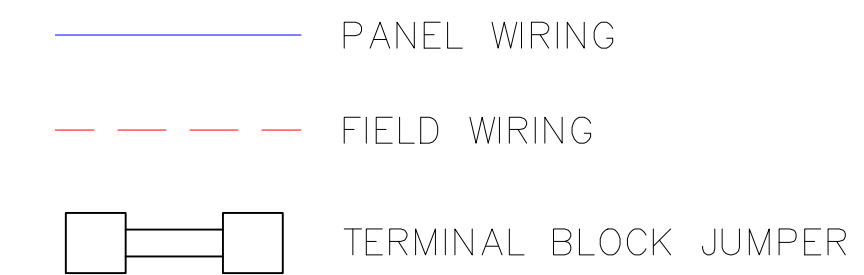
PLC DIGITAL INPUT 1

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5109-P6
DATE: 08/24/2018	SET NO. SHEET NO. 6 OF 12

A B C D E F F G H J K L M

A B C D E F G H J K L M

LEGEND

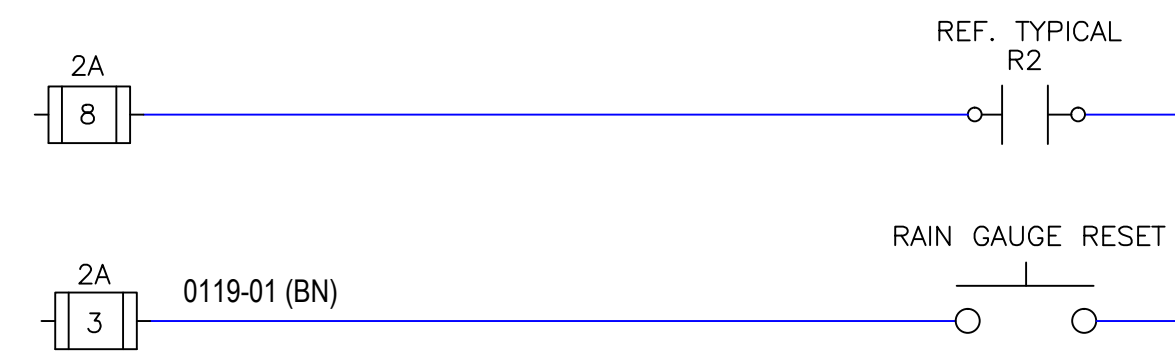
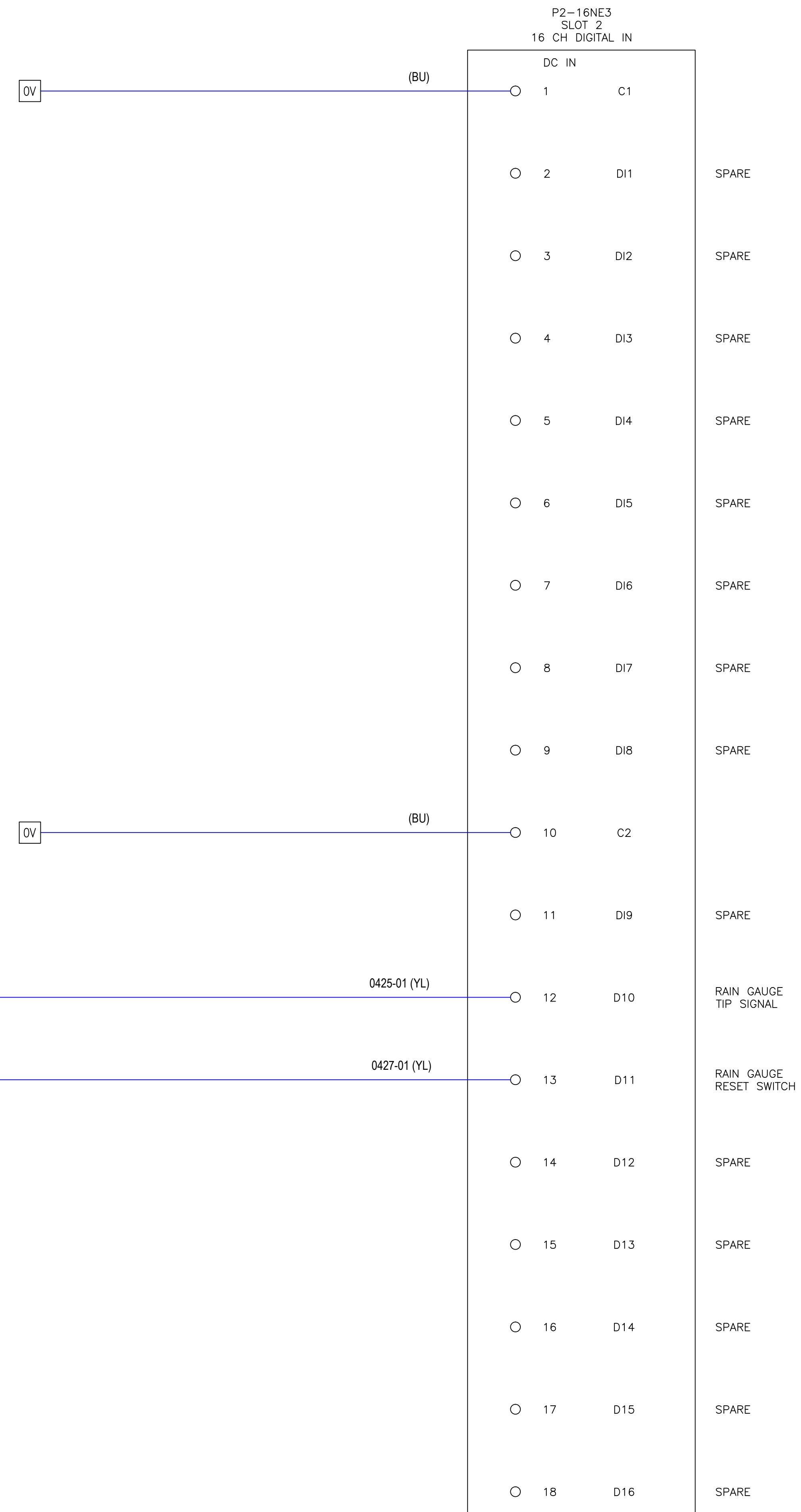
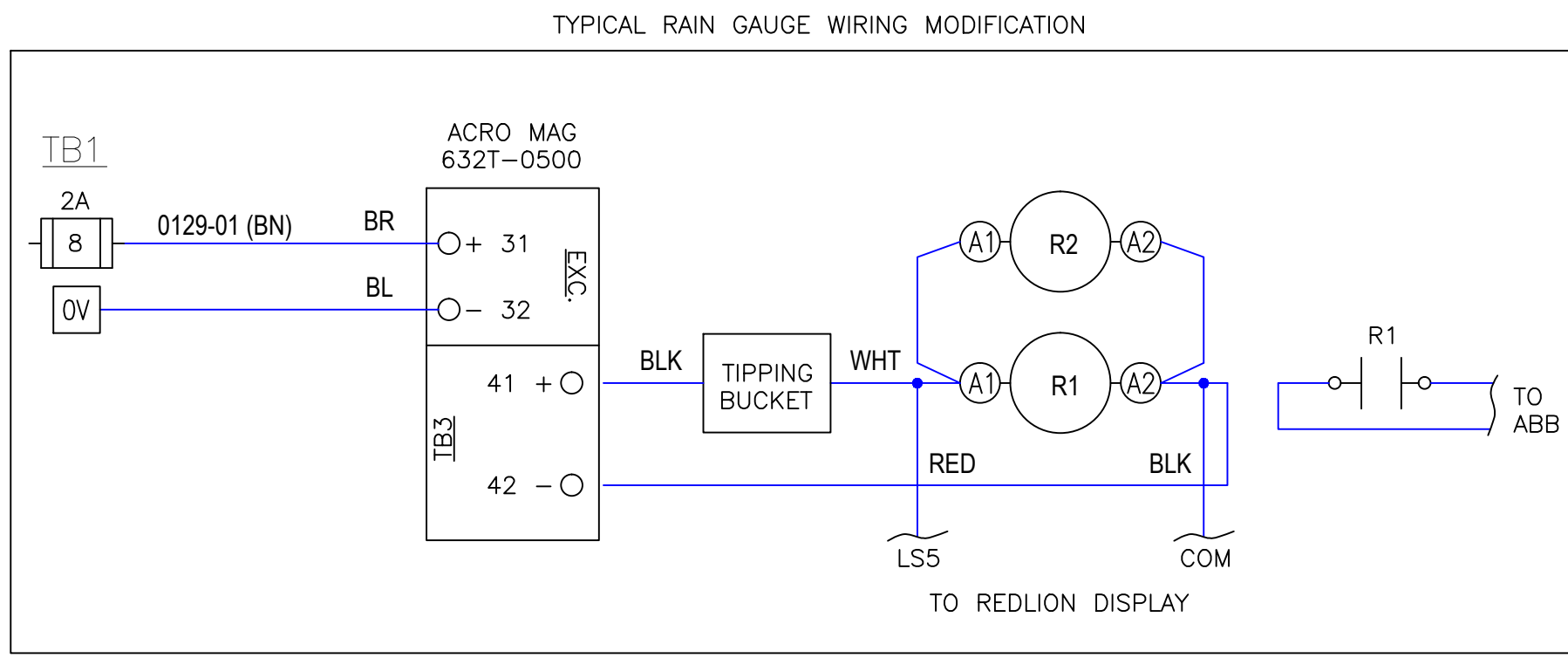


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 3

PLC DIGITAL INPUT 2

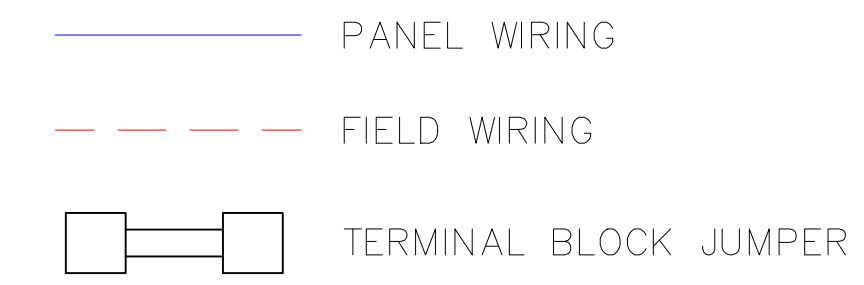
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TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5109-P7
DATE: 08/24/2018	SET NO. SHEET NO. 7 OF 12

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LEGEND

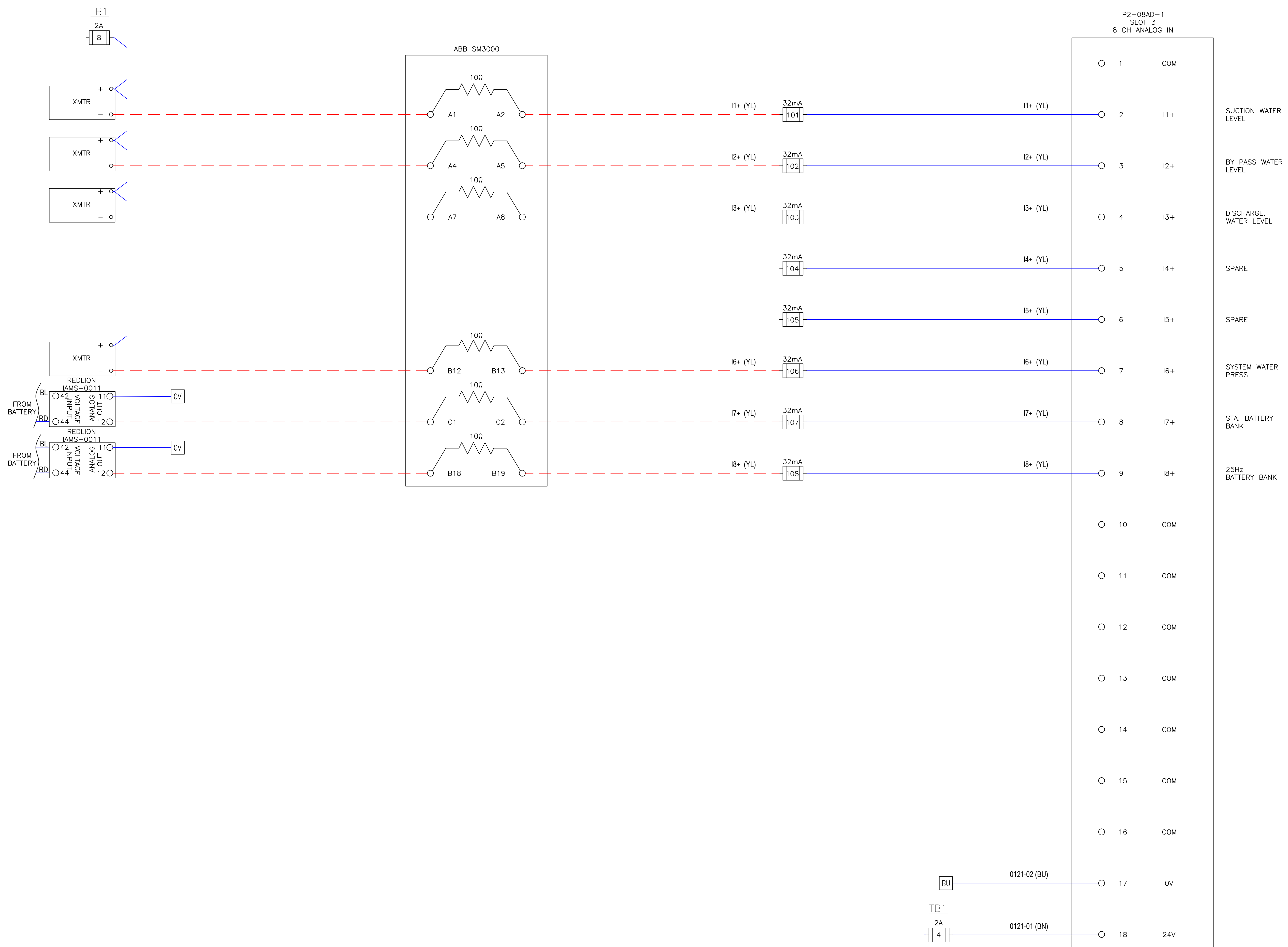


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



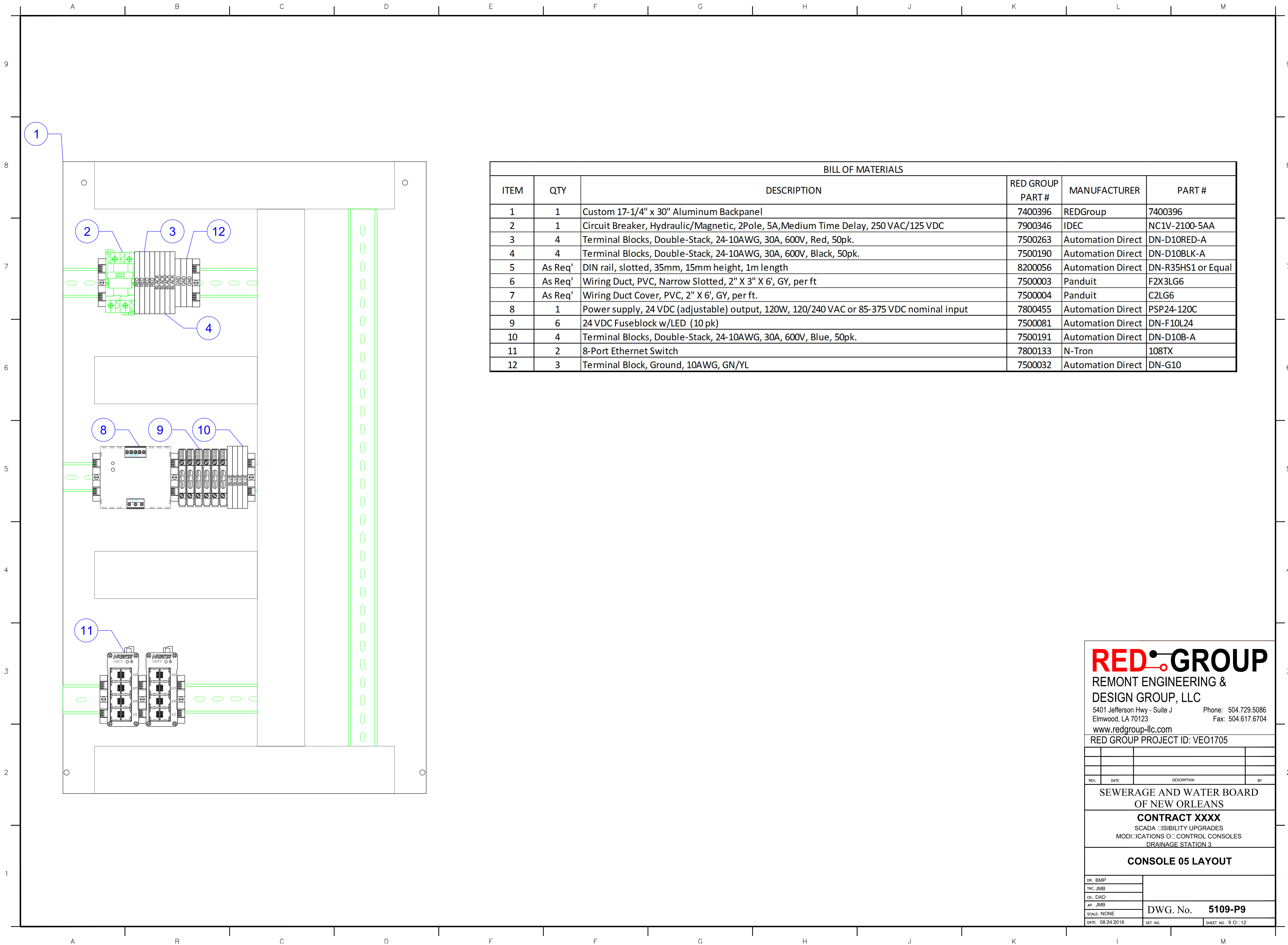
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SUCTION WATER LEVEL
BY PASS WATER LEVEL
DISCHARGE WATER LEVEL
SPARE
SPARE
SYSTEM WATER PRESS
STA. BATTERY BANK
25Hz BATTERY BANK

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SEWERAGE AND WATER BOARD
OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 3
PLC ANALOG INPUT 1

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5109-P8
DATE: 08/24/2018	SET NO. SHEET NO. 8 OF 12



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

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RED GROUP PROJECT ID: VEO1705

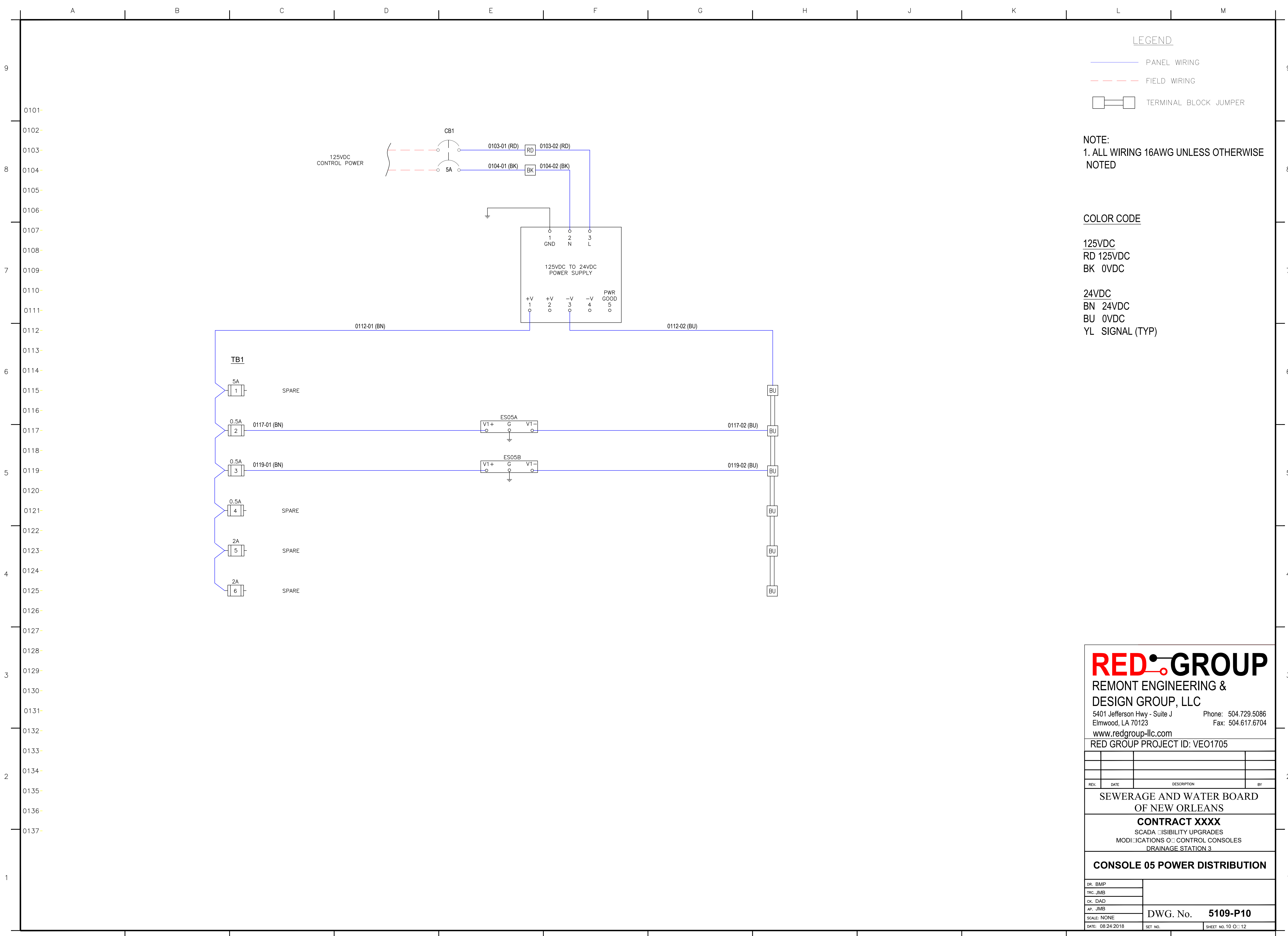
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 3

CONSOLE 05 LAYOUT

DR: BMP	DWG. No. 5109-P9
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08/24/2018	SET NO. SHEET NO. 9 OF 12



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC**
RD 125VDC
BK 0VDC
- 24VDC**
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



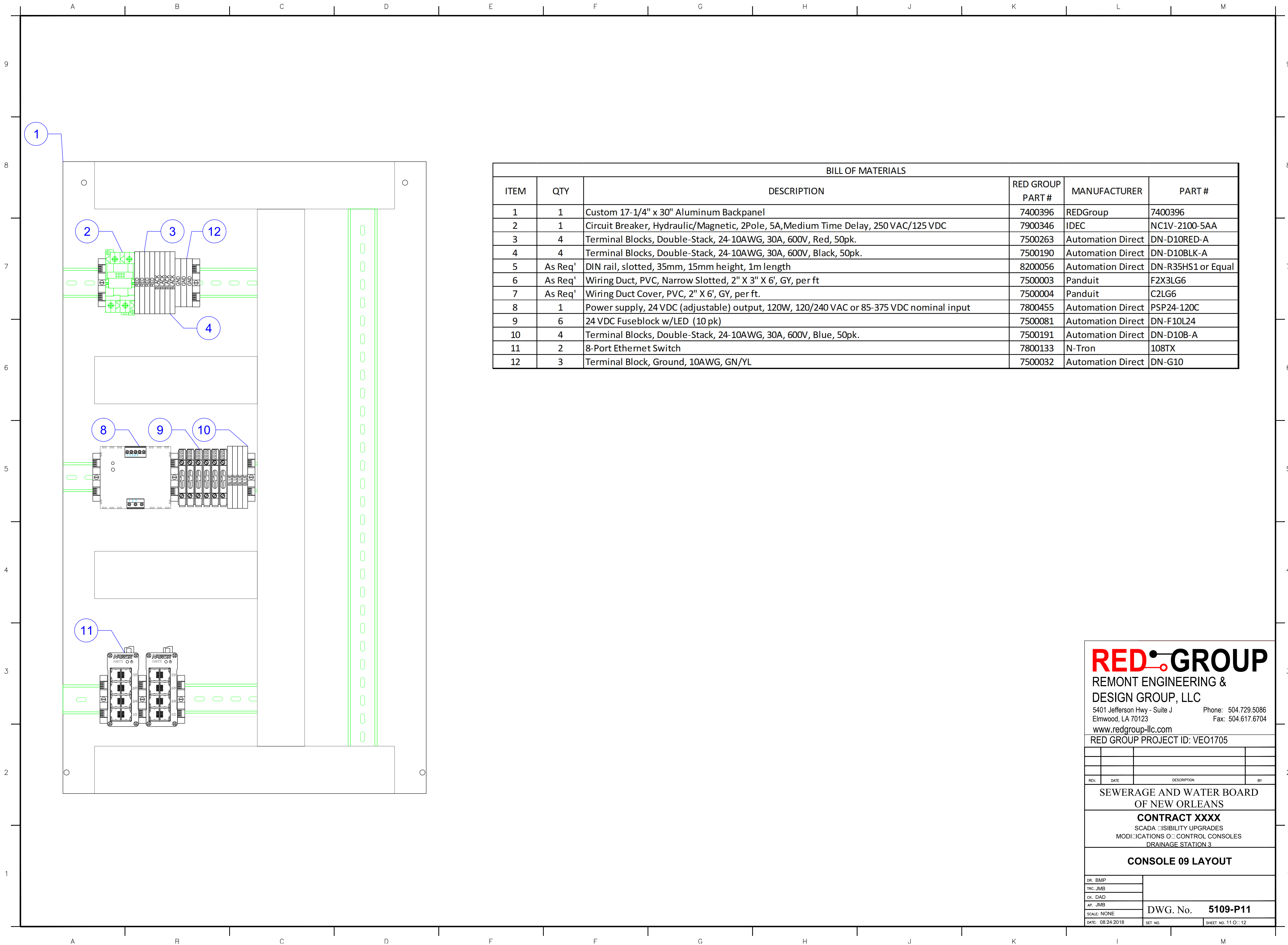
REMONT ENGINEERING & DESIGN GROUP, LLC
5401 Jefferson Hwy - Suite J Phone: 504.729.5086
Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 3

CONSOLE 05 POWER DISTRIBUTION

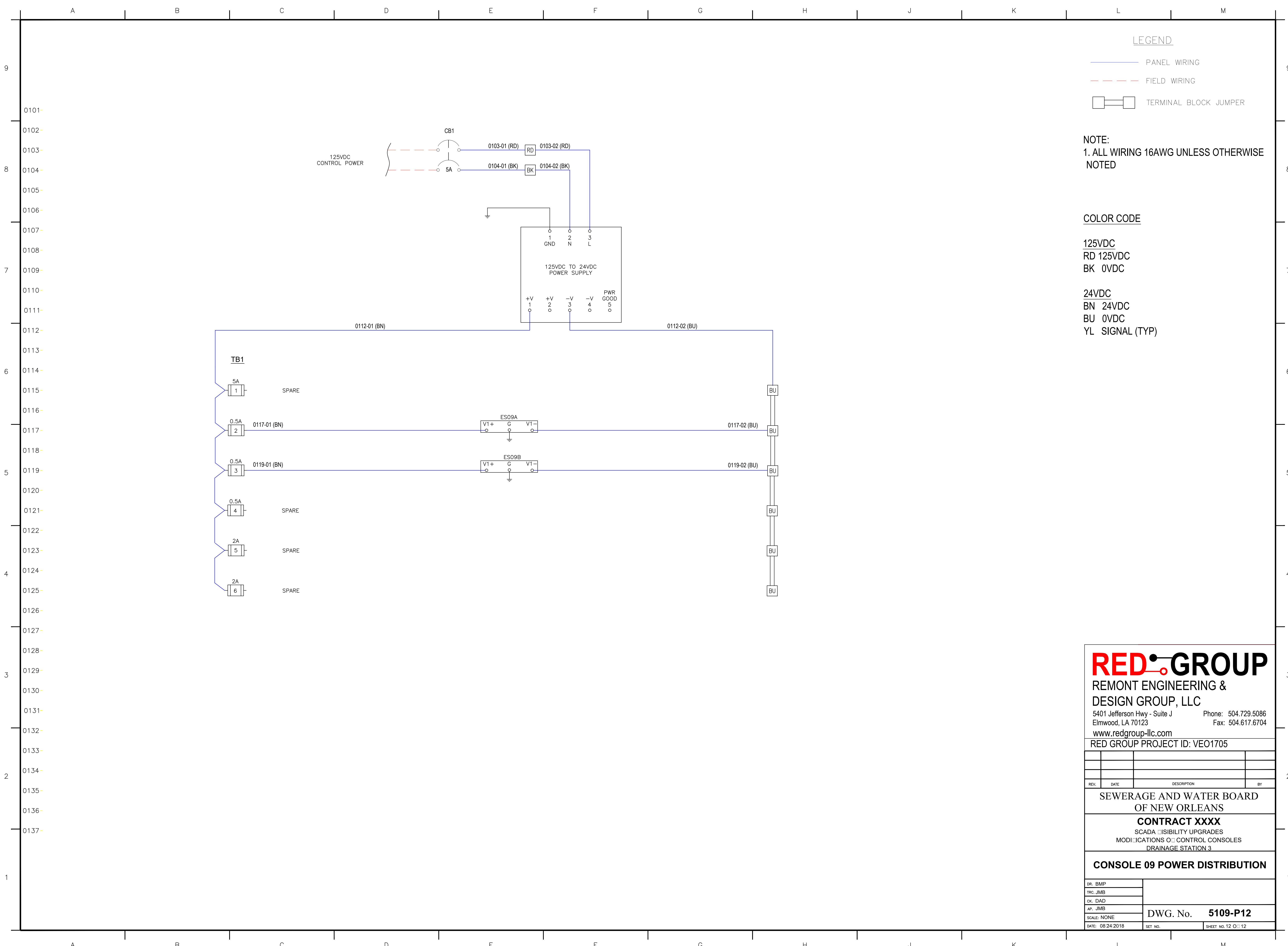
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TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08/24/2018	SET NO. SHEET NO. 10 OF 12



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A,Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

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REV.	DATE	DESCRIPTION	BY
SEWERAGE AND WATER BOARD OF NEW ORLEANS			
CONTRACT XXXX			
SCADA VISIBILITY UPGRADES MODIFICATIONS CONTROL CONSOLES DRAINAGE STATION 3			
CONSOLE 09 LAYOUT			
DR. BMP			
TRC. JMB			
CK. DAD			
AP. JMB			
SCALE: NONE	DWG. No. 5109-P11		
DATE: 08/24/2018	SET NO.	SHEET NO. 11 OF 12	



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC**
RD 125VDC
BK 0VDC
- 24VDC**
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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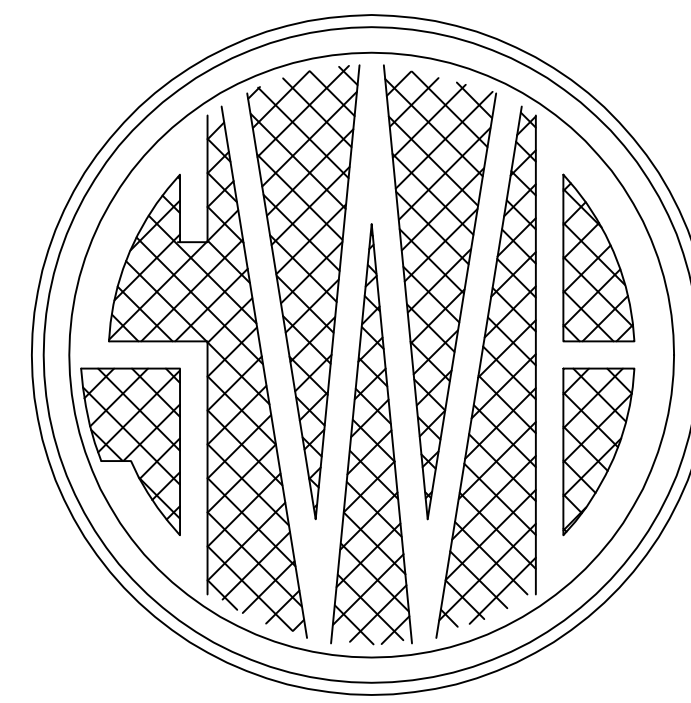
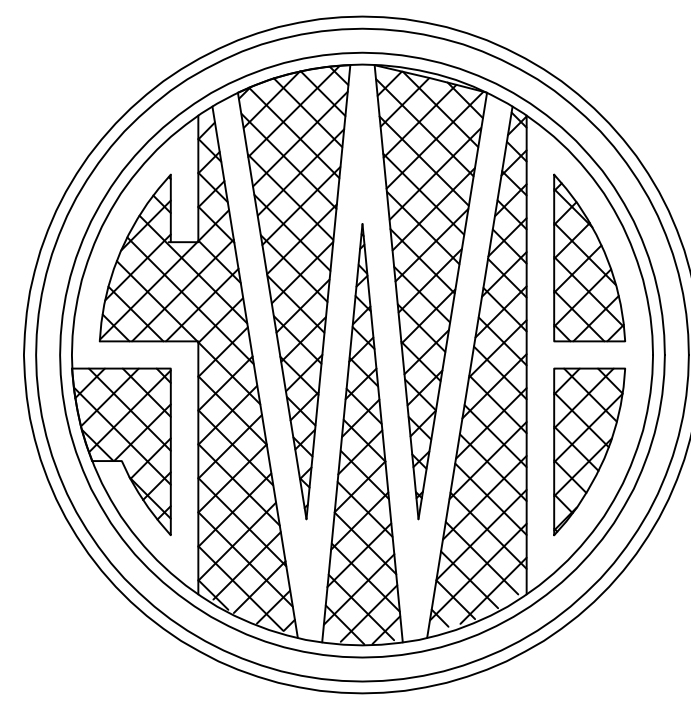
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 3

CONSOLE 09 POWER DISTRIBUTION

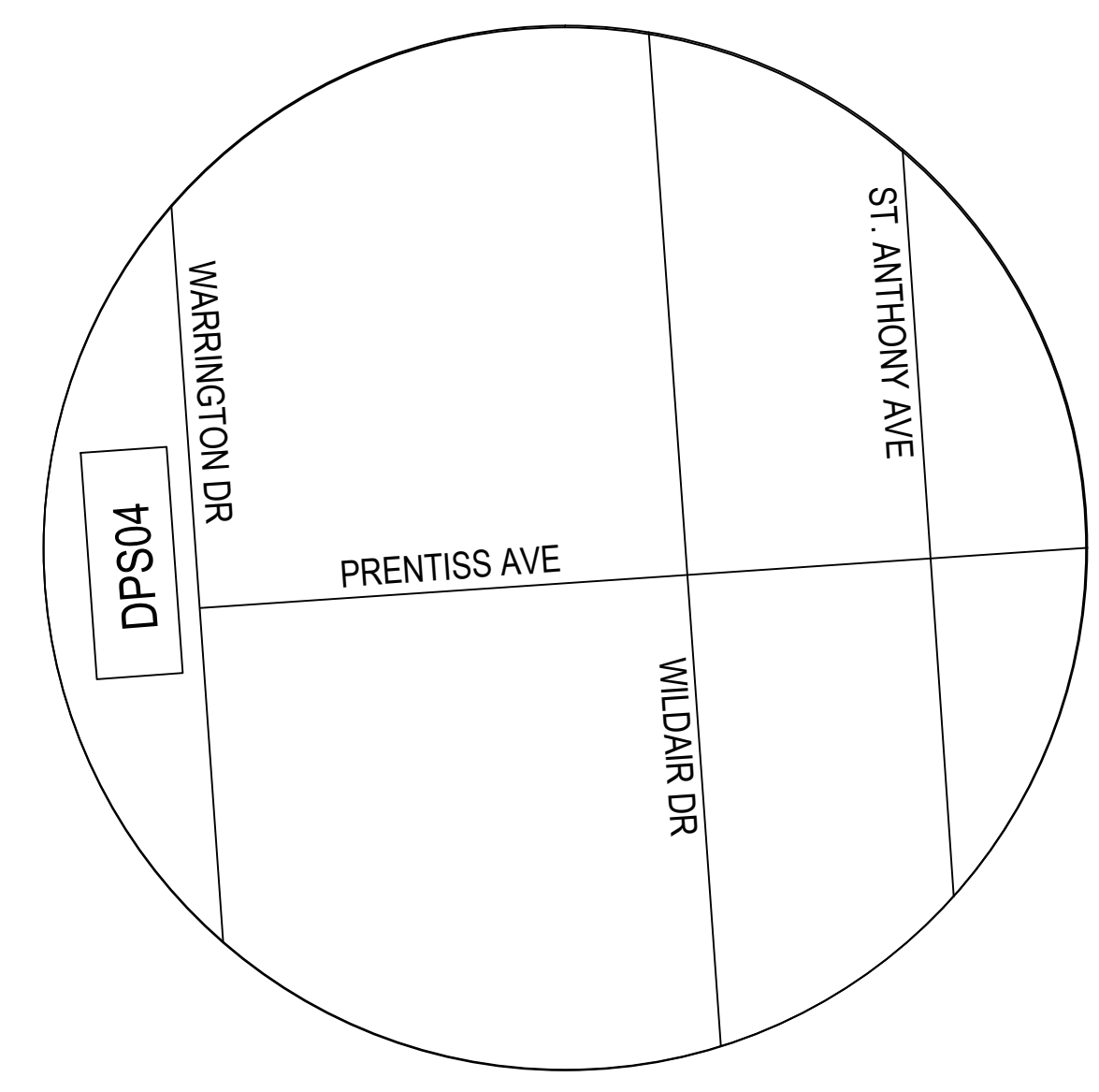
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CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 08/24/2018	SET NO. SHEET NO. 12 OF 12

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 4



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 01 LAYOUT		
10	CONSOLE 01 POWER DISTRIBUTION		
11	CONSOLE 05 LAYOUT		
12	CONSOLE 05 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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 RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 4
INDEX OF SHEETS

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5110-P1
DATE: 03/23/2018	SET NO. SHEET NO. 1 OF 12

A B C D E F G H J K L M

LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

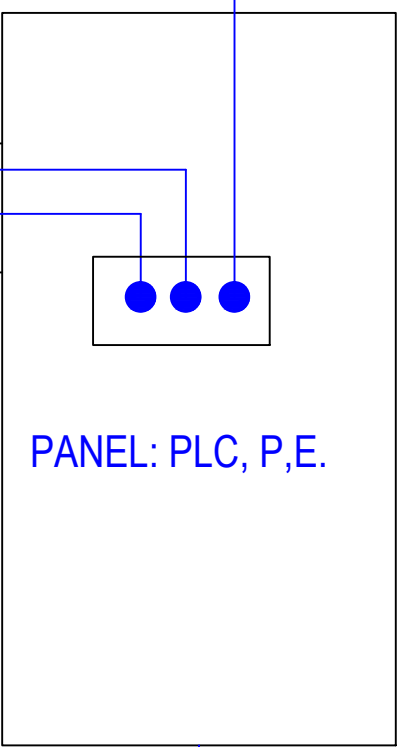
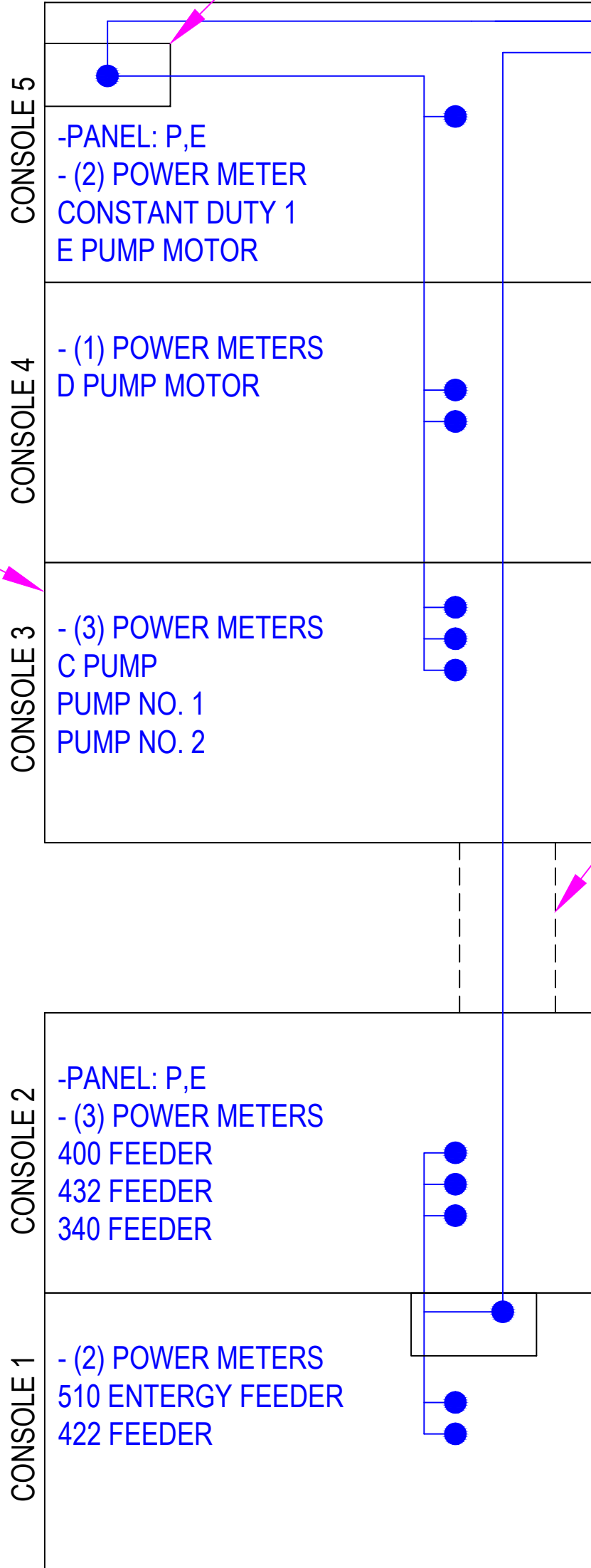
PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU

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IT
CABINET

MOUNT TO BACK OF CONSOLE

NEW 2" CONDUIT

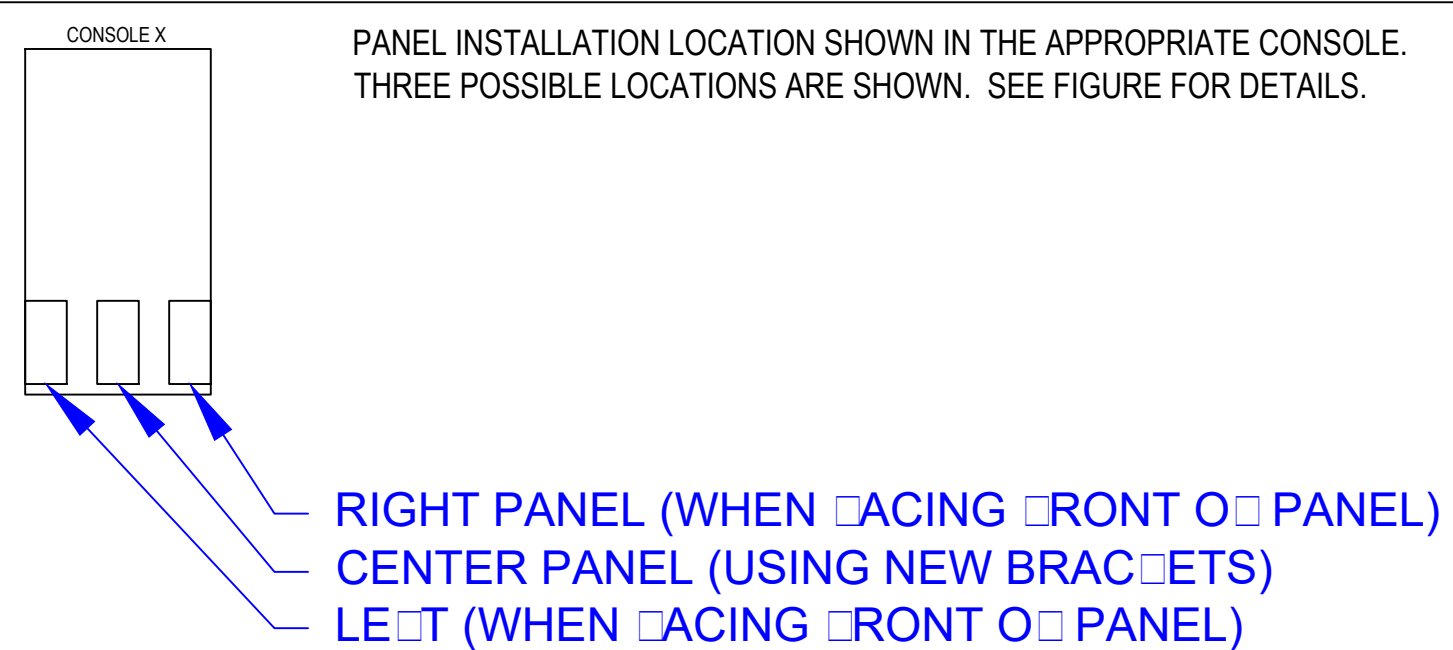


AGAINST WALL

NEW 2" CONDUIT

PANEL LOCATION

PANEL INSTALLATION LOCATION SHOWN IN THE APPROPRIATE CONSOLE. THREE POSSIBLE LOCATIONS ARE SHOWN. SEE FIGURE FOR DETAILS.



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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 4

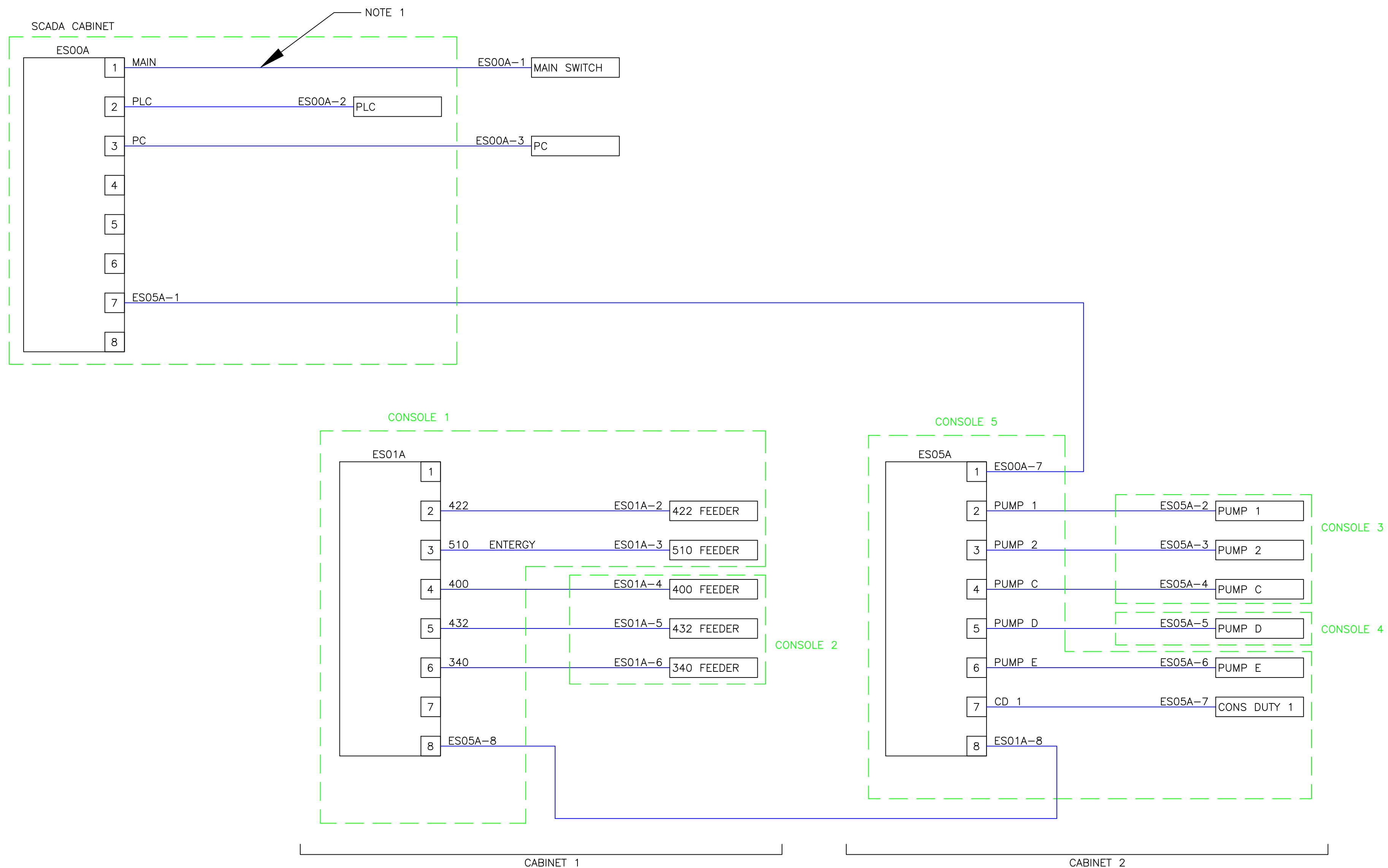
PLAN VIEW

DR: BMP	DWG. No. 5110-P2
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/23/2018	SET NO. SHEET NO. 2 OF 12

A B C D E F G H J K L M

A B C D E F G H J K L M

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NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

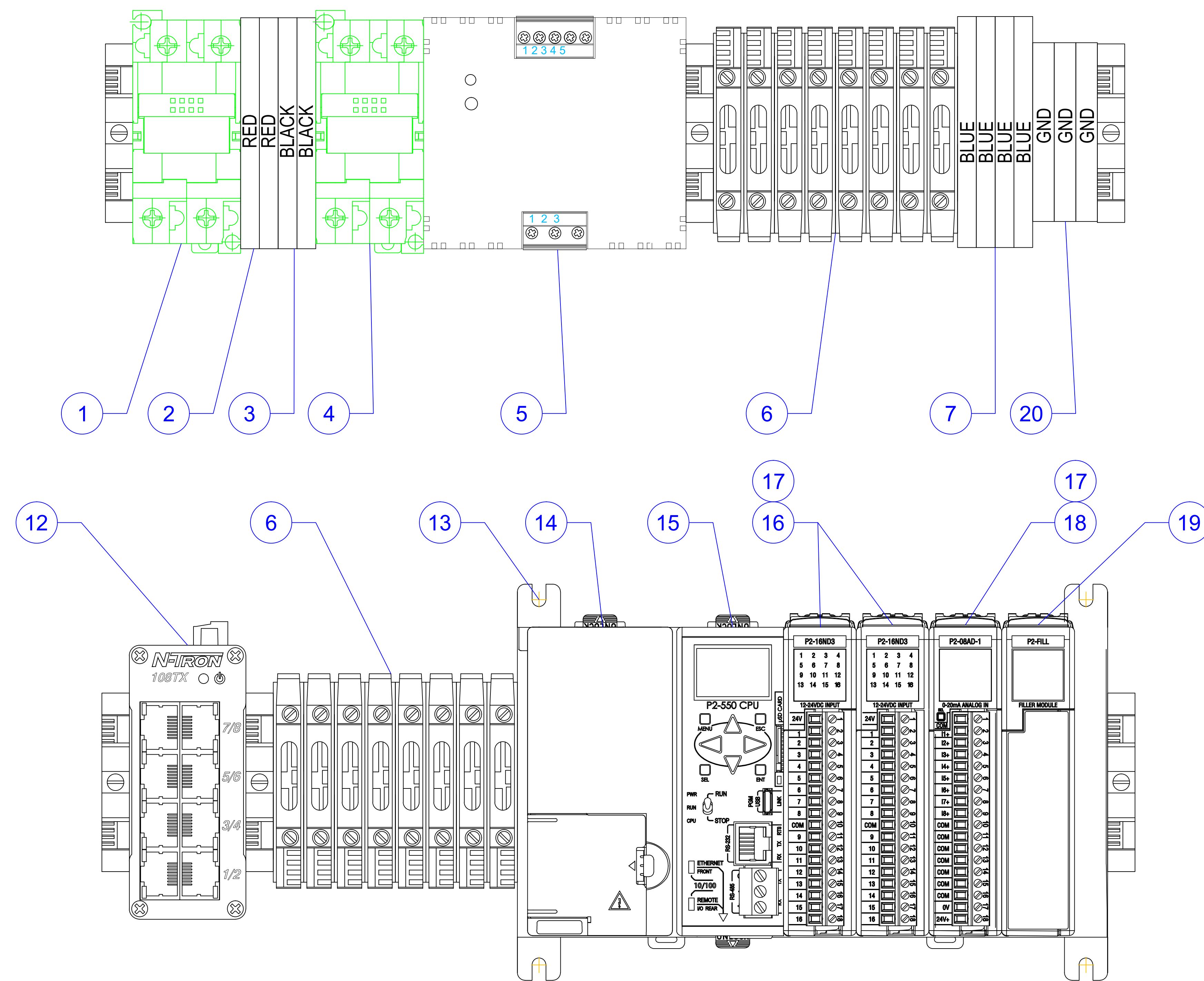
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 4

NETWORK DIAGRAM

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5110-P3
DATE: 03.23.2018	SET NO. SHEET NO. 3 OF 12

A B C D E F F G H J K L M



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	1	Productivity2000 discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 1 isolated	7800451	Automation Direct	P2-16ND3
17	2	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	2	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY
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SEWERAGE AND WATER BOARD OF NEW ORLEANS

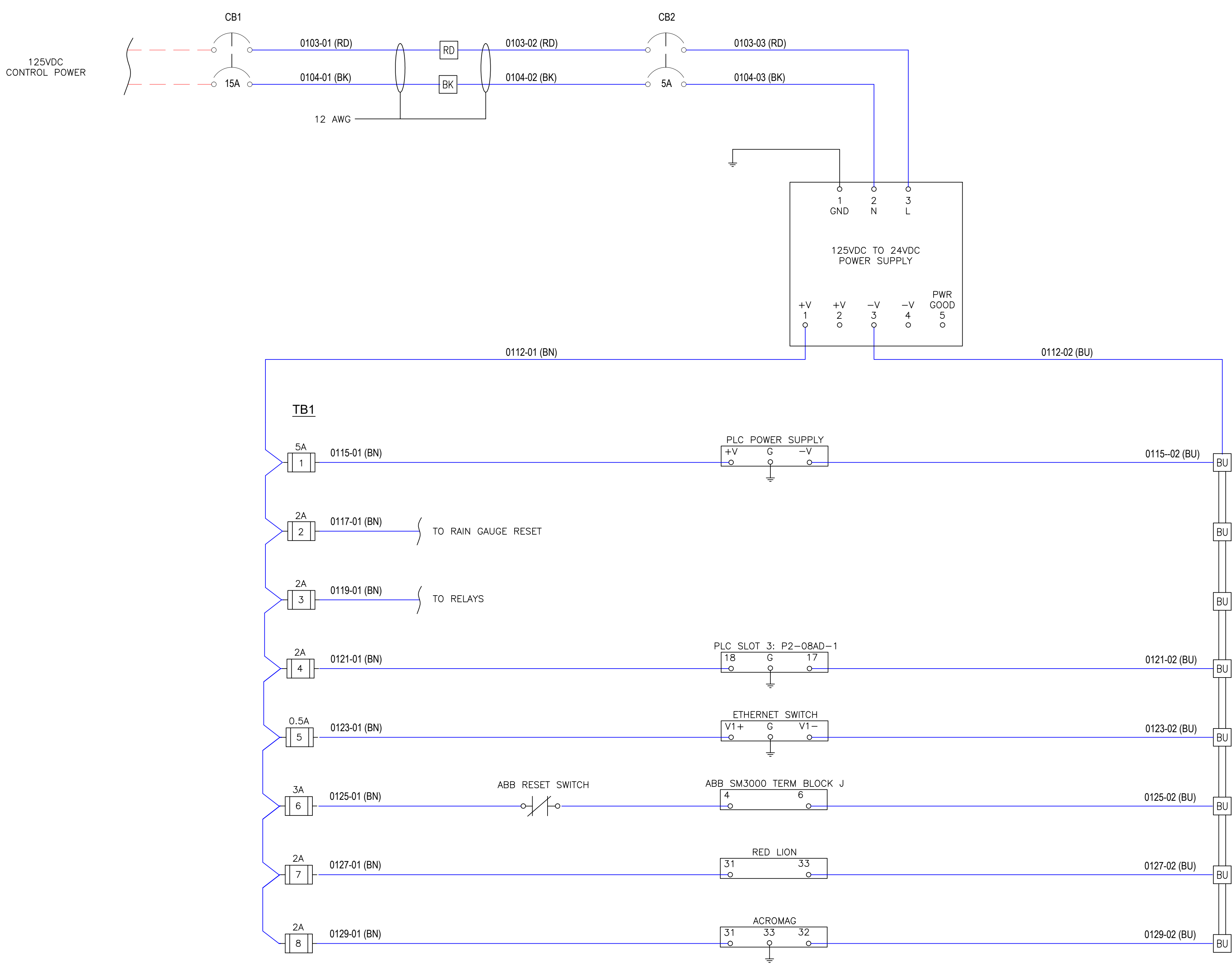
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 4

PLC LAYOUT

DR: BMP	DWG. No. 5110-P4
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DATE: 03.23.2018
SET NO.	SHEET NO. 4 OF 12

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0137-
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LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 4

PLC POWER DISTRIBUTION

DR: BMP	DWG. No. 5110-P5
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03.23.2018	SET NO. SHEET NO. 5 OF 12

A B C D E F G H J K L M

A B C D E F G H J K L M

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LEGEND

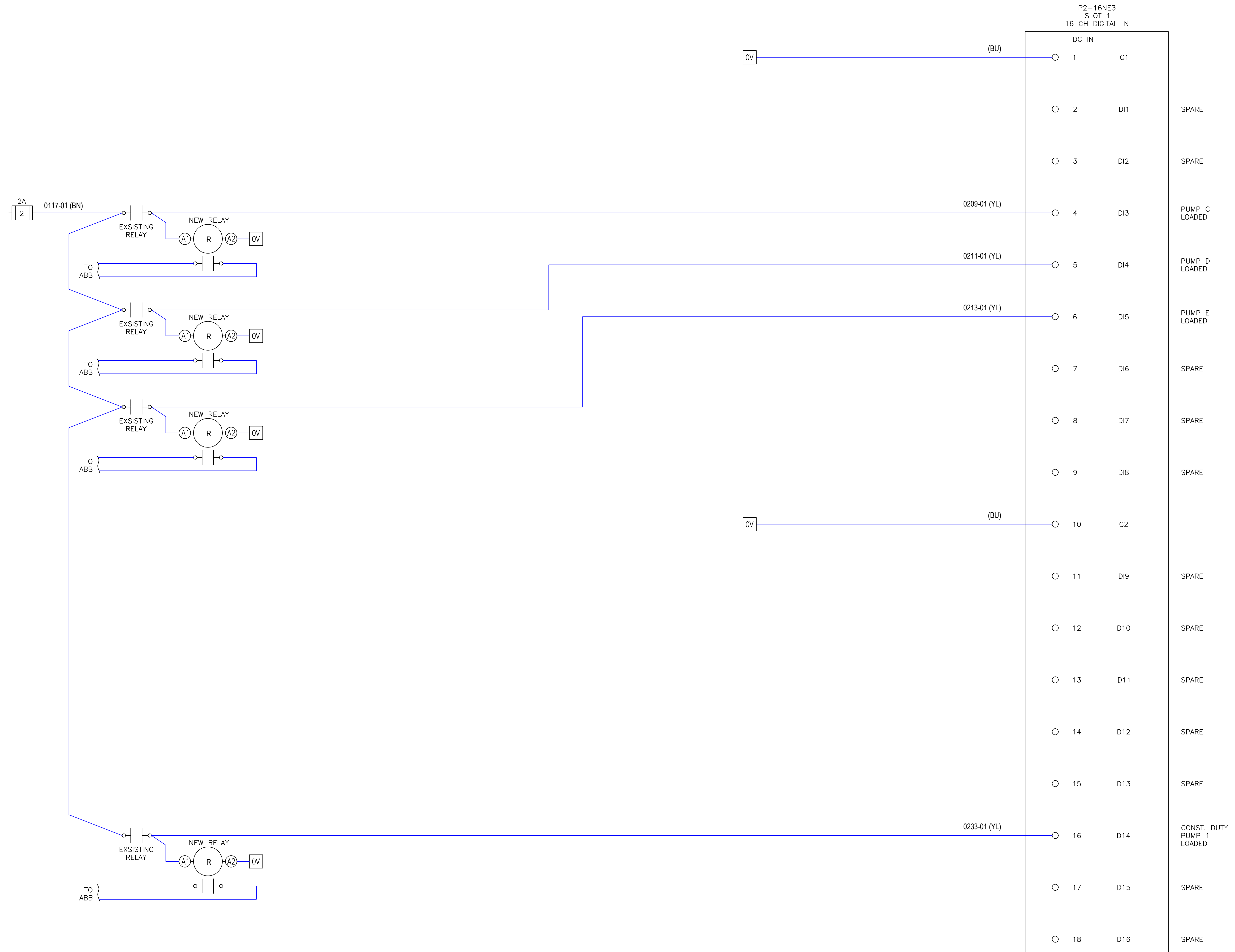
- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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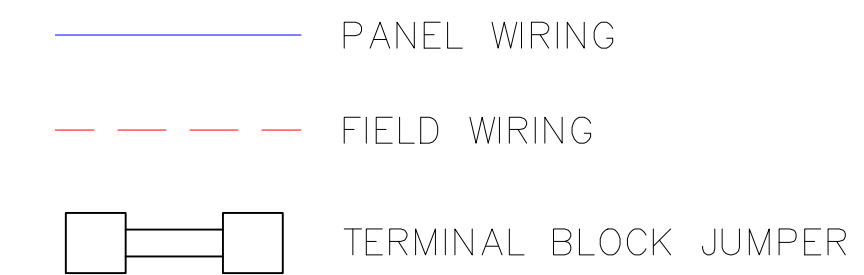
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 4
PLC DIGITAL INPUT 1

DR: BMP	DWG. No. 5110-P6
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/23/2018	SET NO. SHEET NO. 6 OF 12

A B C D E F F G H J K L M

LEGEND

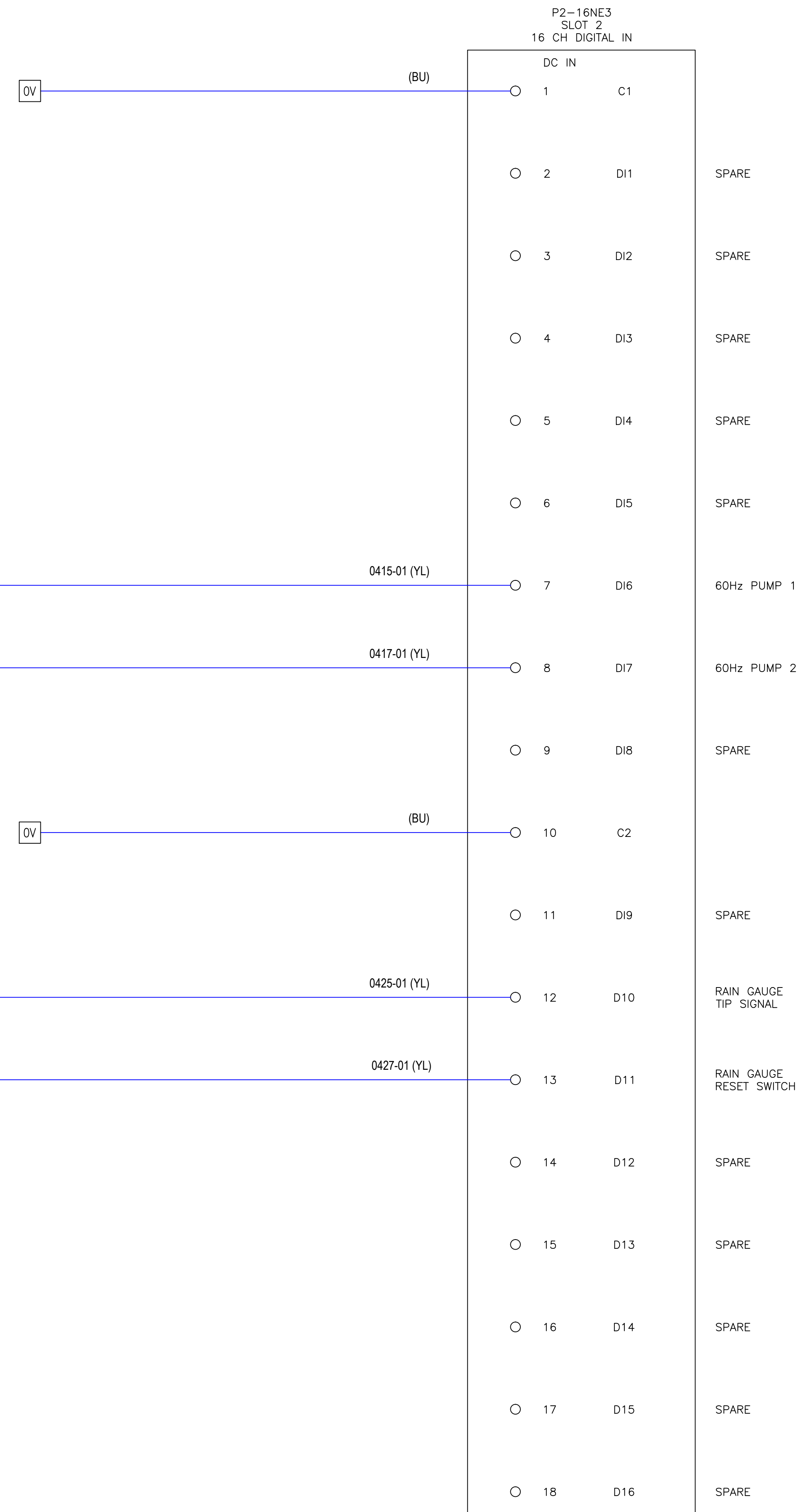
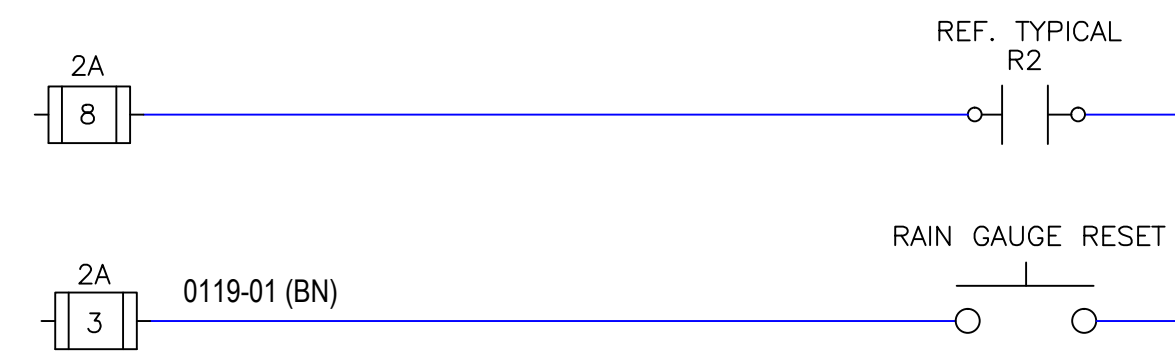
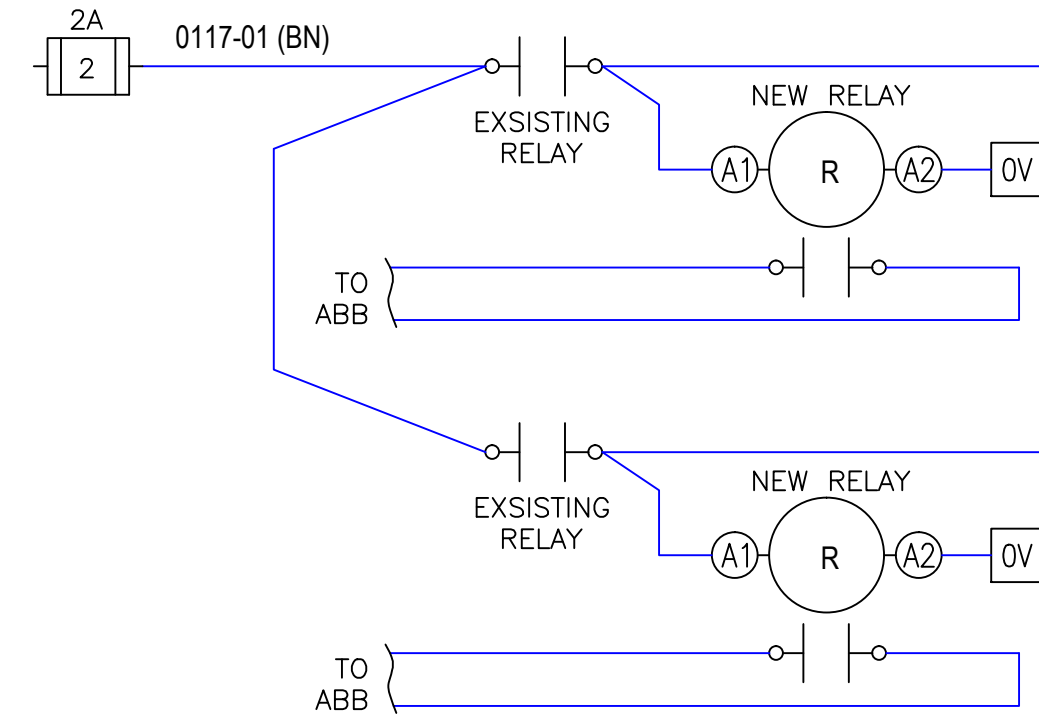
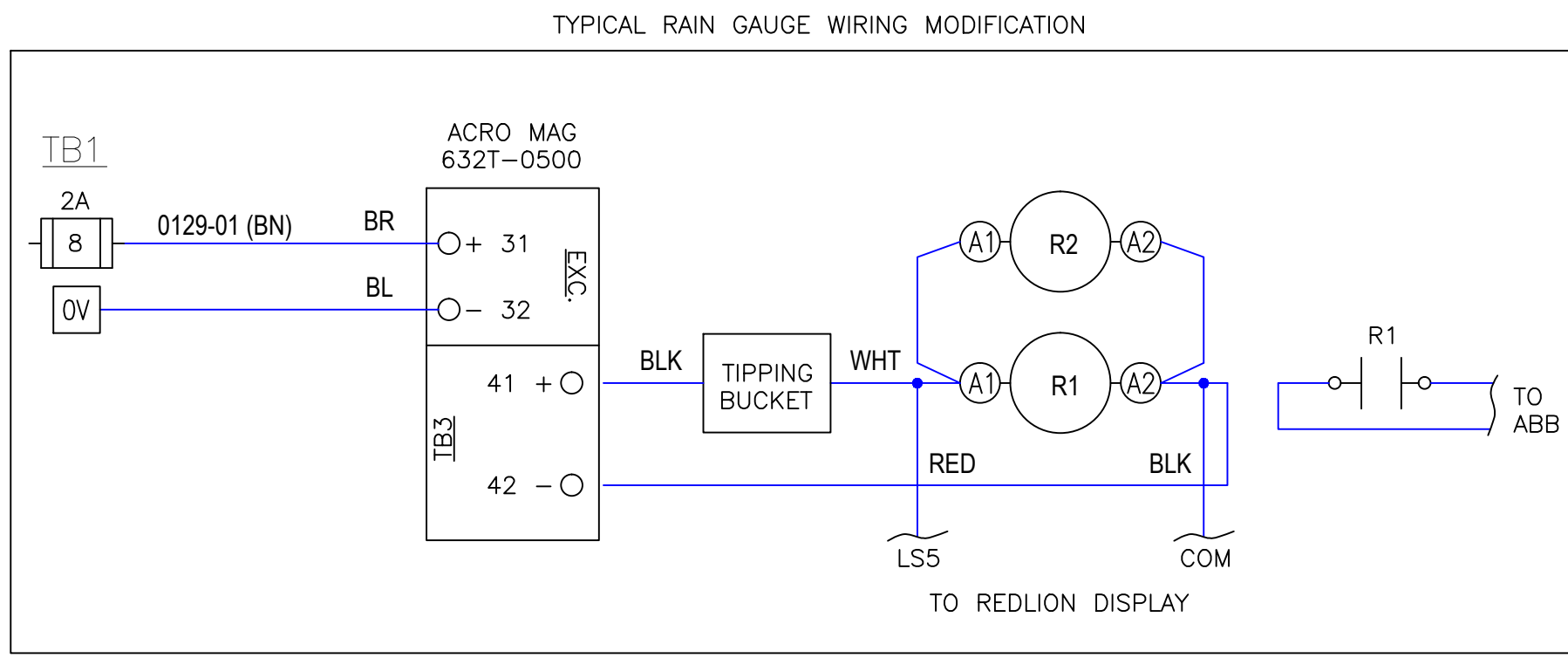


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 4
PLC DIGITAL INPUT 2

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5110-P7
DATE: 03/23/2018	SET NO. SHEET NO. 7 OF 12

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LEGEND

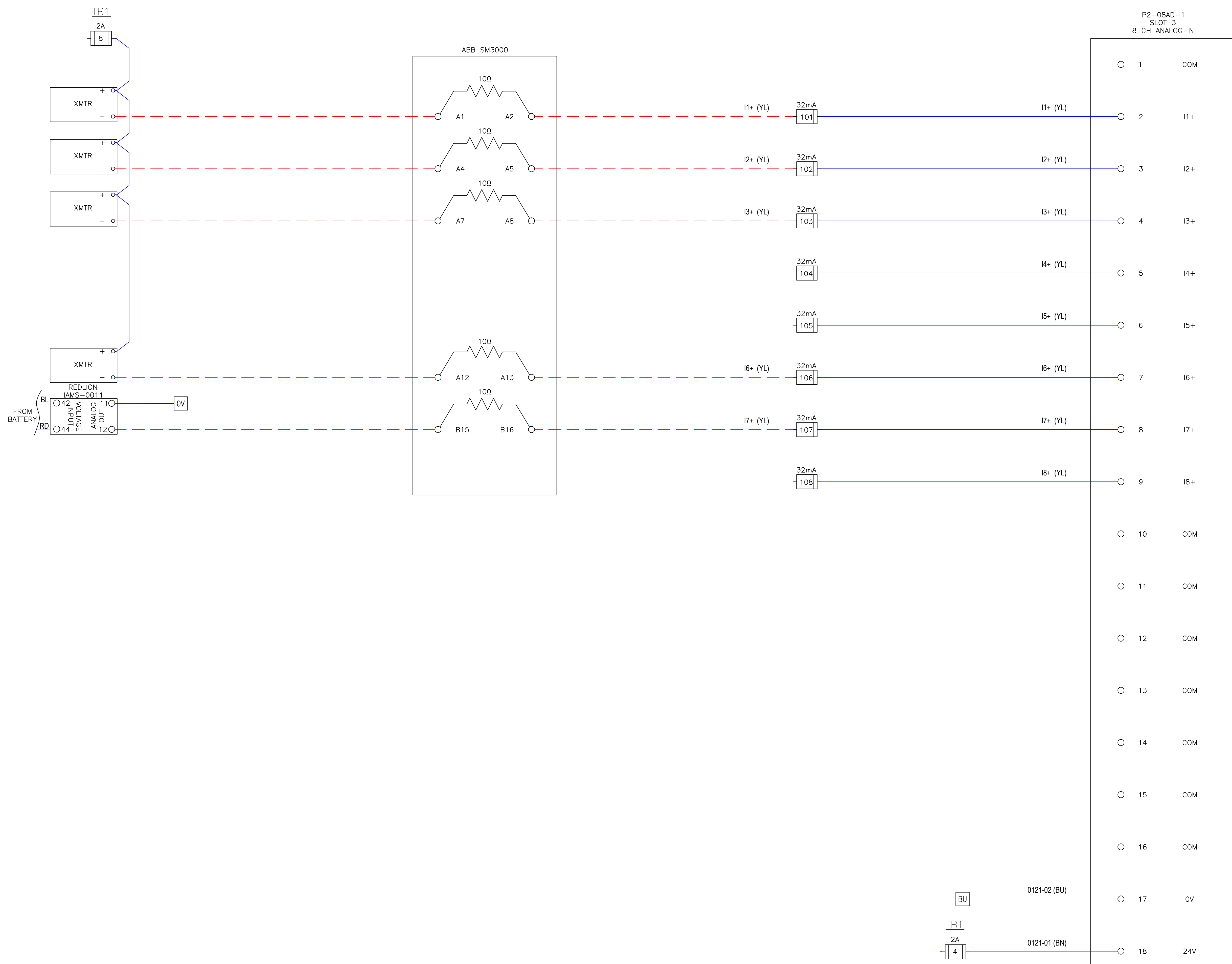


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



P2-08AD-1
SLOT 3
8 CH ANALOG IN

1	COM
2	11+
3	12+
4	13+
5	14+
6	15+
7	16+
8	17+
9	18+
10	COM
11	COM
12	COM
13	COM
14	COM
15	COM
16	COM
17	0V
18	24V

FOS WATER LEVEL
SYPHON WATER LEVEL
DISCHARGE WATER LEVEL
SPARE
SPARE
SYSTEM WATER PRESS
BATTERY BANK VOLTAGE
SPARE

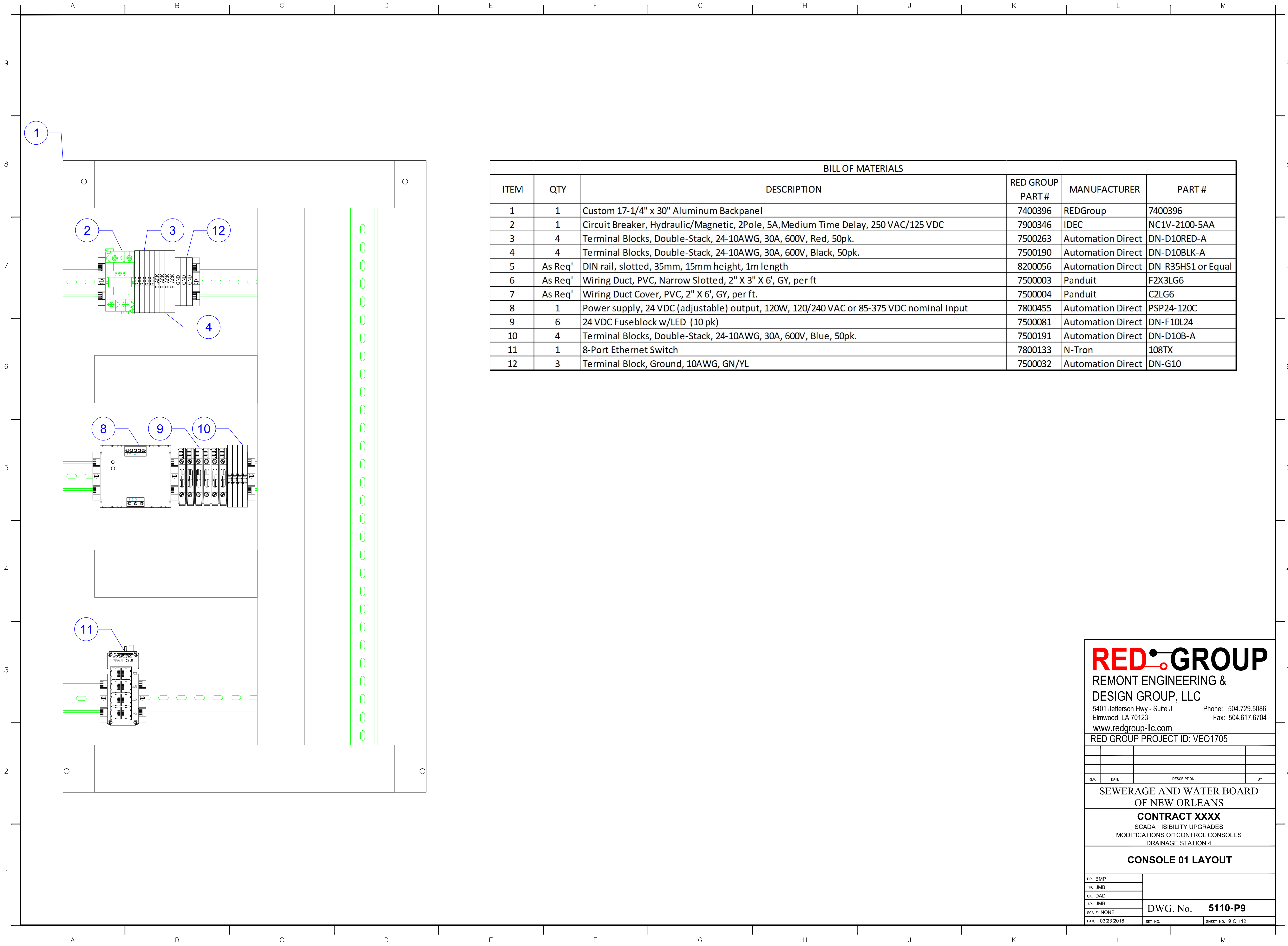
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SEWERAGE AND WATER BOARD
OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 4

PLC ANALOG INPUT 1

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5110-P8
DATE: 03/23/2018	SET NO. SHEET NO. 8 OF 12

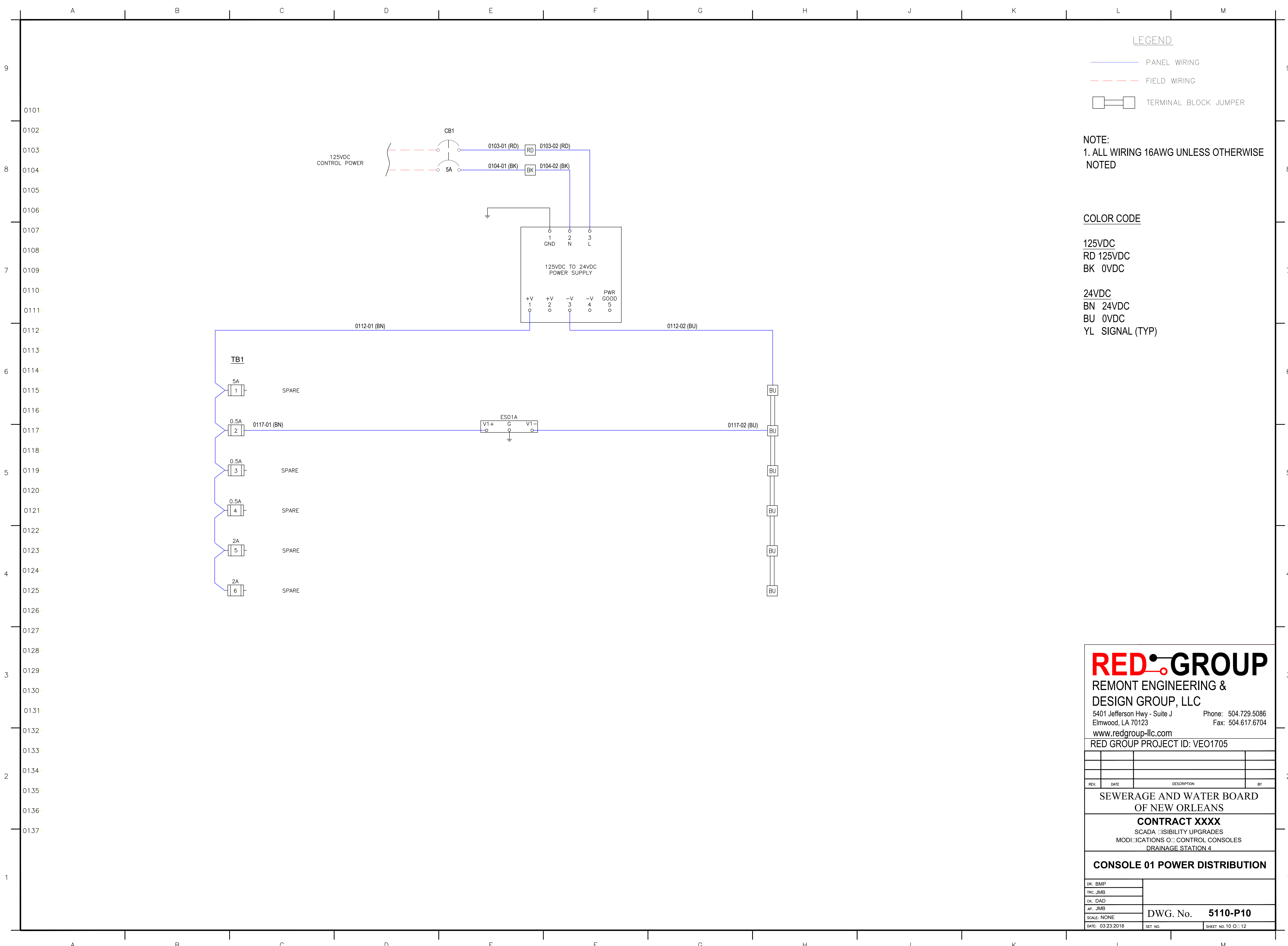


BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

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 DESIGN GROUP, LLC
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 RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 4
CONSOLE 01 LAYOUT

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5110-P9
DATE: 03.23.2018	SET NO. SHEET NO. 9 OF 12



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



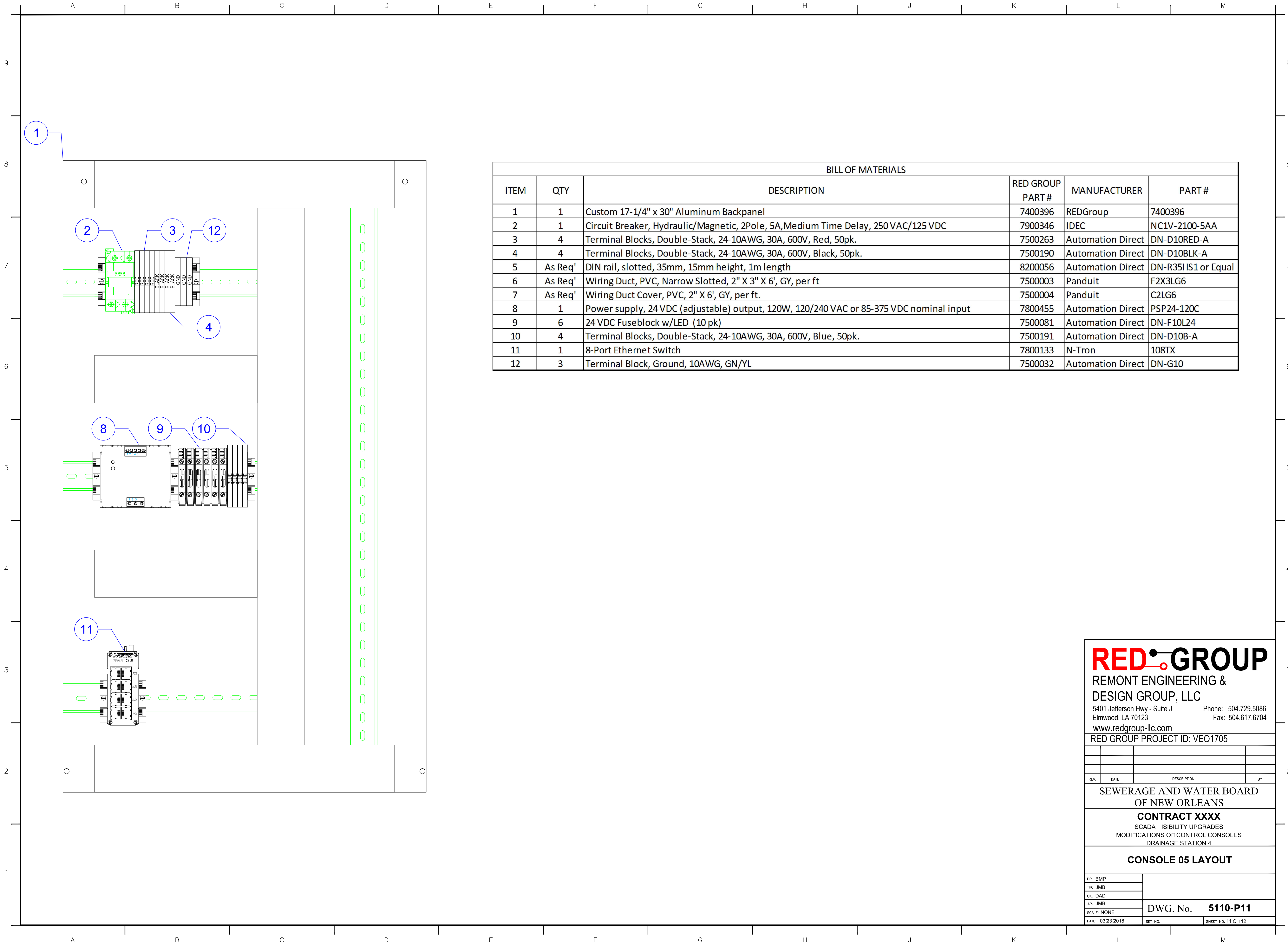
REMONT ENGINEERING & DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 4

CONSOLE 01 POWER DISTRIBUTION

DR: BMP	DWG. No. 5110-P10
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/23/2018	SET NO. SHEET NO. 10 OF 12

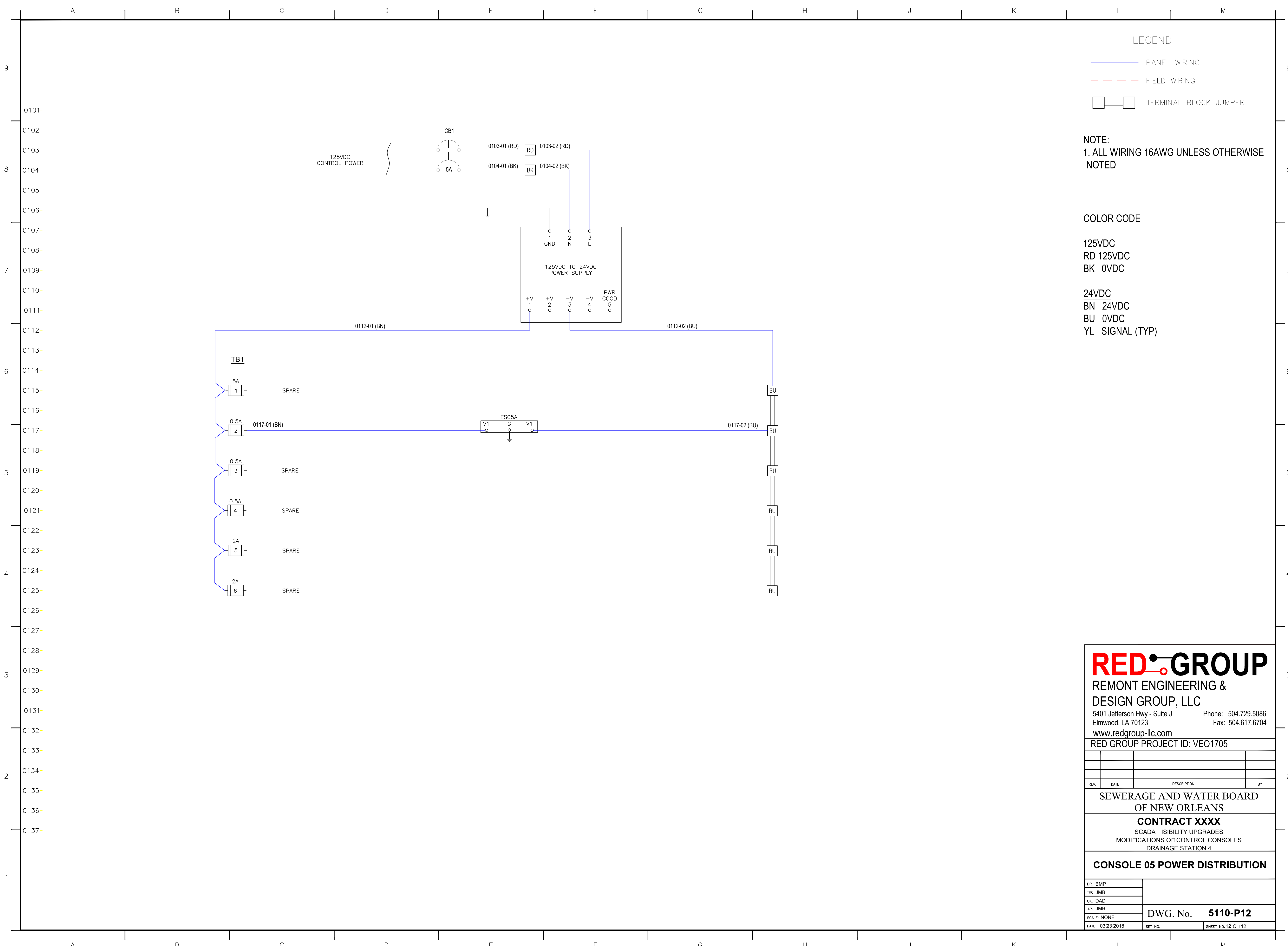


BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A,Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

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 Elmwood, LA 70123 Fax: 504.617.6704
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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 4
CONSOLE 05 LAYOUT

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5110-P11
DATE: 03.23.2018	SET NO. SHEET NO. 11 OF 12



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC**
RD 125VDC
BK 0VDC
- 24VDC**
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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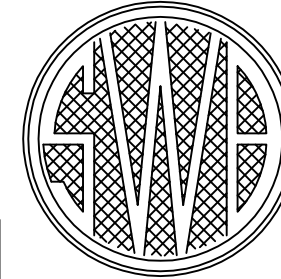
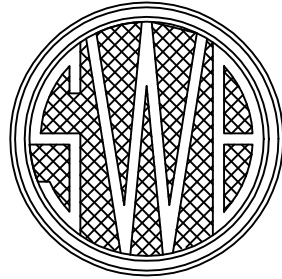
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 4

CONSOLE 05 POWER DISTRIBUTION

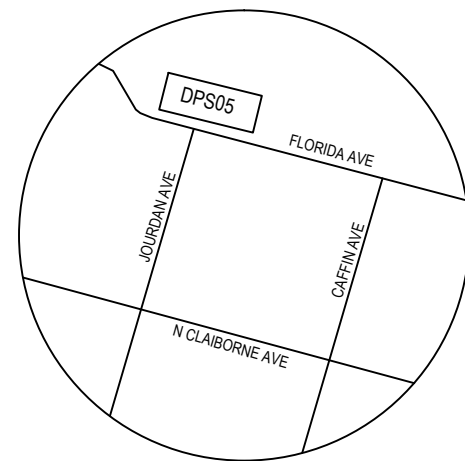
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CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/23/2018	SET NO. SHEET NO. 12 OF 12

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 5



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	PLC ANALOG INPUT 2		
10	CONSOLE 06 LAYOUT		
11	CONSOLE 06 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 5

INDEX OF SHEETS

DR. BMP	
TNC. JMB	
CC. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5111-P1
DATE: 03/26/2018	SHEET NO. 1 OF 11

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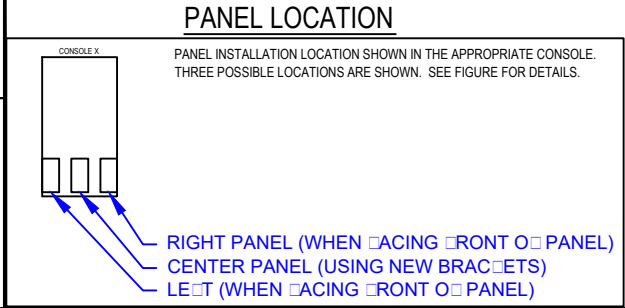
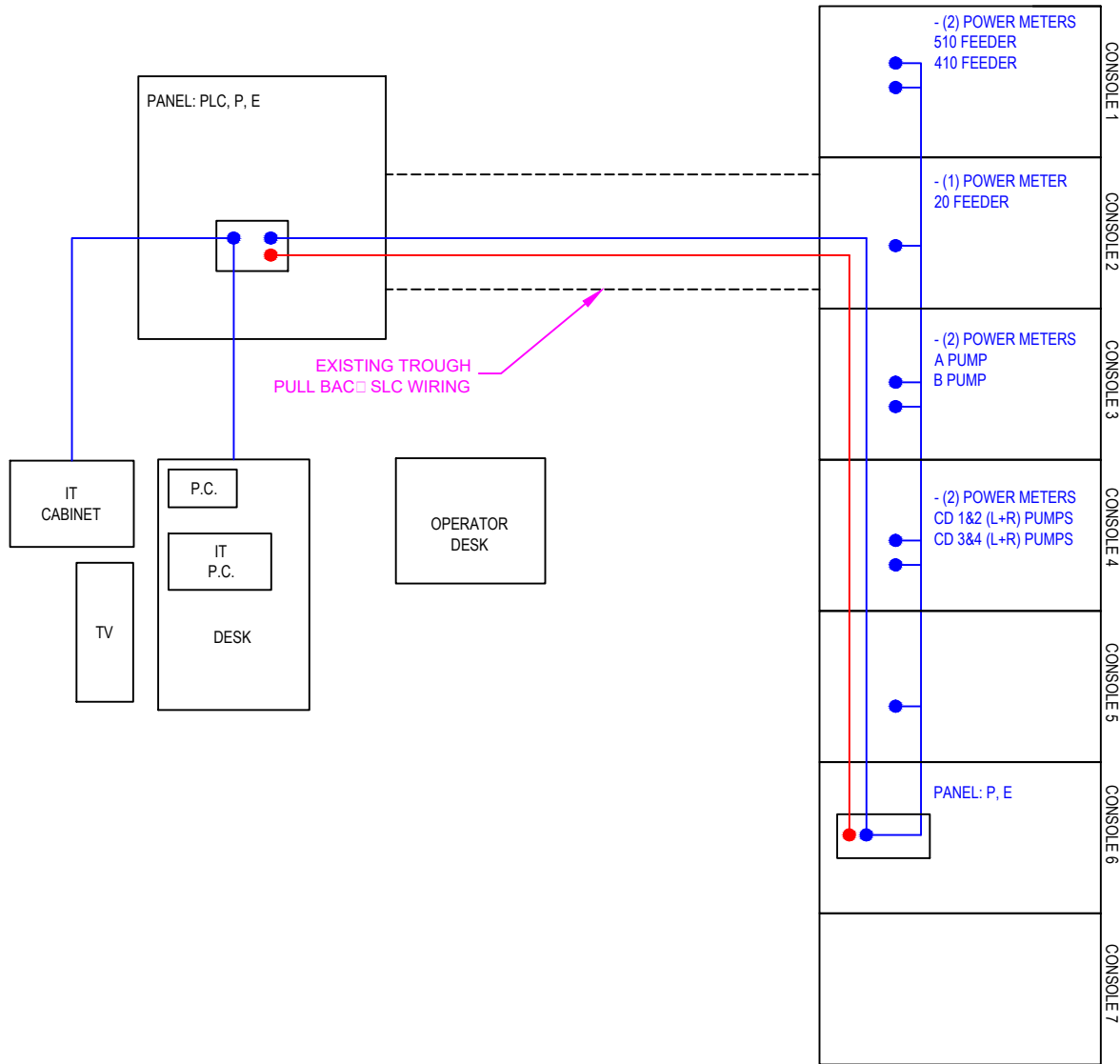
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LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU



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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

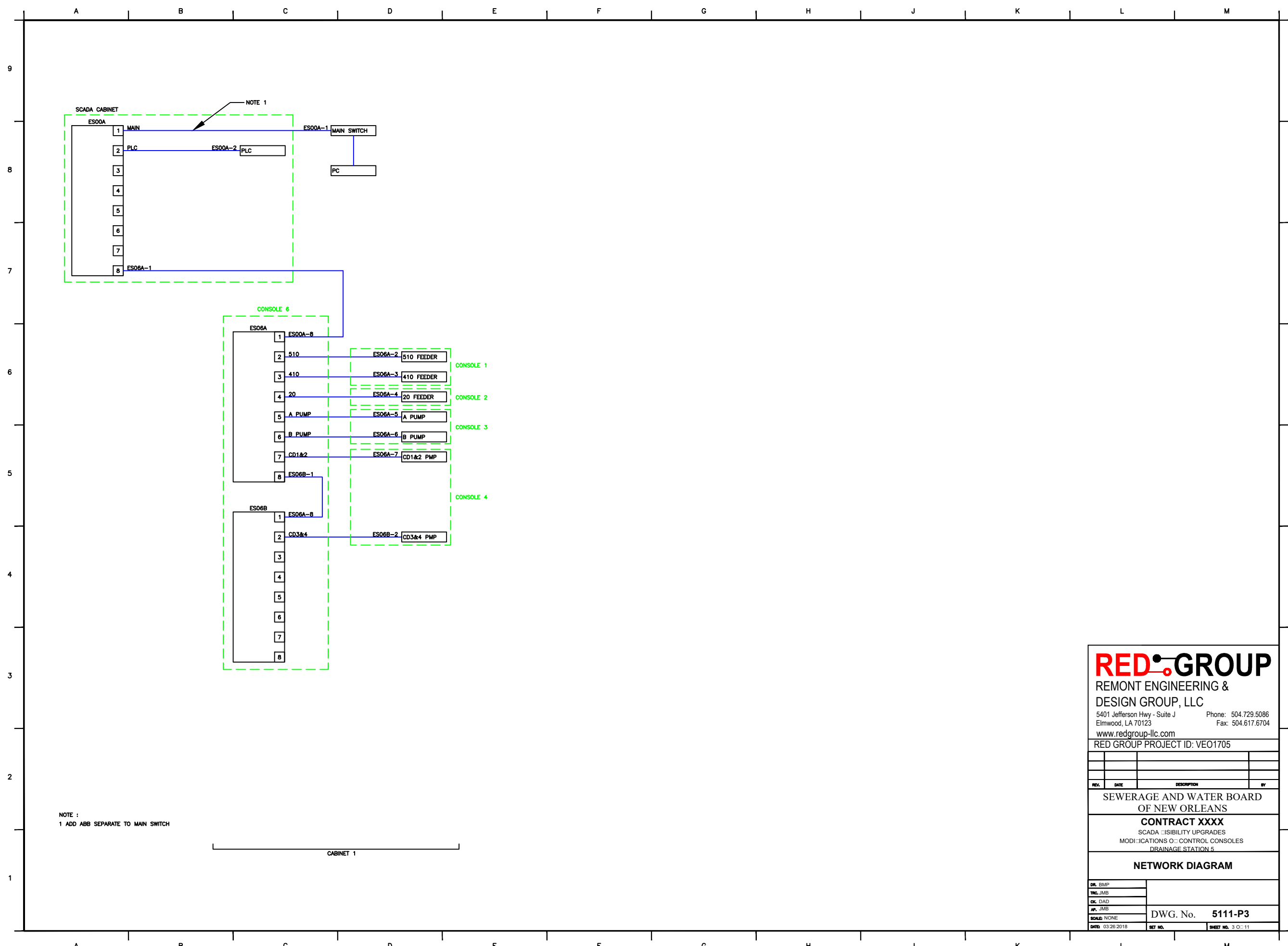
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 5

PLAN VIEW

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5111-P2
DATE: 03/26/2018	SET NO. SHEET NO. 2 OF 11

A B C D E F G H J K L M



NOTE 1

NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

CABINET 1

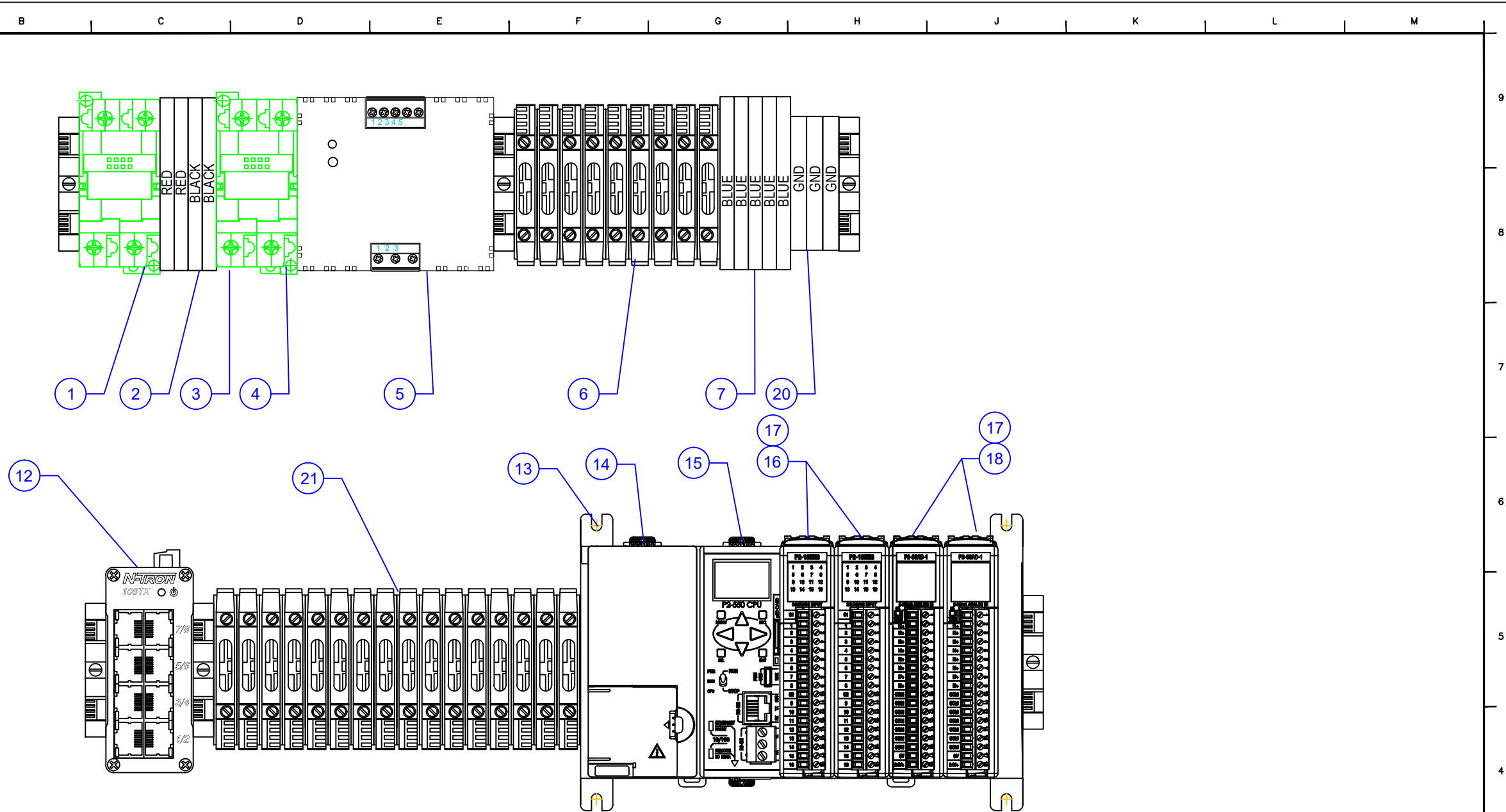
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 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 5

NETWORK DIAGRAM

DR. BMP	
TNG. JMB	
CK. DAD	
JP. JMB	
SCALE: NONE	DWG. No. 5111-P3
DATE: 03/26/2018	SET NO. SHEET NO. 3 OF 11



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A,Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A,Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	9	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	4	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	2	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	0	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	16	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC

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 RED GROUP PROJECT ID: VEO1705

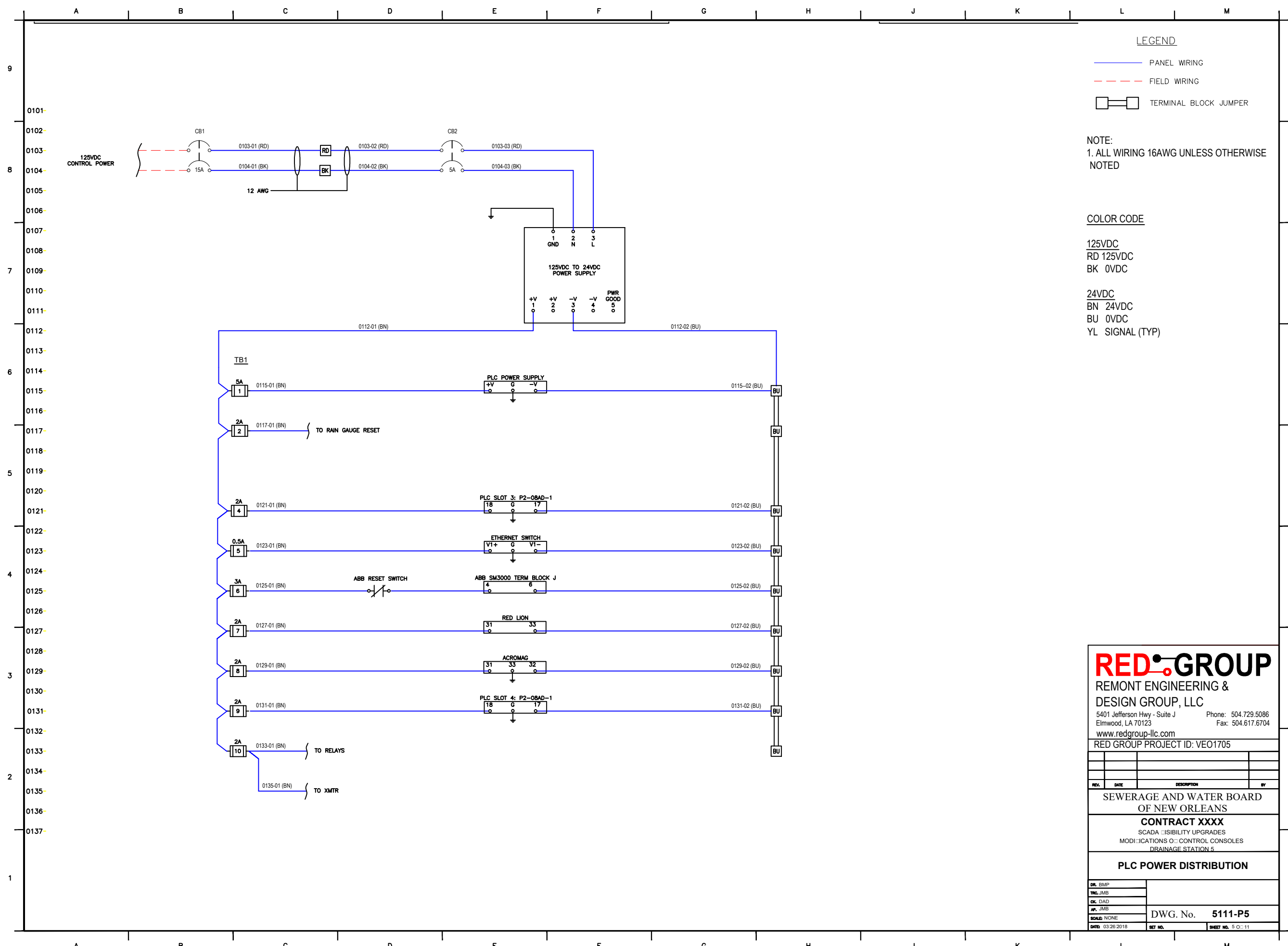
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
 OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 5

PLC LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5111-P4
DATE: 03/26/2018	SET NO. SHEET NO. 4 OF 11



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

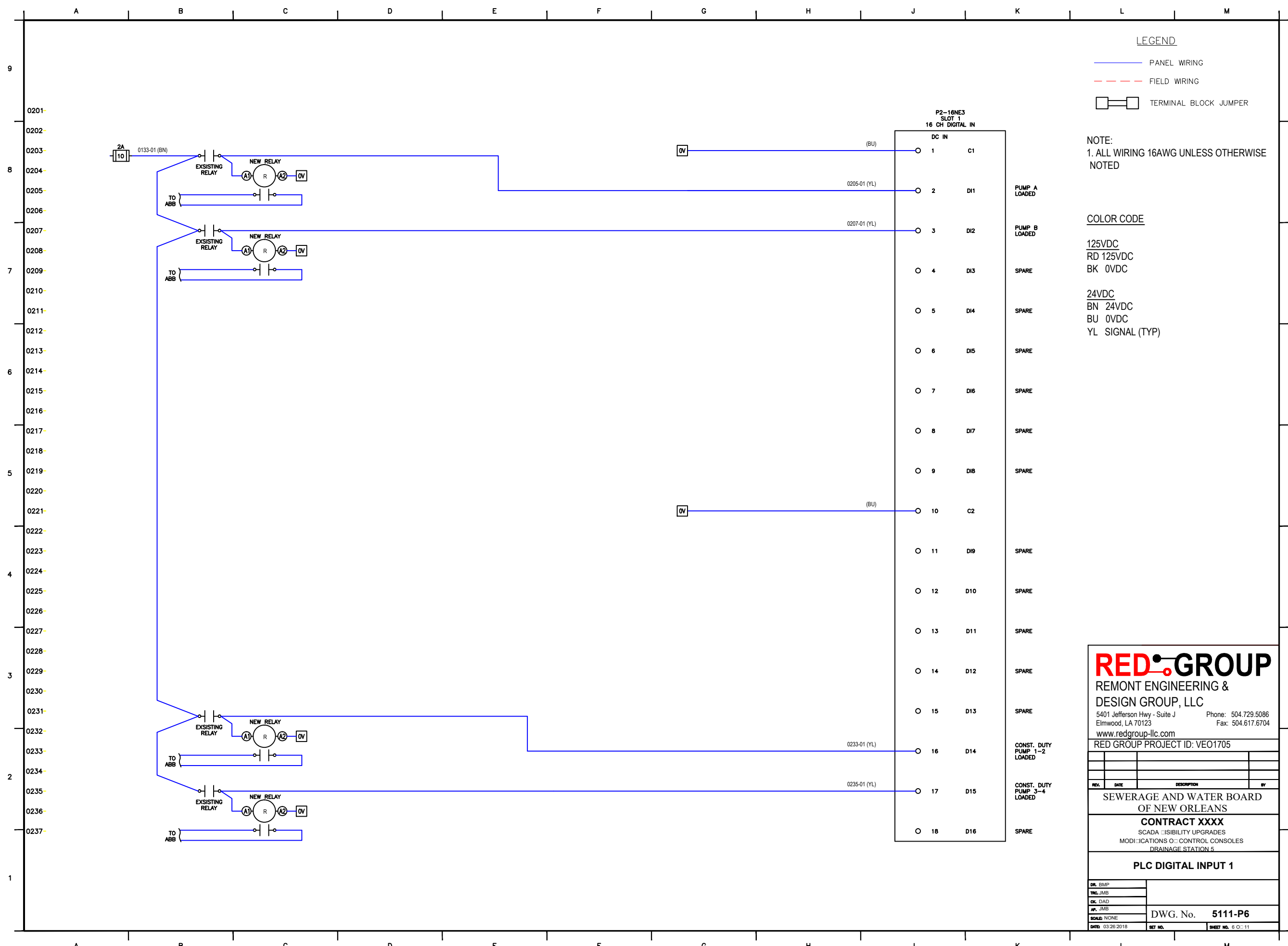
SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 5

PLC POWER DISTRIBUTION

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5111-P5
DATE: 03/26/2018	SHEET NO. 5 OF 11



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

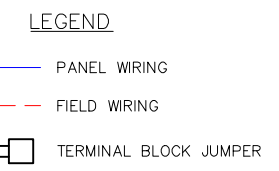
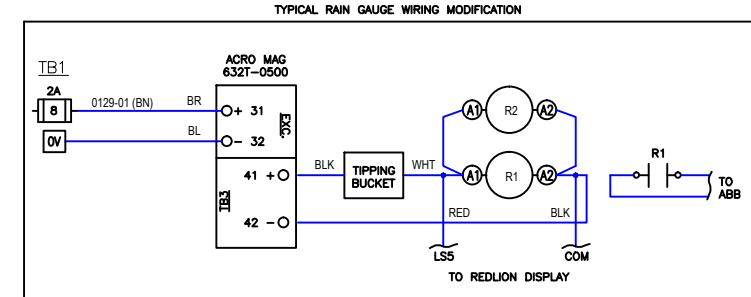
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 5

PLC DIGITAL INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5111-P6
DATE: 03/26/2018	SET NO. SHEET NO. 6 OF 11

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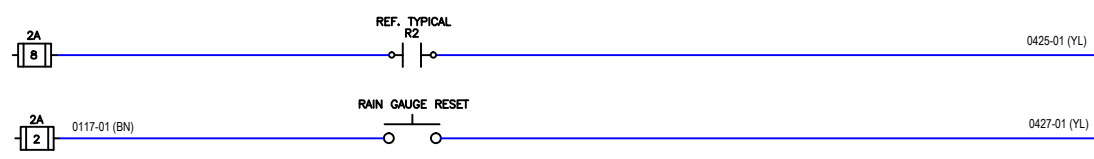
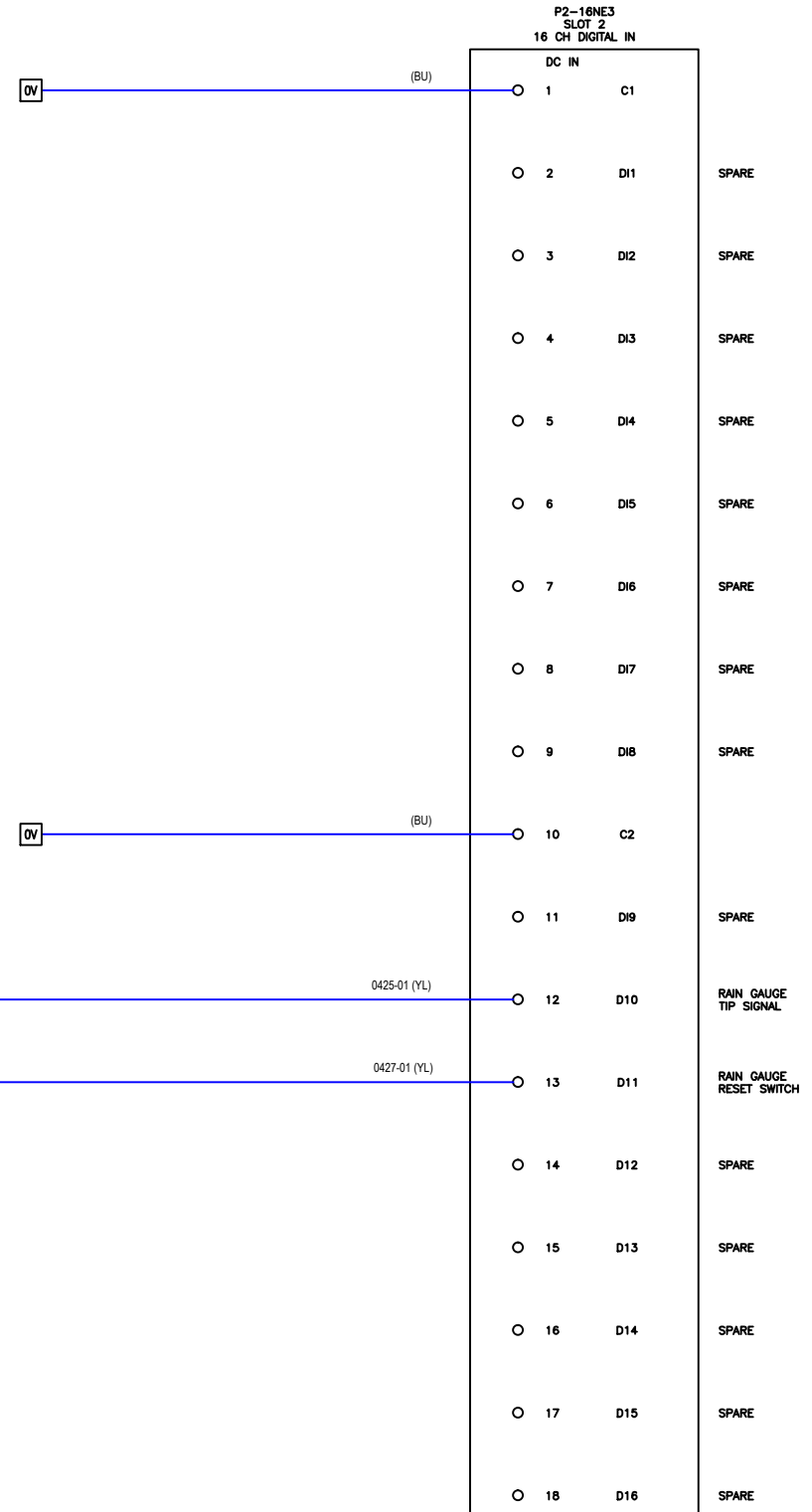


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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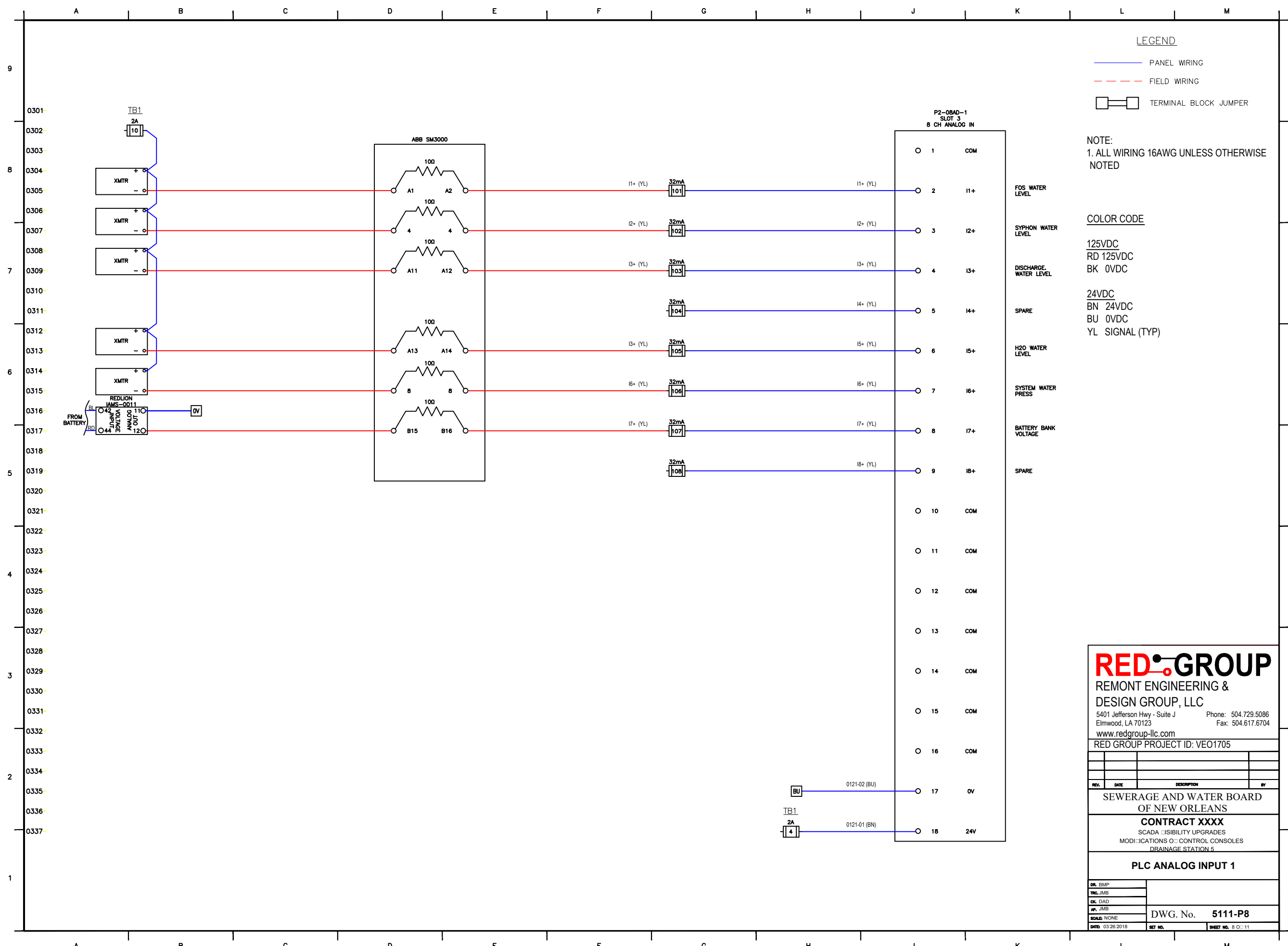
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 5

PLC DIGITAL INPUT 2

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5111-P7
DATE: 03/26/2018	SET NO. SHEET NO. 7 OF 11

A B C D E F G H J K L M



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

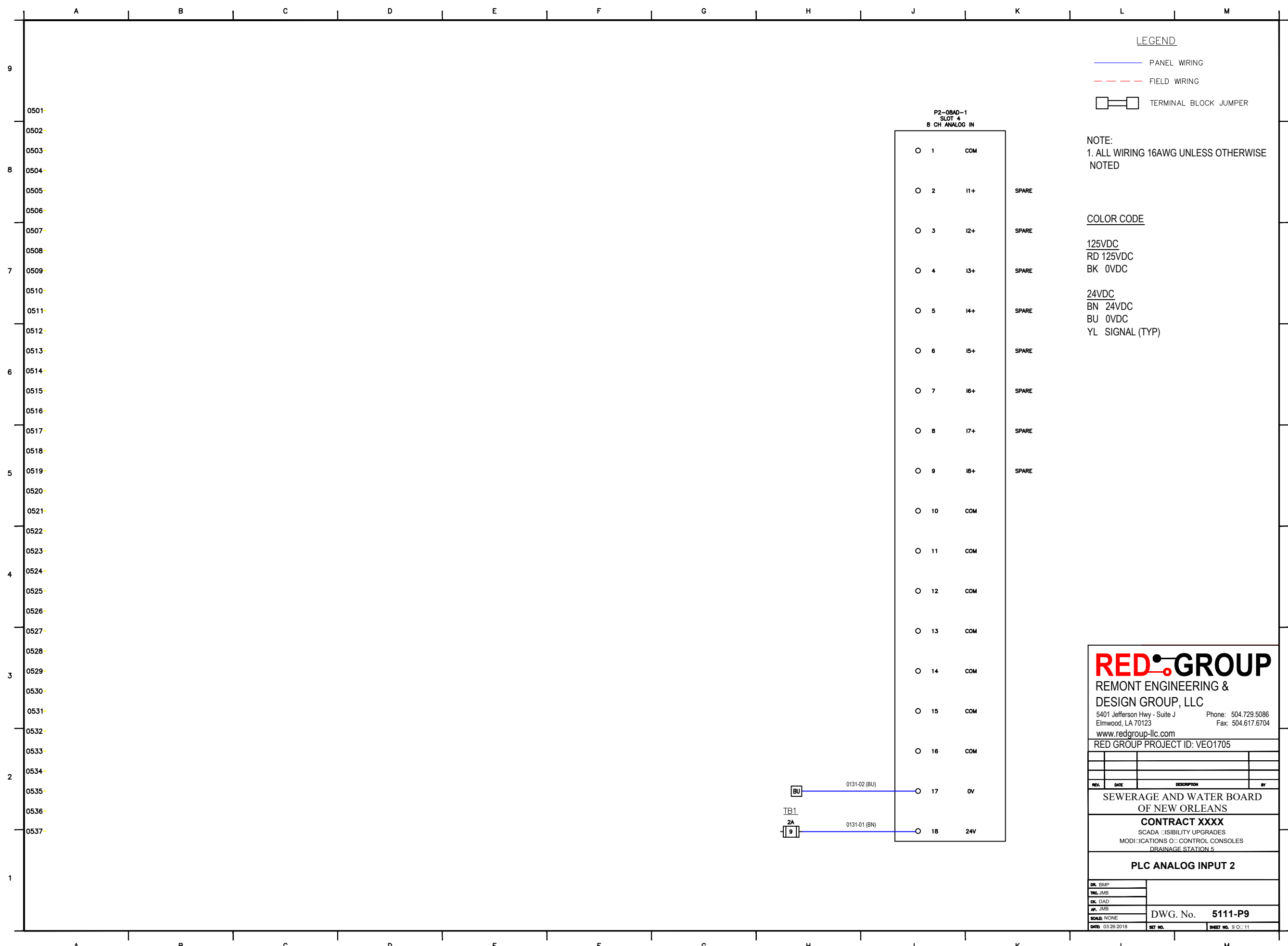
CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 5

PLC ANALOG INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	
DATE: 03/26/2018	
SET NO.	
SHEET NO.	

DWG. No. 5111-P8



LEGEND

- PANEL WIRING
- - - - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

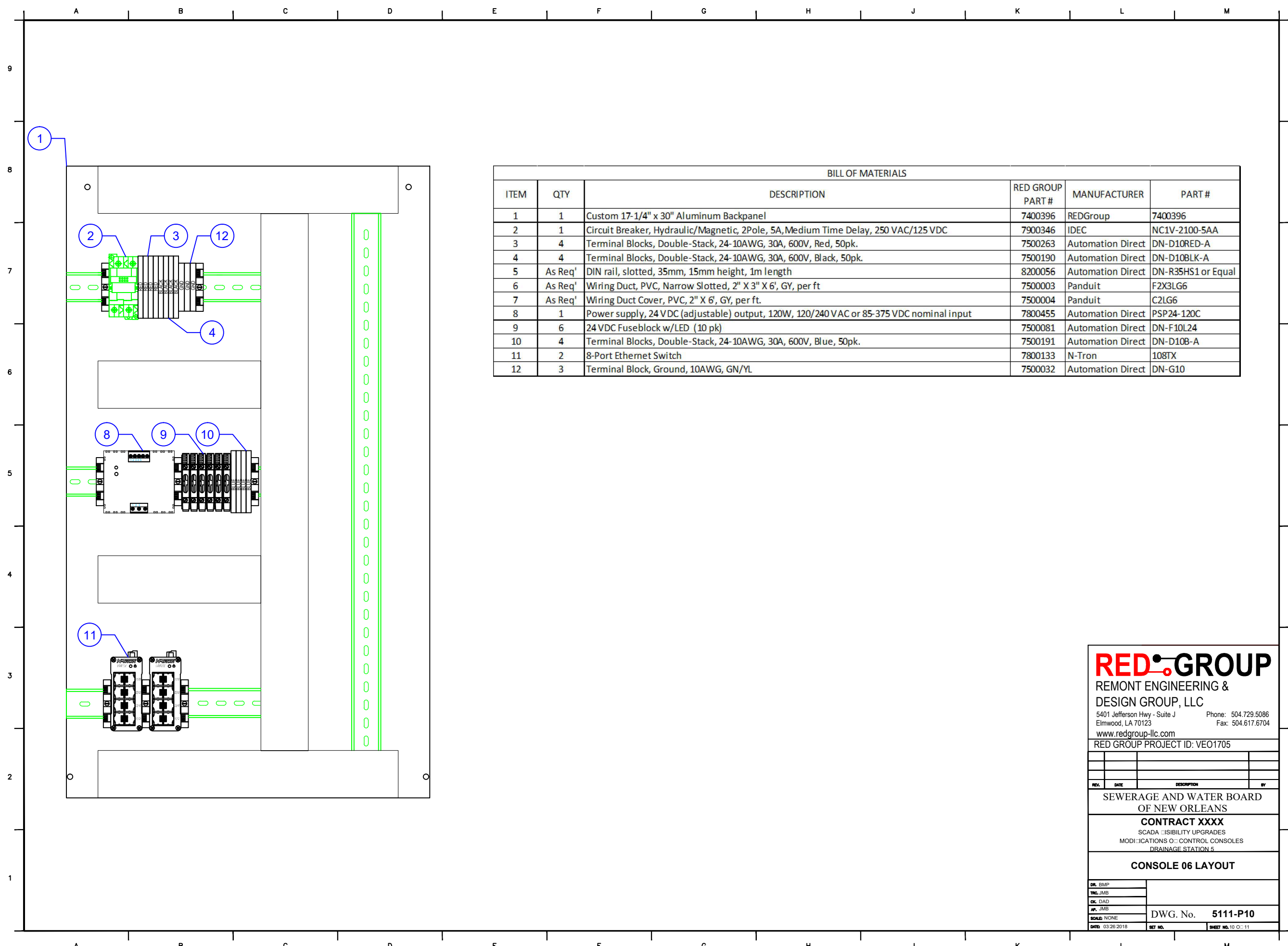
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 5

PLC ANALOG INPUT 2

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	
DATE: 03/26/2018	

DWG. No. 5111-P9

SHEET NO. 9 OF 11



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

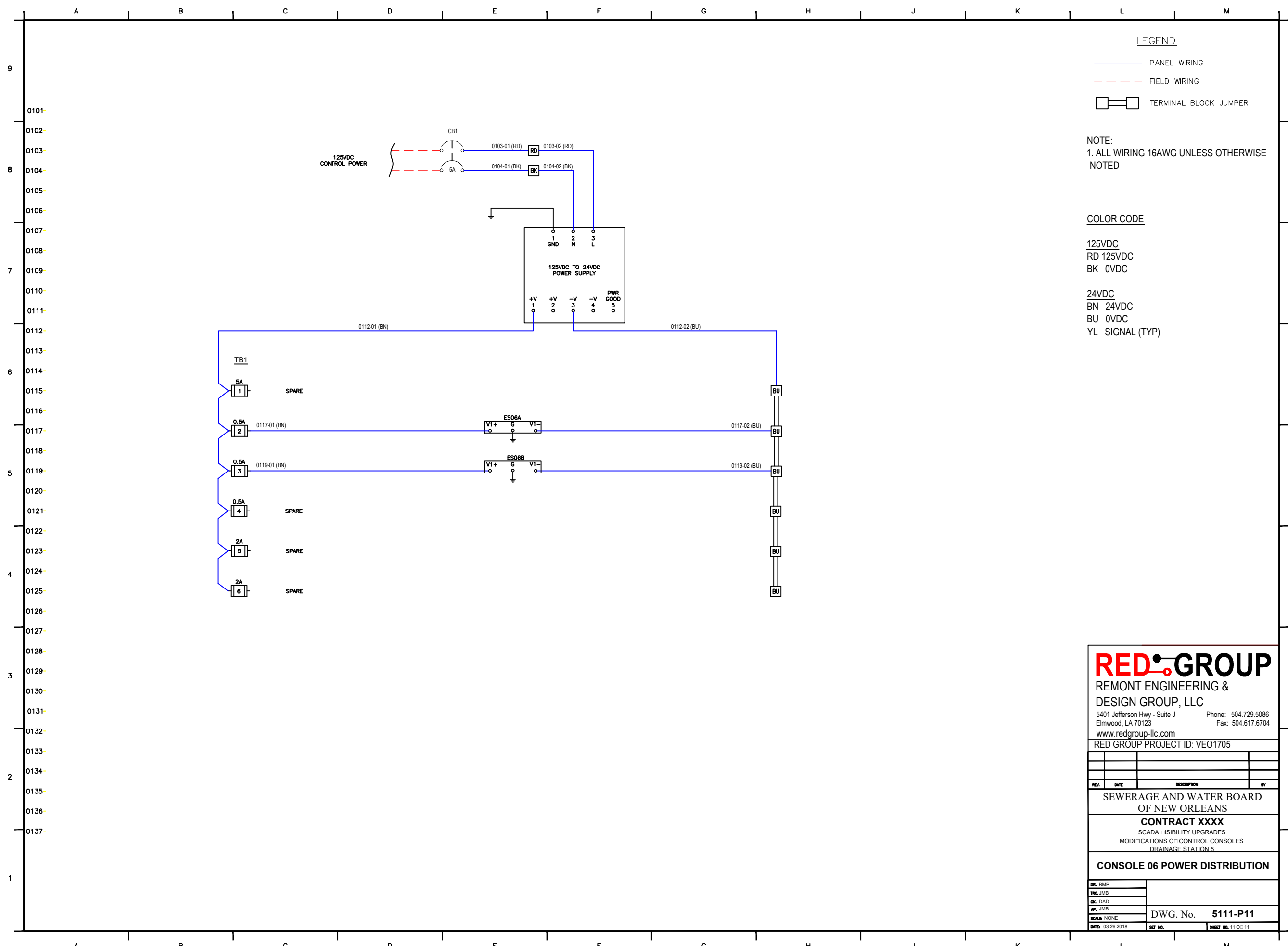
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 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 5

CONSOLE 06 LAYOUT

DL, BMP	
TNC, JMB	
CK, DAD	
AP, JMB	
SCALE: NONE	DWG. No. 5111-P10
DATE: 03/26/2018	SHEET NO. 10 OF 11



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX

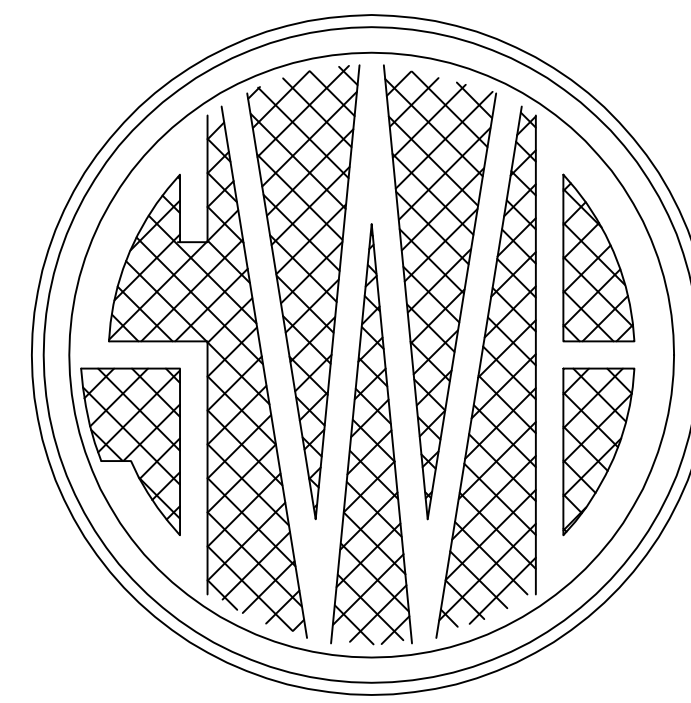
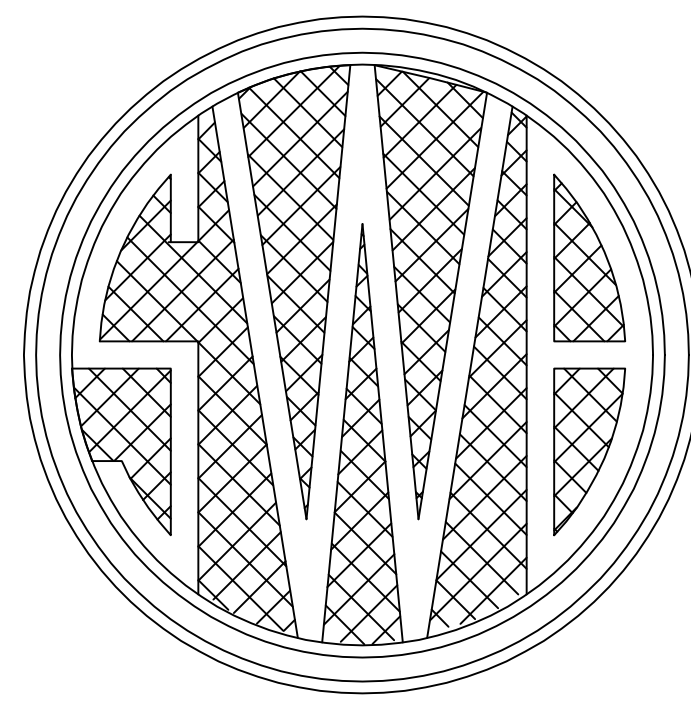
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 5

CONSOLE 06 POWER DISTRIBUTION

DR: BMP		
TRC: JMB		
CK: DAD		
AP: JMB		
SCALE: NONE		
DATE: 03/26/2018	SET NO.	SHEET NO. 11 OF 11

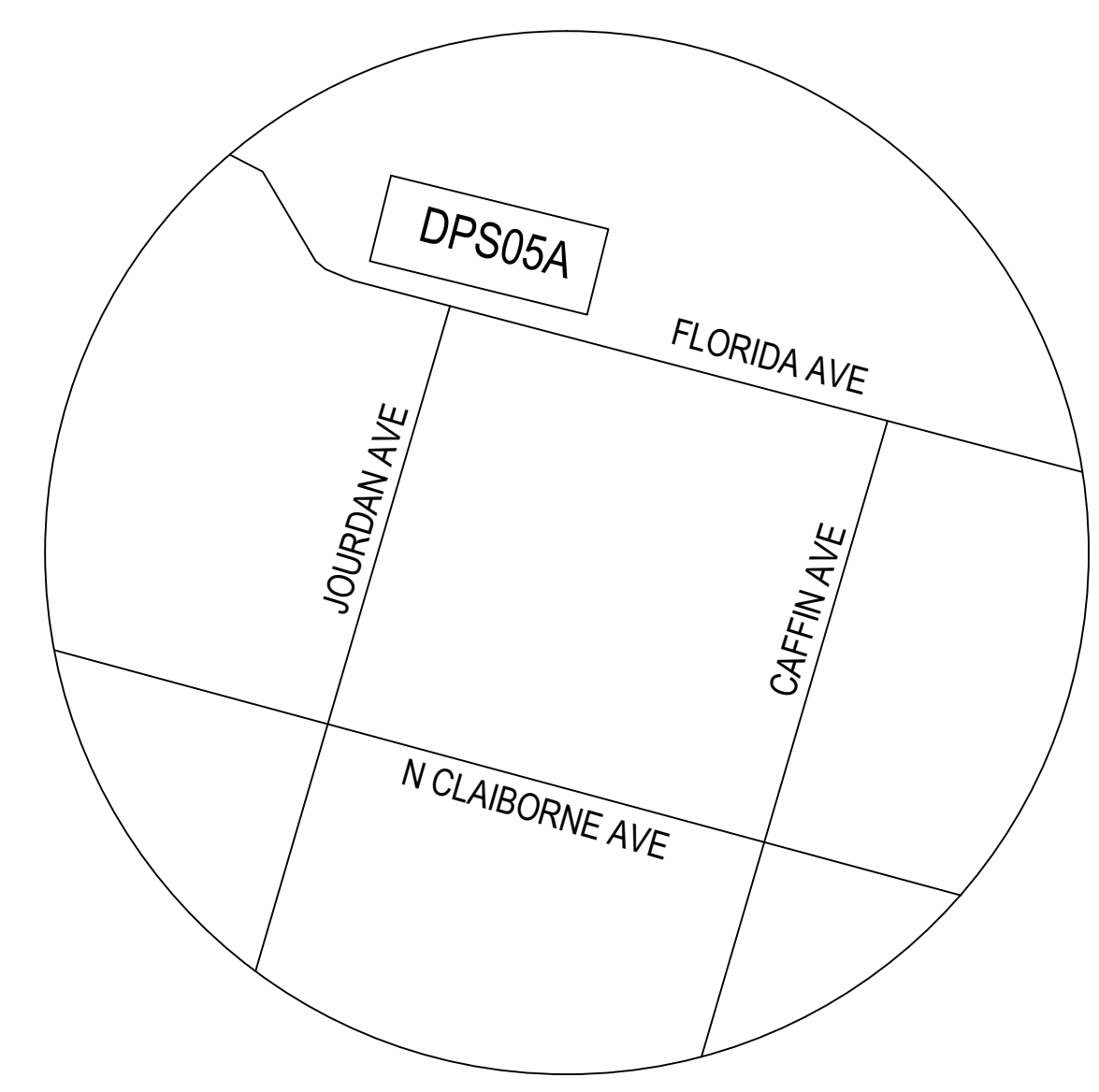
DWG. No. **5111-P11**

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 5A



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 02 LAYOUT		
10	CONSOLE 02 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

RED GROUP

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DESIGN GROUP, LLC
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www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 5A

INDEX OF SHEETS

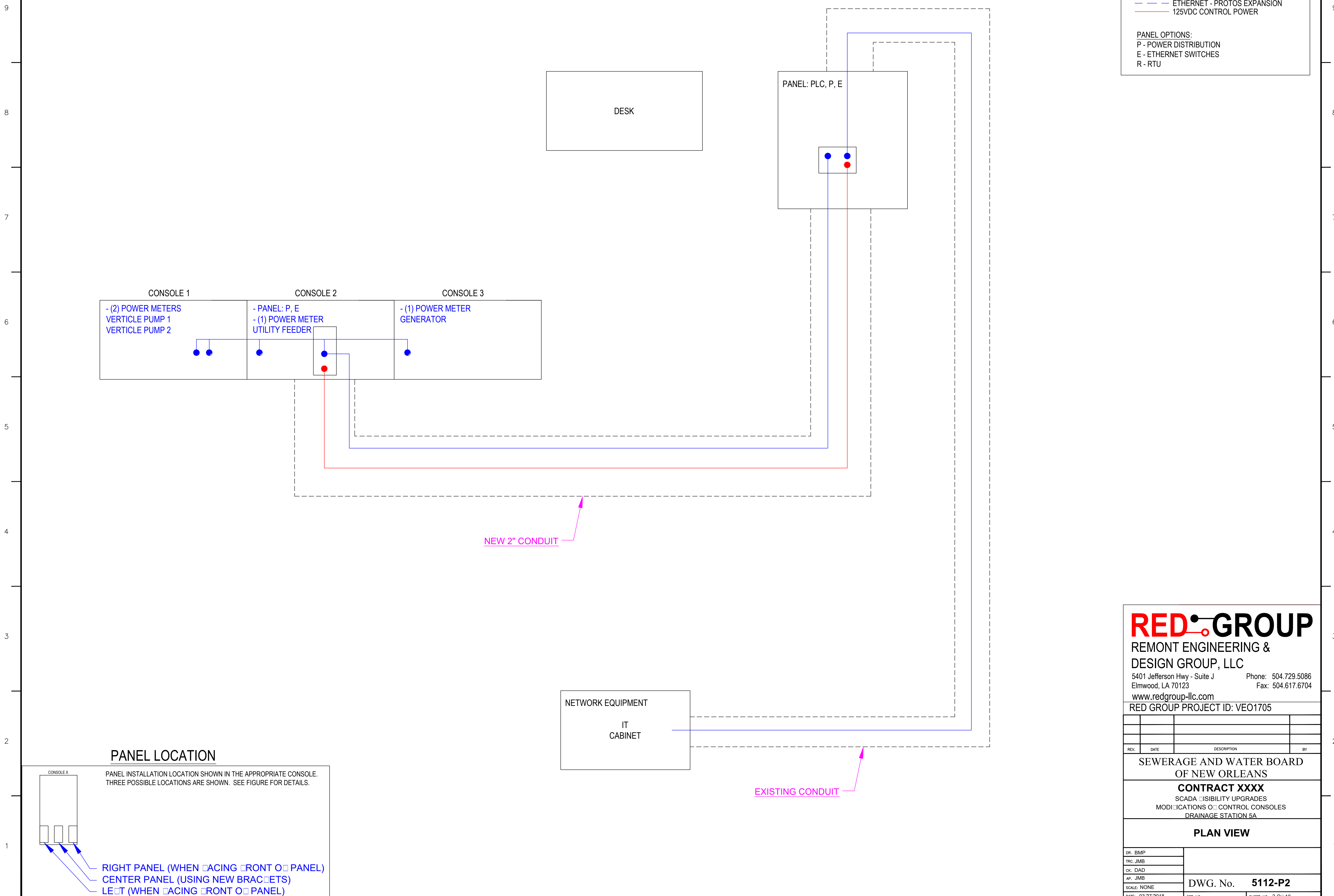
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CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5112-P1
DATE: 03/27/2018	SET NO. SHEET NO. 1 OF 10

A B C D E F G H J K L M

LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
P - POWER DISTRIBUTION
E - ETHERNET SWITCHES
R - RTU

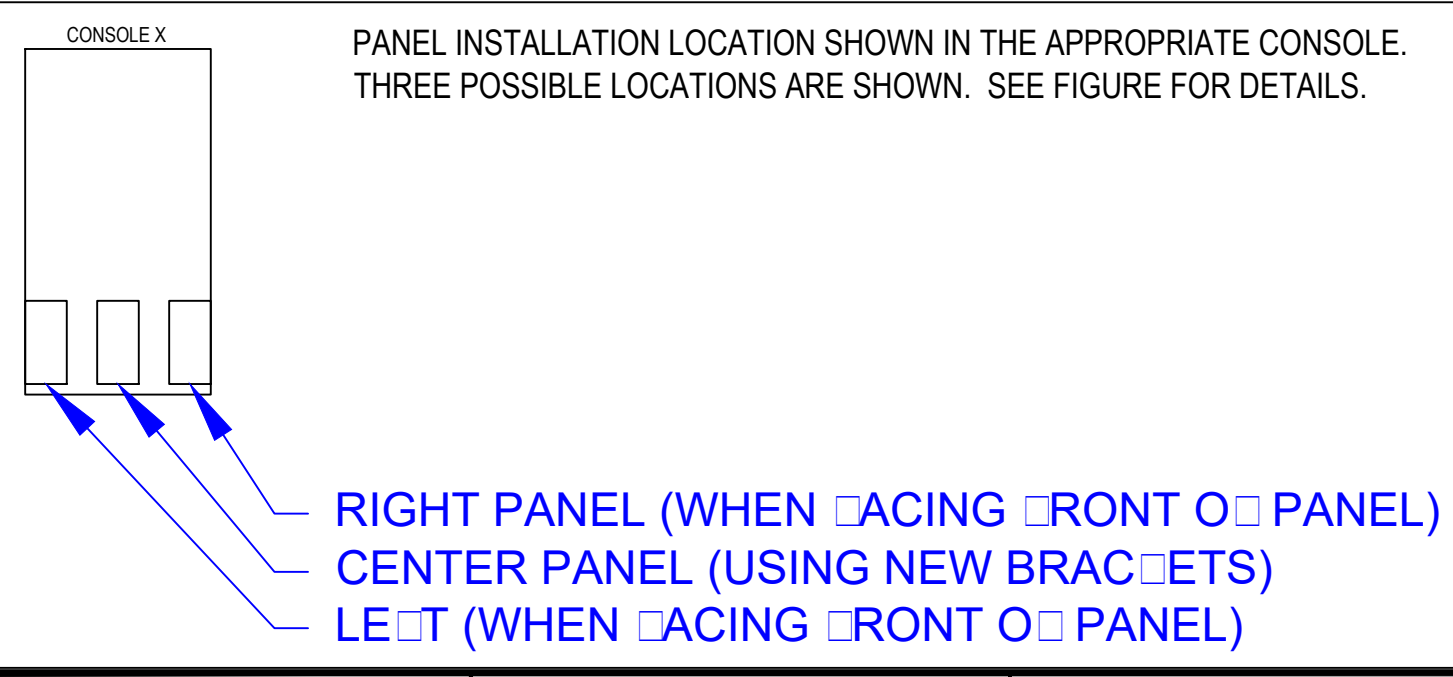


NEW 2" CONDUIT

EXISTING CONDUIT

PANEL LOCATION

PANEL INSTALLATION LOCATION SHOWN IN THE APPROPRIATE CONSOLE. THREE POSSIBLE LOCATIONS ARE SHOWN. SEE FIGURE FOR DETAILS.



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REMONT ENGINEERING & DESIGN GROUP, LLC
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Elmwood, LA 70123 Fax: 504.617.6704
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RED GROUP PROJECT ID: VEO1705

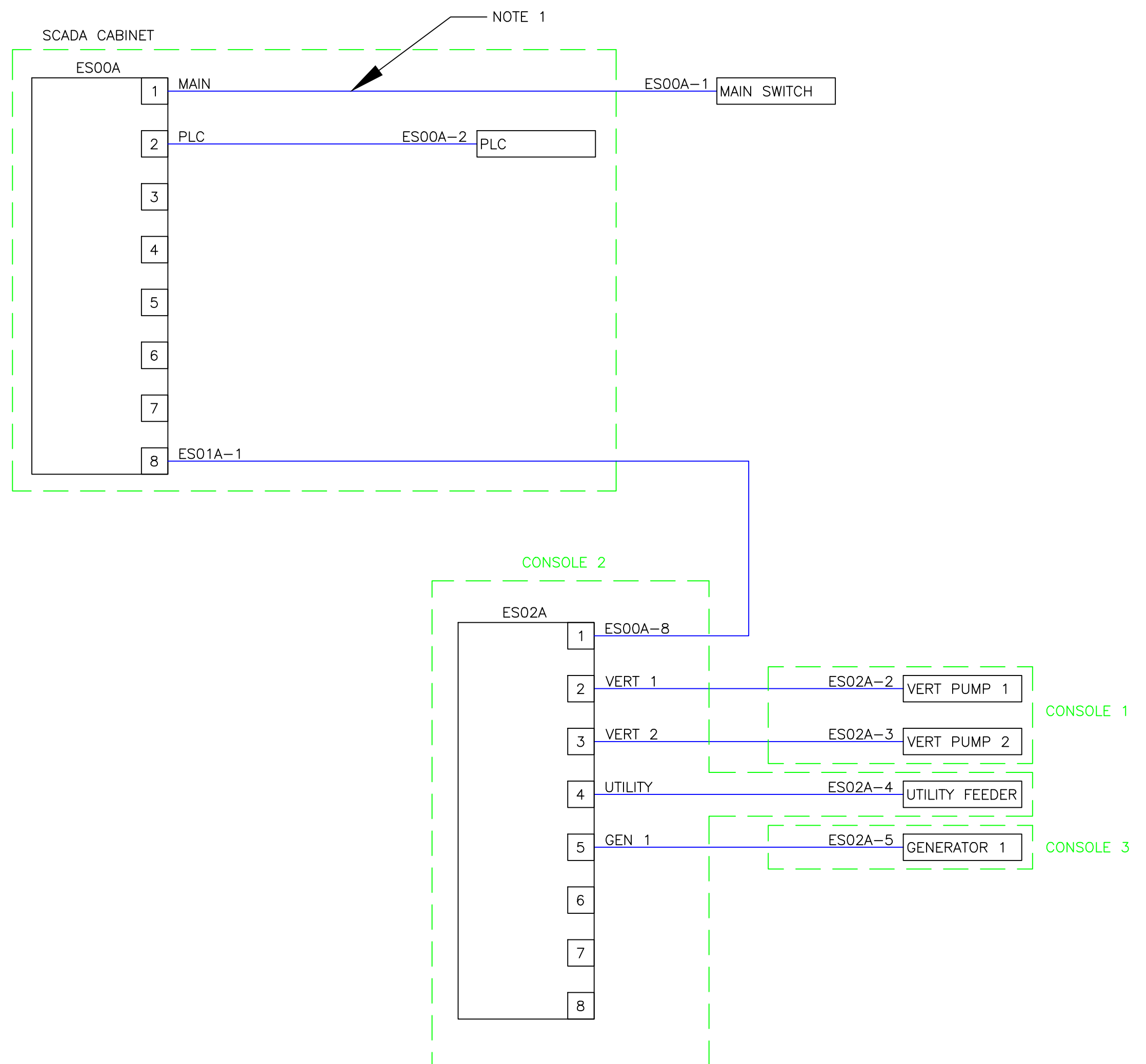
SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 5A

PLAN VIEW

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5112-P2
DATE: 03/27/2018	SET NO. SHEET NO. 2 OF 10

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NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

CABINET 1

RED GROUP

REMONT ENGINEERING &
DESIGN GROUP, LLC

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Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

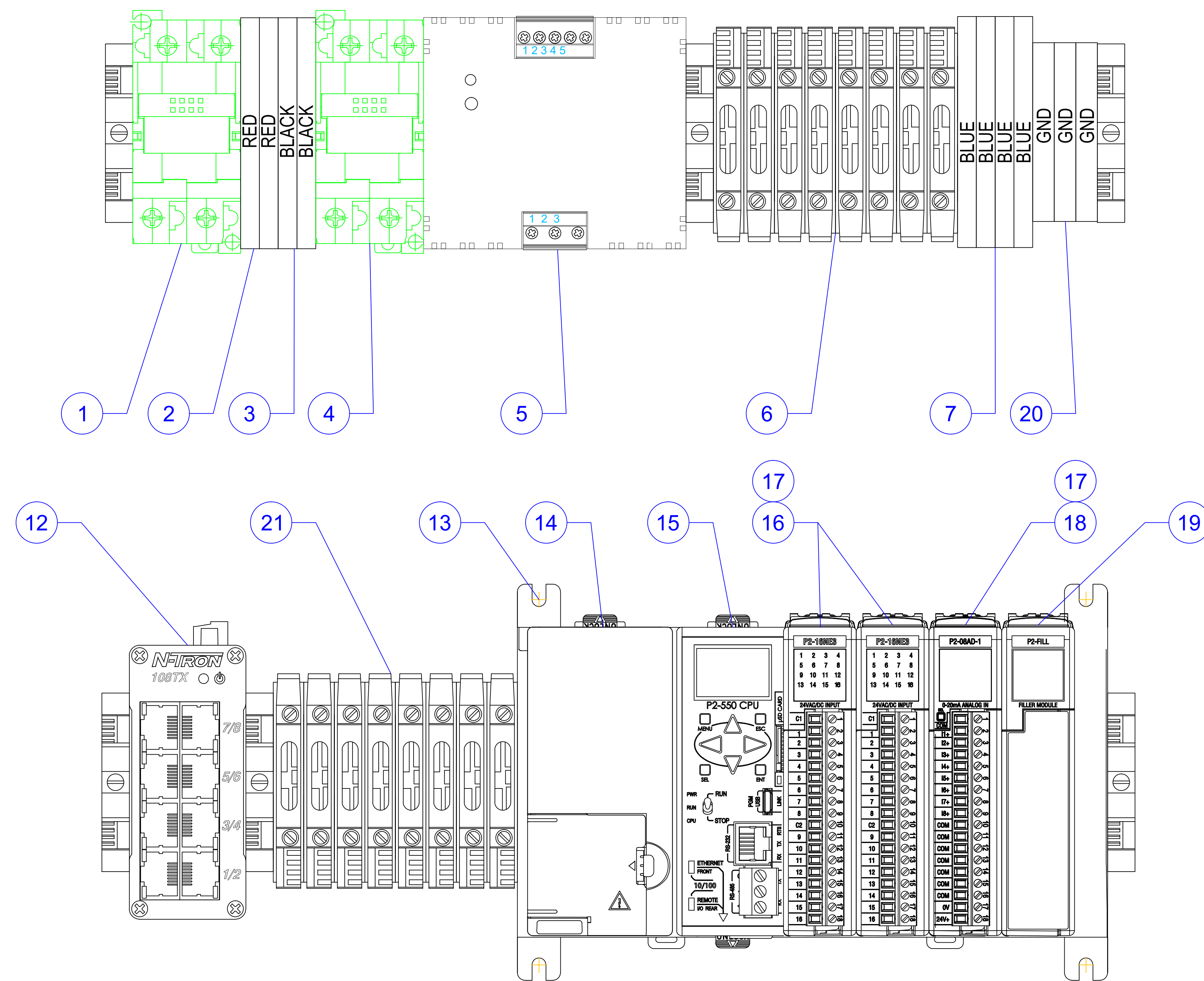
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS OF CONTROL CONSOLES
DRAINAGE STATION 5A

NETWORK DIAGRAM

DR: BMP	DWG. No. 5112-P3
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 3 OF 10

A B C D E F F G H J K I M



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

RED GROUP

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www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY
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SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 5A

PLC LAYOUT

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5112-P4
DATE: 03/27/2018	SET NO. SHEET NO. 4 OF 10

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LEGEND

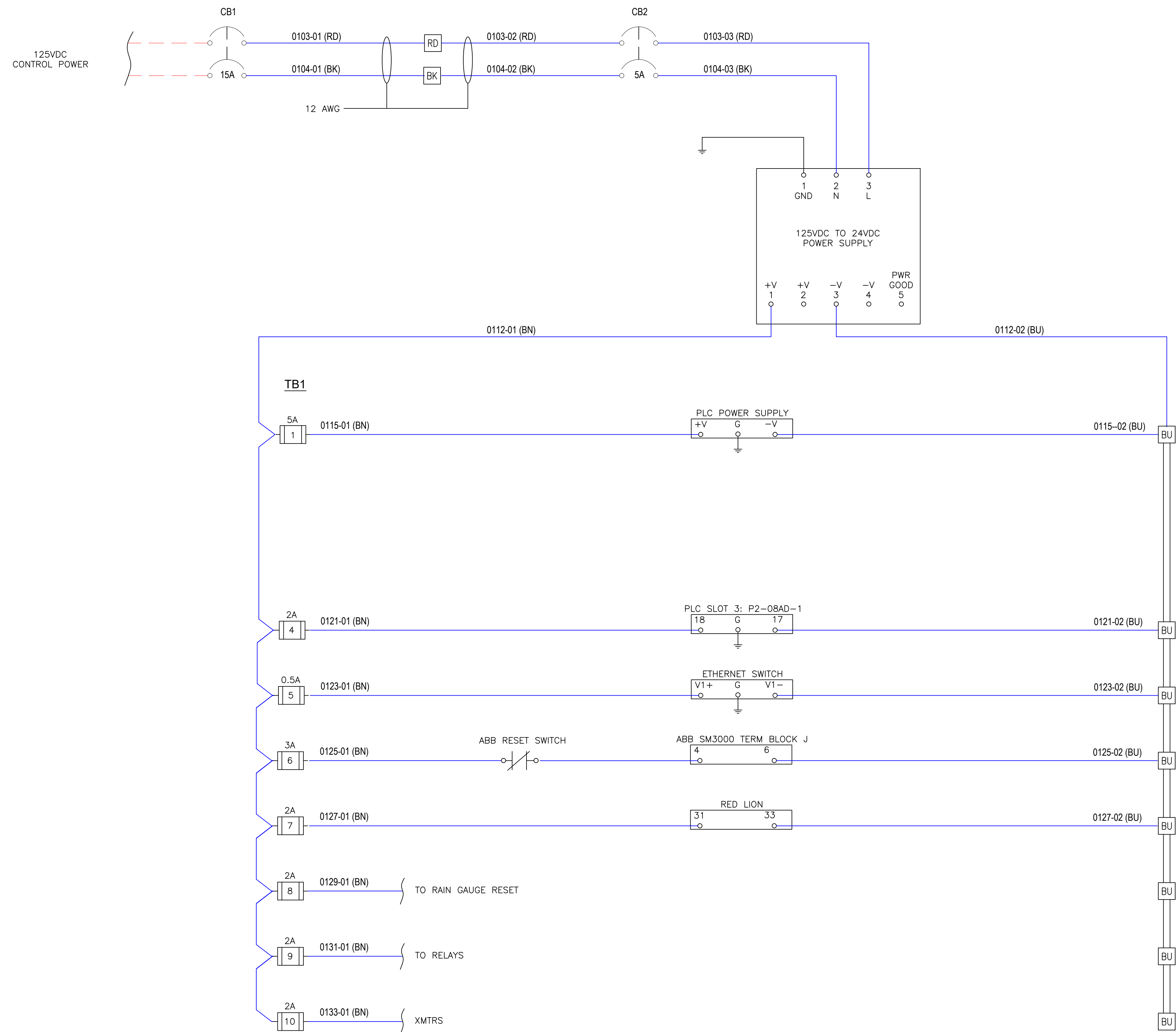
- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



RED GROUP

REMONT ENGINEERING & DESIGN GROUP, LLC
5401 Jefferson Hwy - Suite J Phone: 504.729.5086
Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 5A
PLC POWER DISTRIBUTION

DR: BMP	DWG. No. 5112-P5
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 5 OF 10

A B C D E F G H J K L M

A B C D E F G H J K L M

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LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

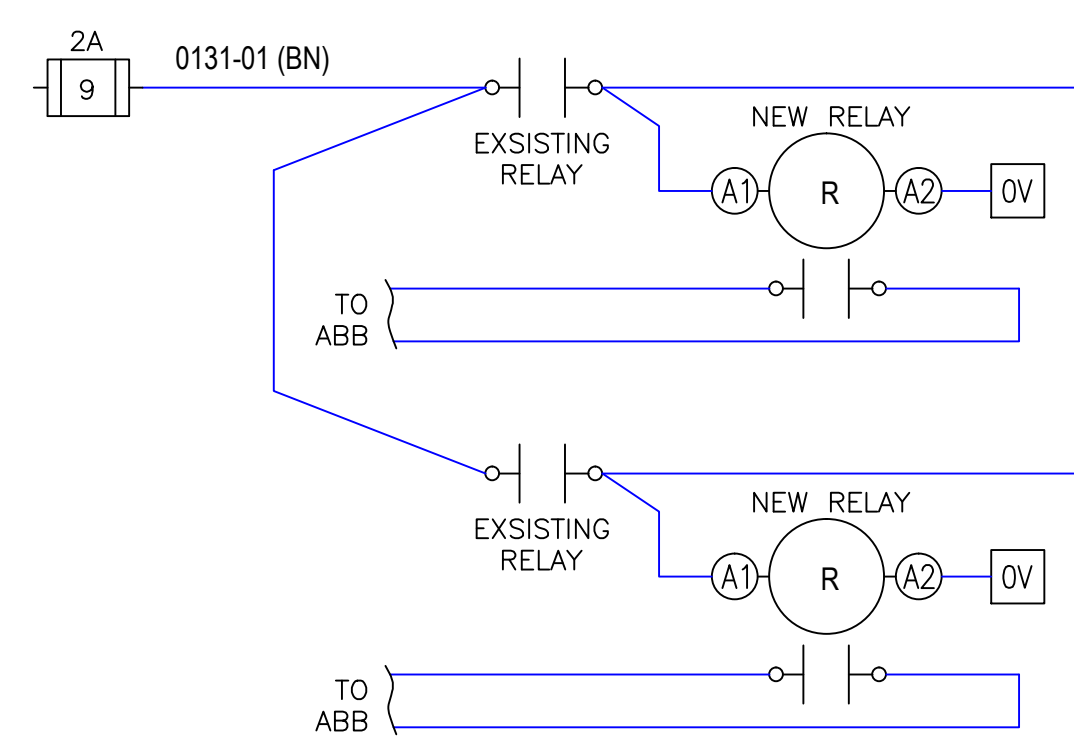
COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

P2-16NE3
SLOT 1
16 CH DIGITAL IN

DC IN		
○ 1	C1	
○ 2	D11	SPARE
○ 3	D12	SPARE
○ 4	D13	SPARE
○ 5	D14	SPARE
○ 6	D15	SPARE
○ 7	D16	SPARE
○ 8	D17	SPARE
○ 9	D18	SPARE
○ 10	C2	
○ 11	D19	SPARE
○ 12	D10	VERTICAL PUMP 1
○ 13	D11	VERTICAL PUMP 2
○ 14	D12	SPARE
○ 15	D13	SPARE
○ 16	D14	SPARE
○ 17	D15	SPARE
○ 18	D16	SPARE



0V (BU) —

0V (BU) —

0225-01 (YL) —

0227-01 (YL) —

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www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 5A

PLC DIGITAL INPUT 1

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5112-P6
DATE: 03/27/2018	SET NO. SHEET NO. 6 OF 10

A B C D E F F G H J K L M

A B C D E F G H J K L M

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LEGEND

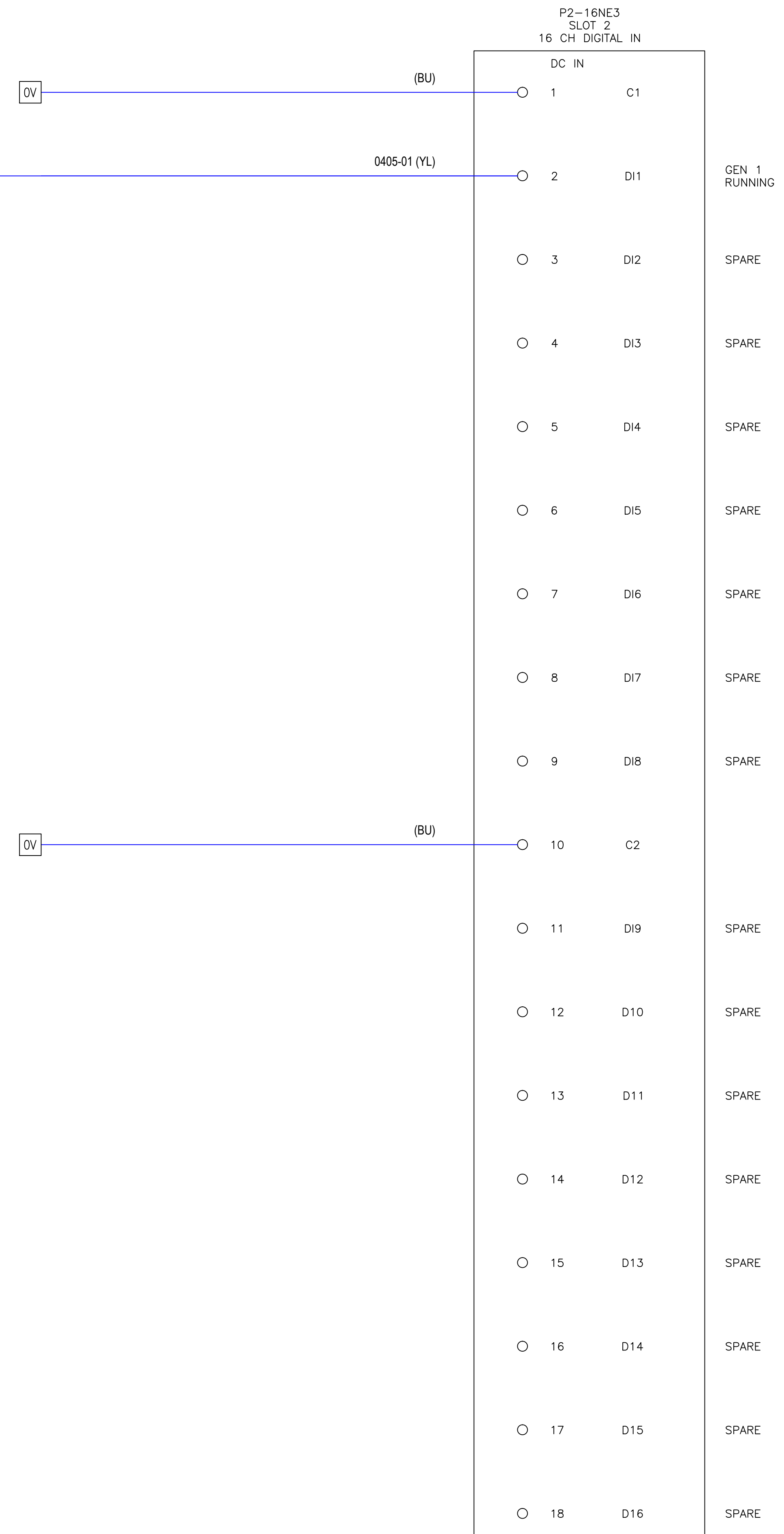
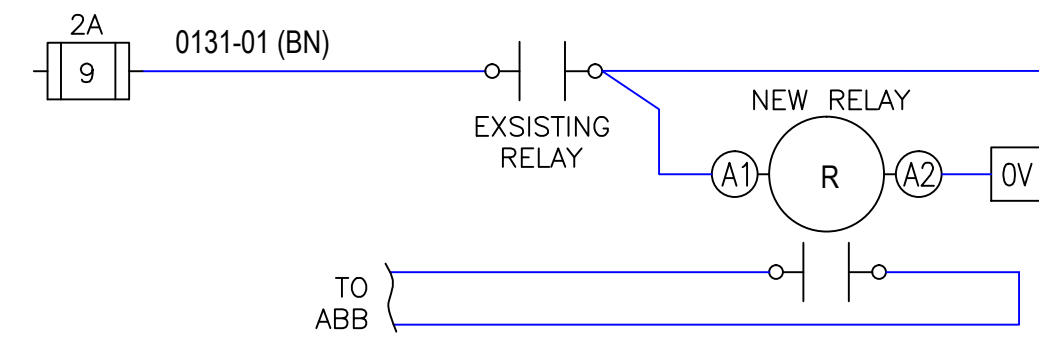
- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY
SEWERAGE AND WATER BOARD OF NEW ORLEANS CONTRACT XXXX SCADA VISIBILITY UPGRADES MODIFICATIONS TO CONTROL CONSOLES DRAINAGE STATION 5A PLC DIGITAL INPUT 2			
DR: BMP			
TRC: JMB			
CK: DAD			
AP: JMB			
SCALE: NONE	DWG. No. 5112-P7		
DATE: 03/27/2018	SET NO.	SHEET NO. 7 OF 10	

A B C D E F F G H J K I M

A B C D E F G H J K L M

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LEGEND

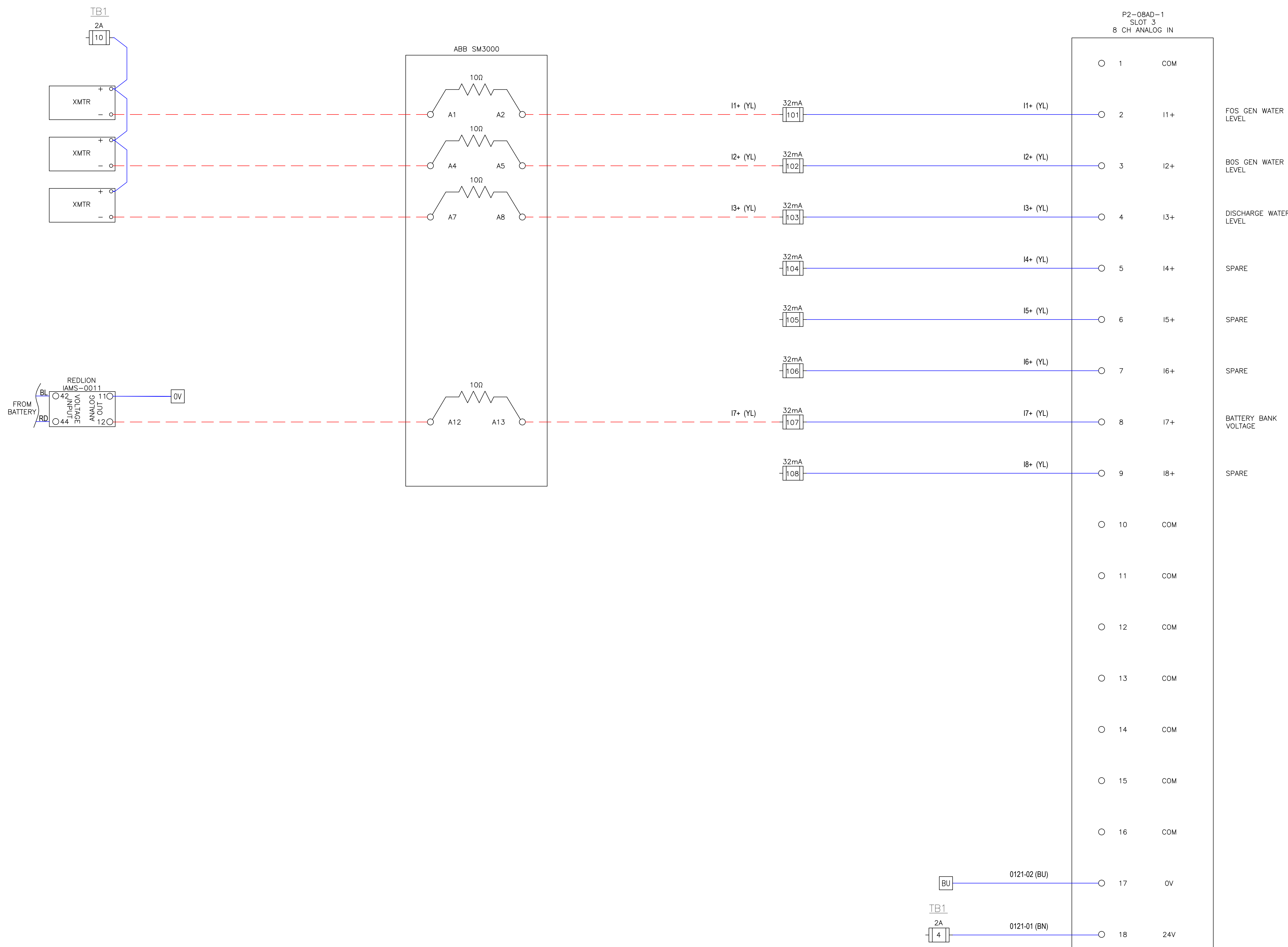
- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



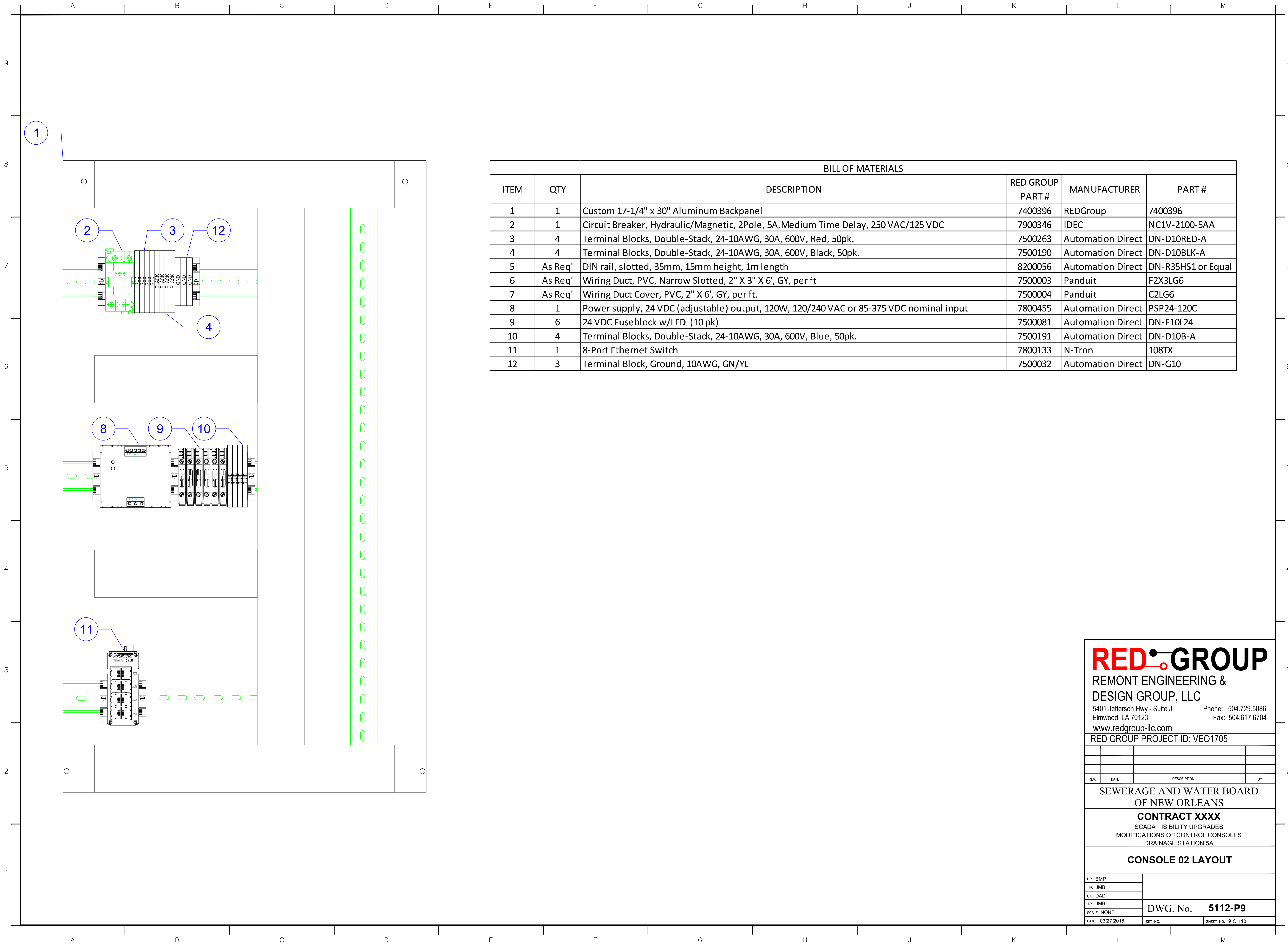
RED GROUP

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DESIGN GROUP, LLC
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Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD
OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 5A

PLC ANALOG INPUT 1

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5112-P8
DATE: 03/27/2018	SET NO. SHEET NO. 8 OF 10



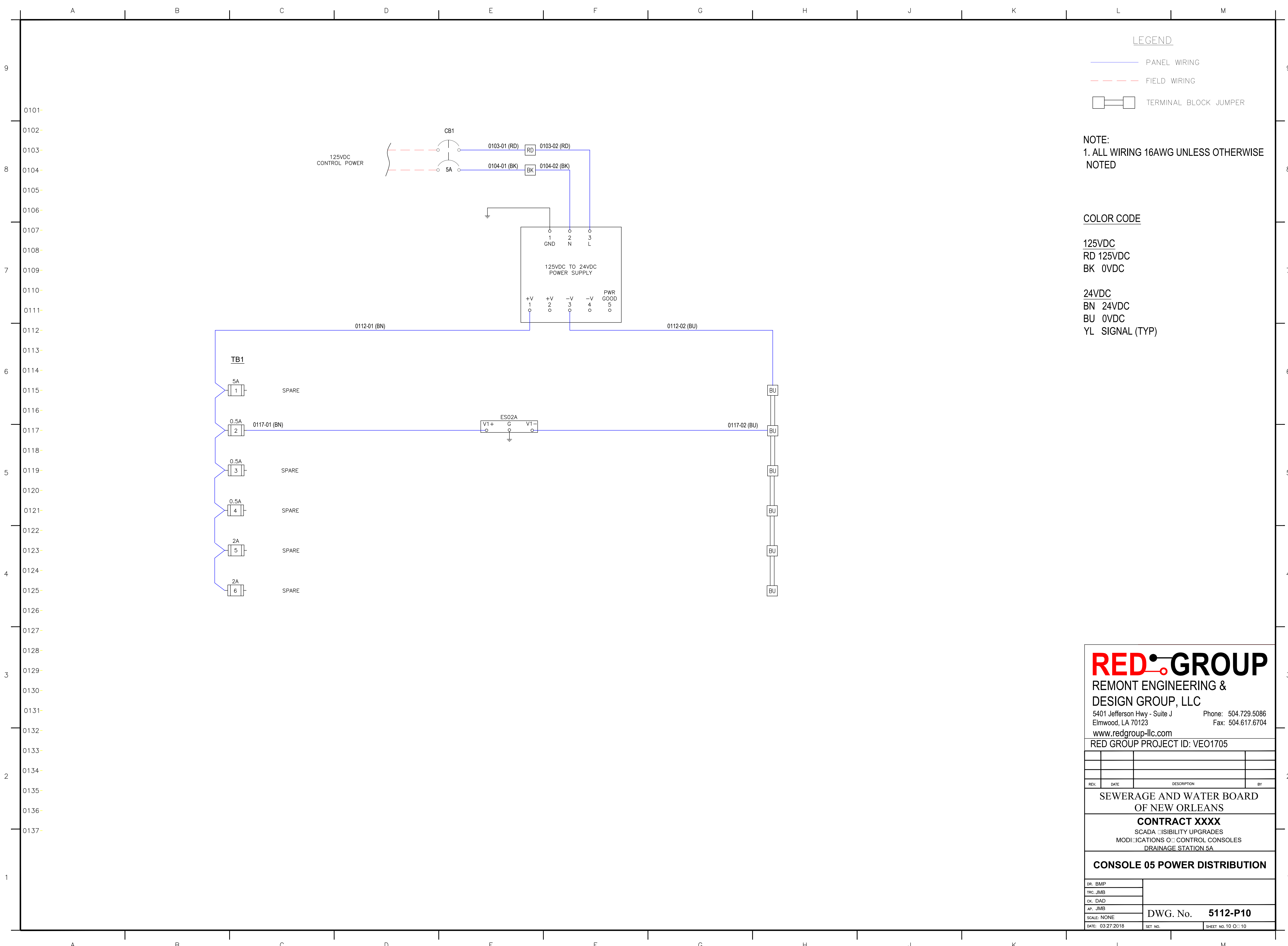
BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

RED GROUP
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 DESIGN GROUP, LLC
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 Elmwood, LA 70123 Fax: 504.617.6704
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 RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 5A

CONSOLE 02 LAYOUT

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5112-P9
DATE: 03.27.2018	SET NO. SHEET NO. 9 OF 10



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



REMONT ENGINEERING & DESIGN GROUP, LLC
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

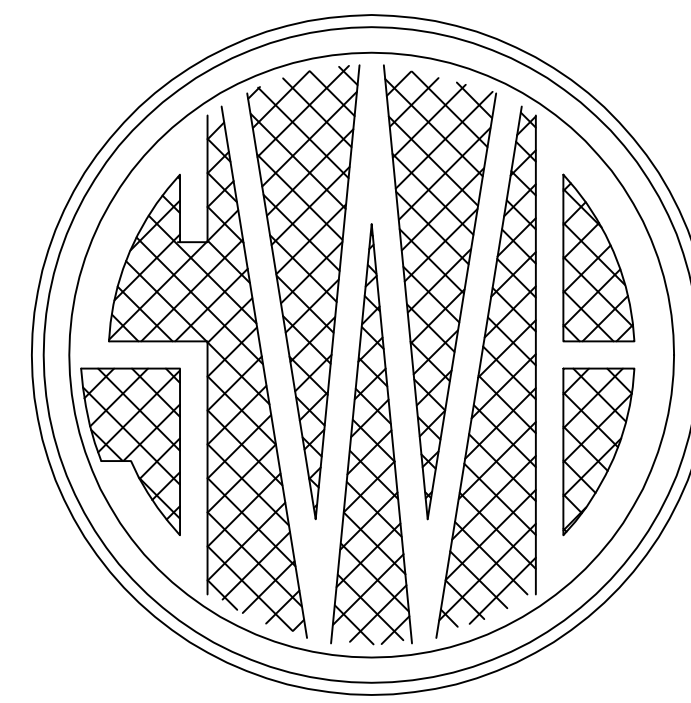
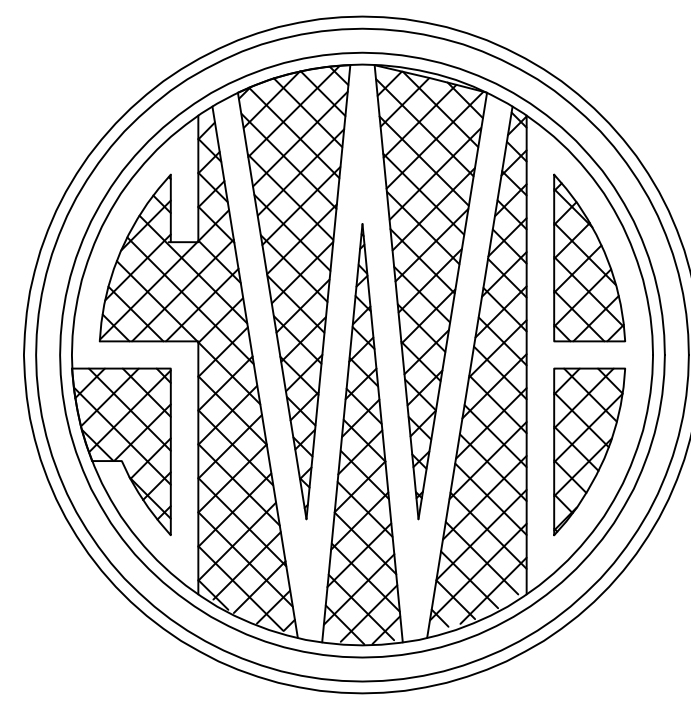
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 5A

CONSOLE 05 POWER DISTRIBUTION

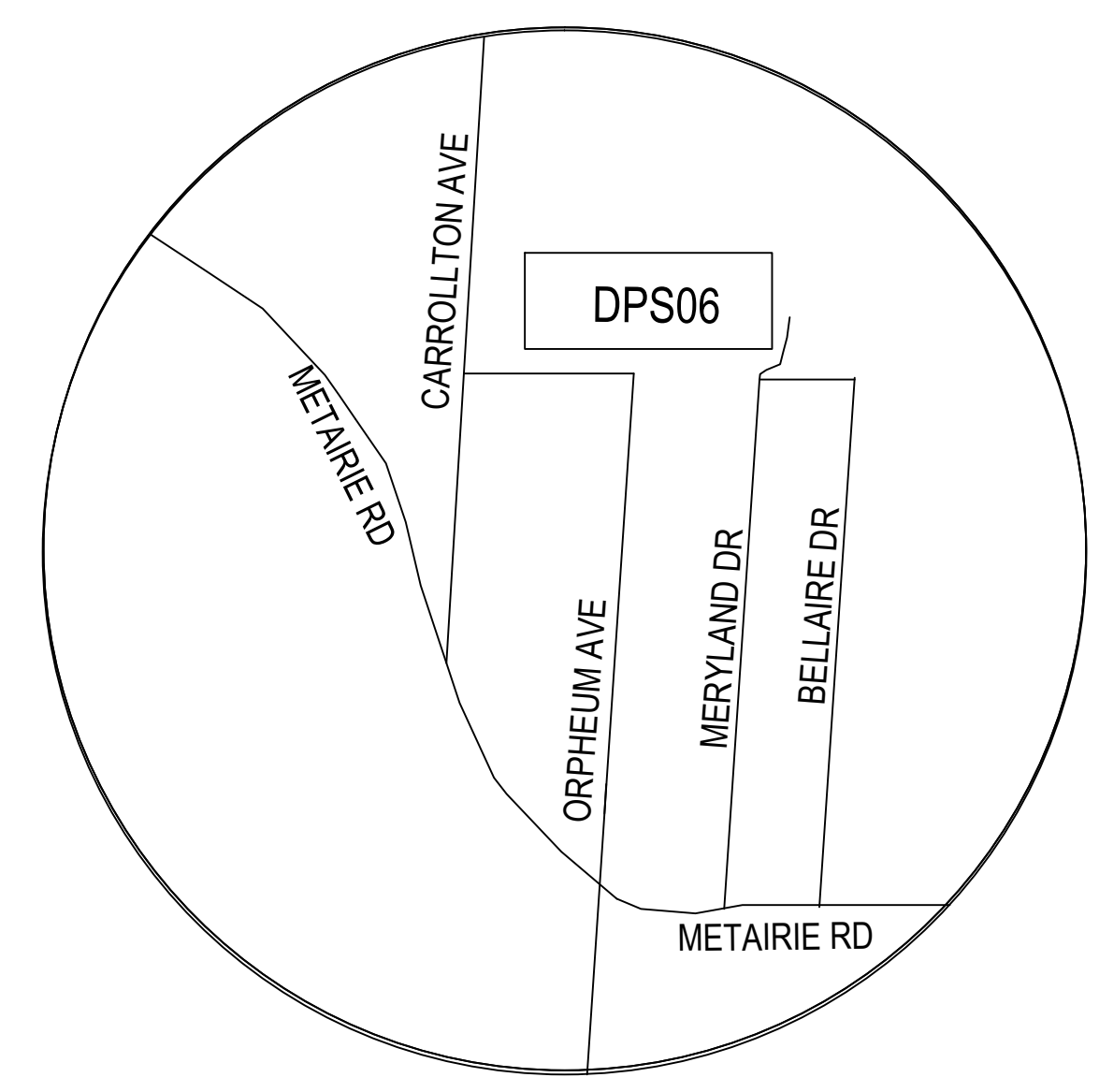
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CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 10 OF 10

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 6



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS	14	CONSOLE 12 POWER DISTRIBUTION
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 03 LAYOUT		
10	CONSOLE 03 POWER DISTRIBUTION		
11	CONSOLE 11 LAYOUT		
12	CONSOLE 11 POWER DISTRIBUTION		
13	CONSOLE 12 LAYOUT		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

RED GROUP

REMONT ENGINEERING & DESIGN GROUP, LLC

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Elmwood, LA 70123 Fax: 504.617.6704

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RED GROUP PROJECT ID: VEO1705

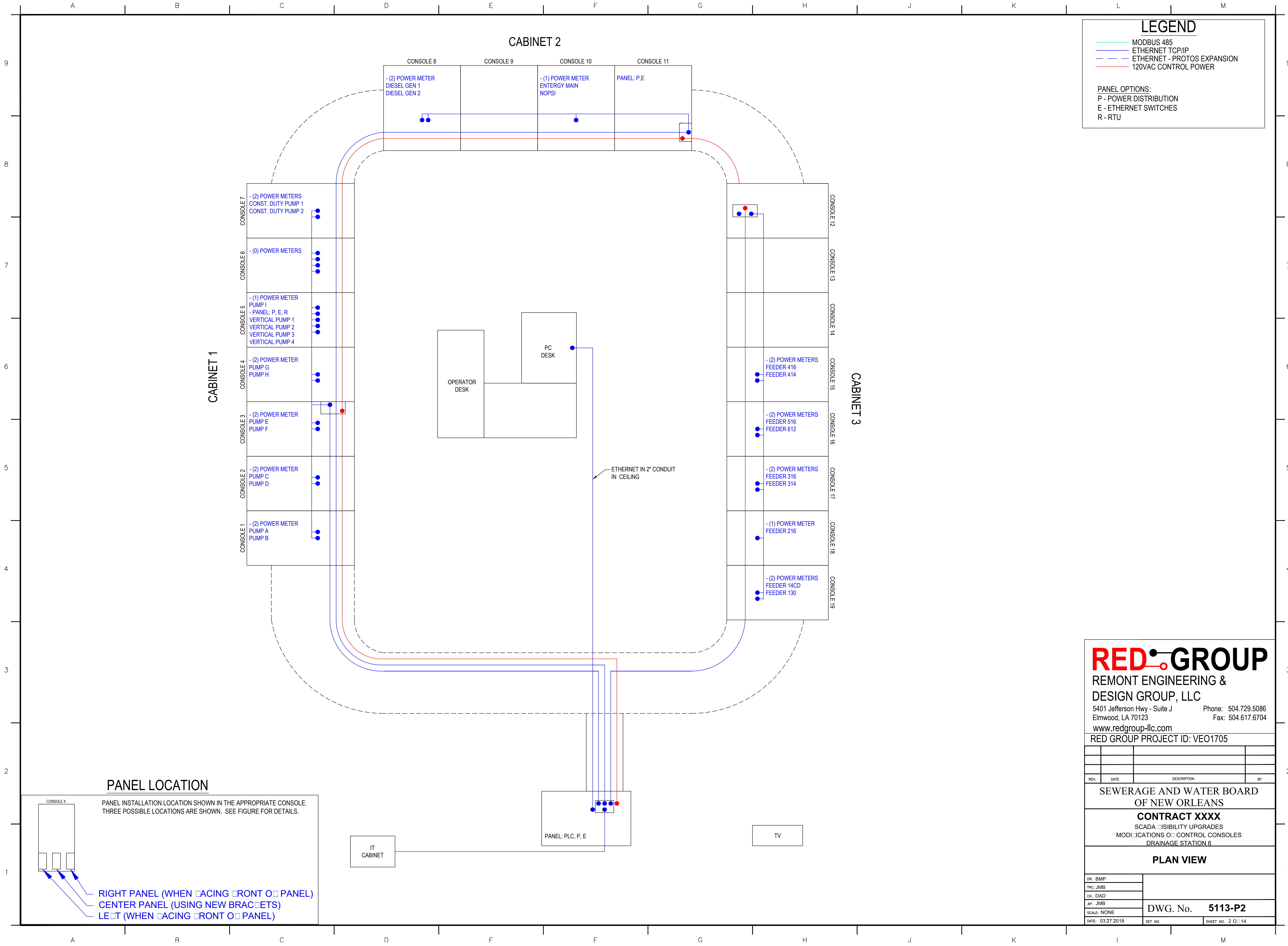
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 6

INDEX OF SHEETS

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5113-P1
DATE: 03/27/2018	SET NO. SHEET NO. 1 OF 14



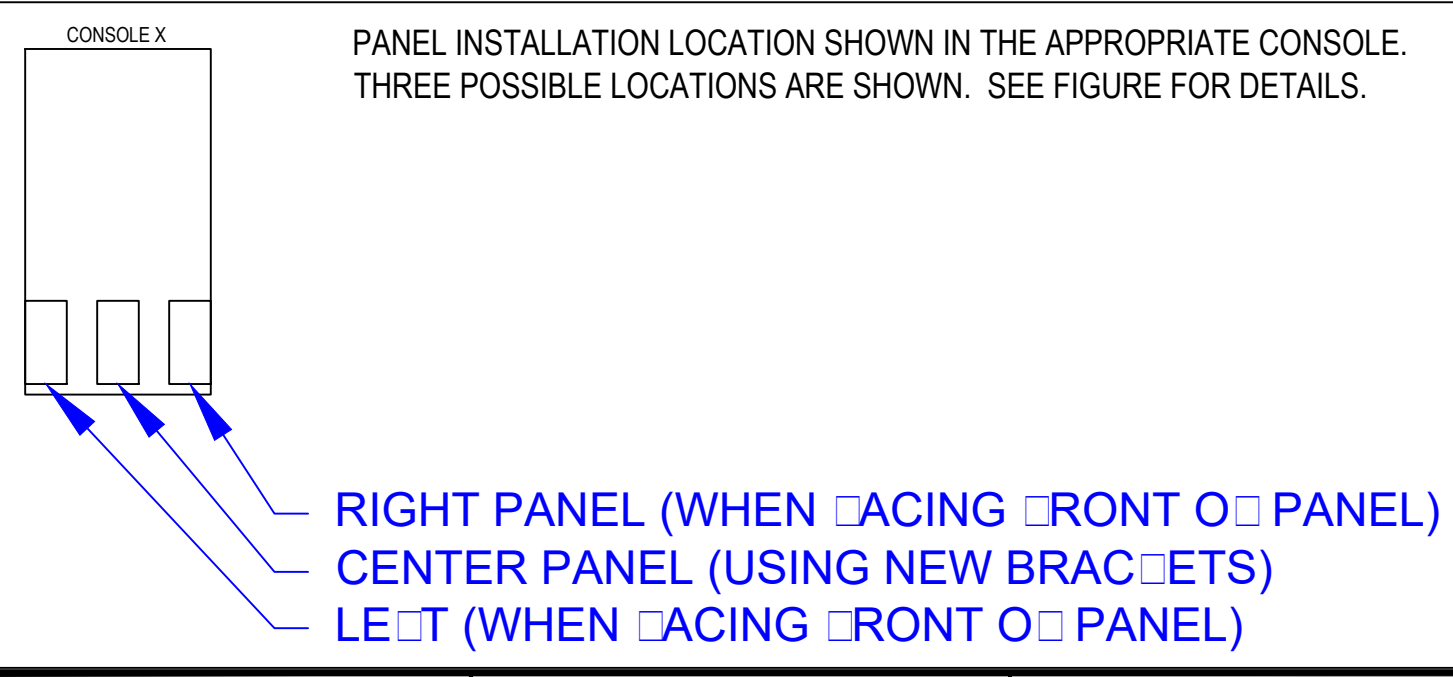
LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- ETHERNET - PROTOS EXPANSION
- 120VAC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU

PANEL LOCATION

PANEL INSTALLATION LOCATION SHOWN IN THE APPROPRIATE CONSOLE. THREE POSSIBLE LOCATIONS ARE SHOWN. SEE FIGURE FOR DETAILS.



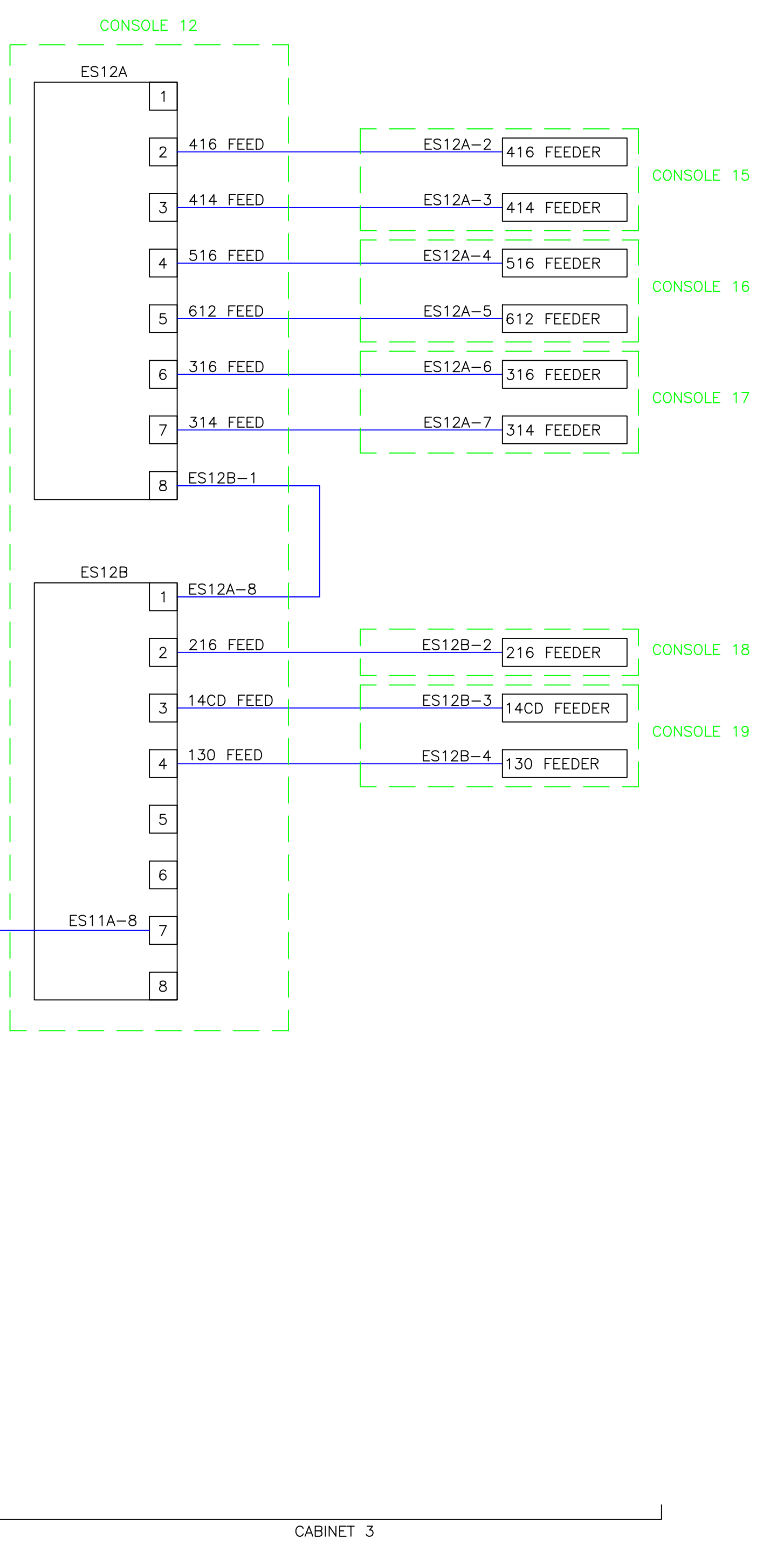
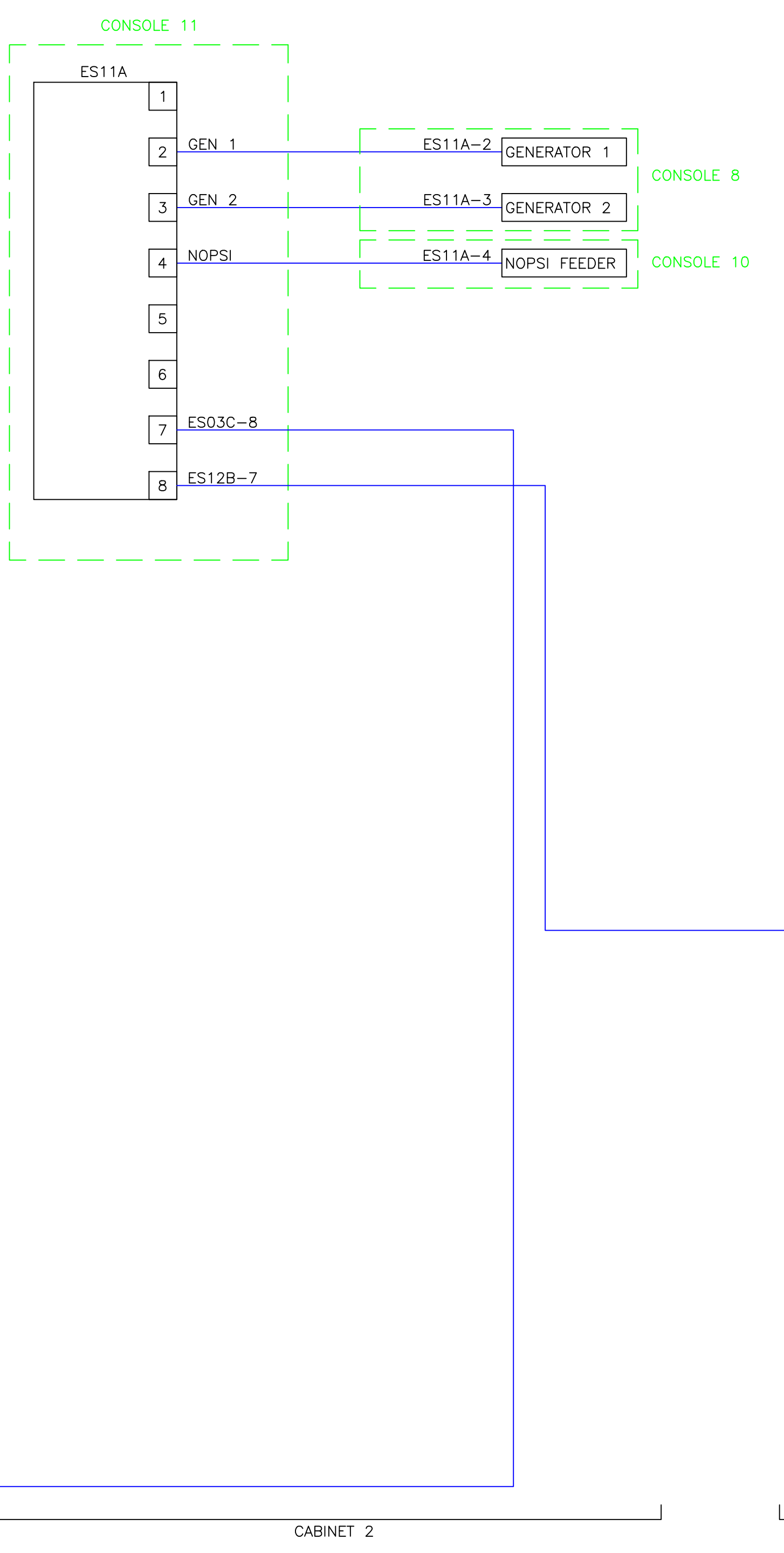
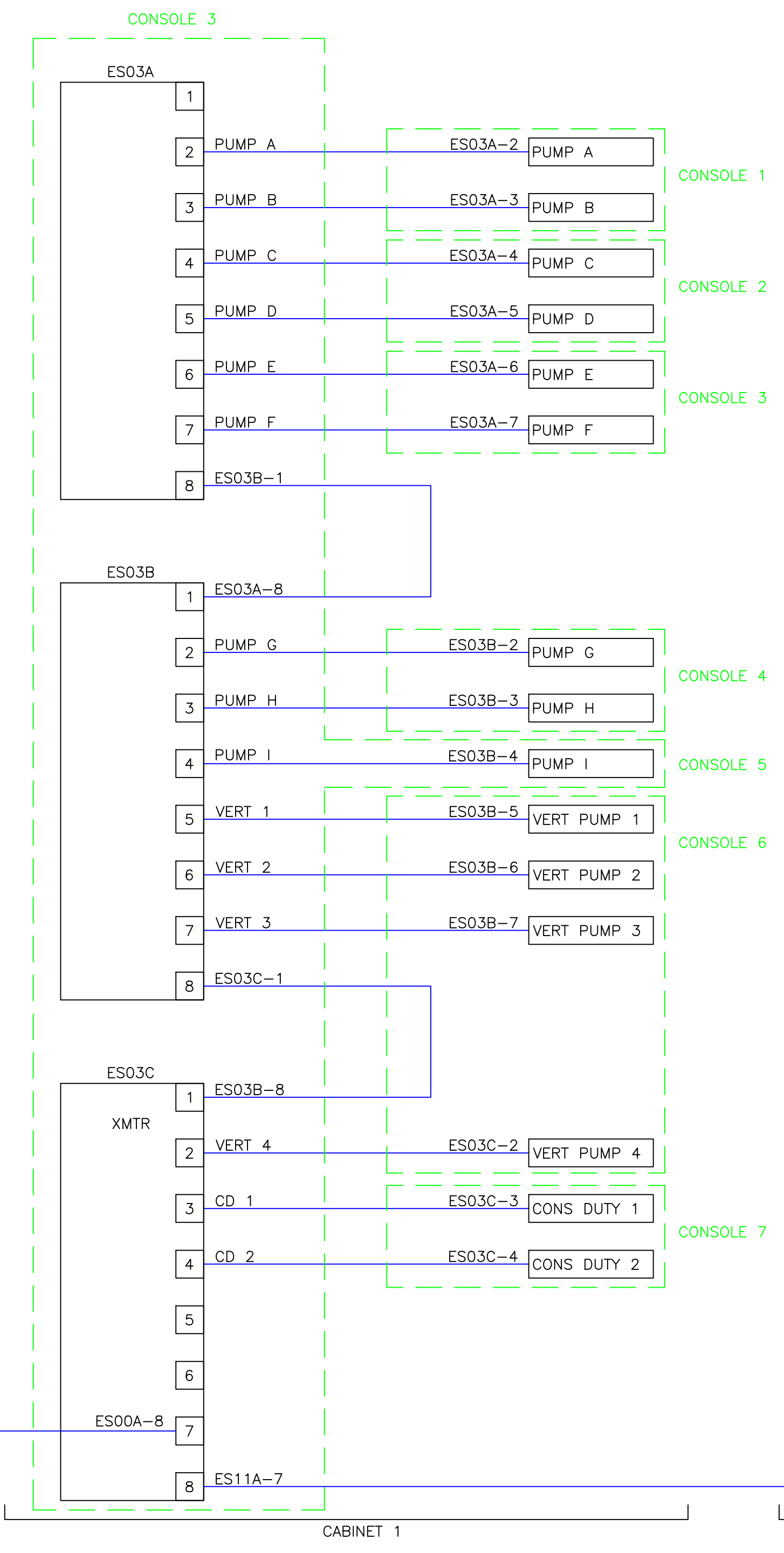
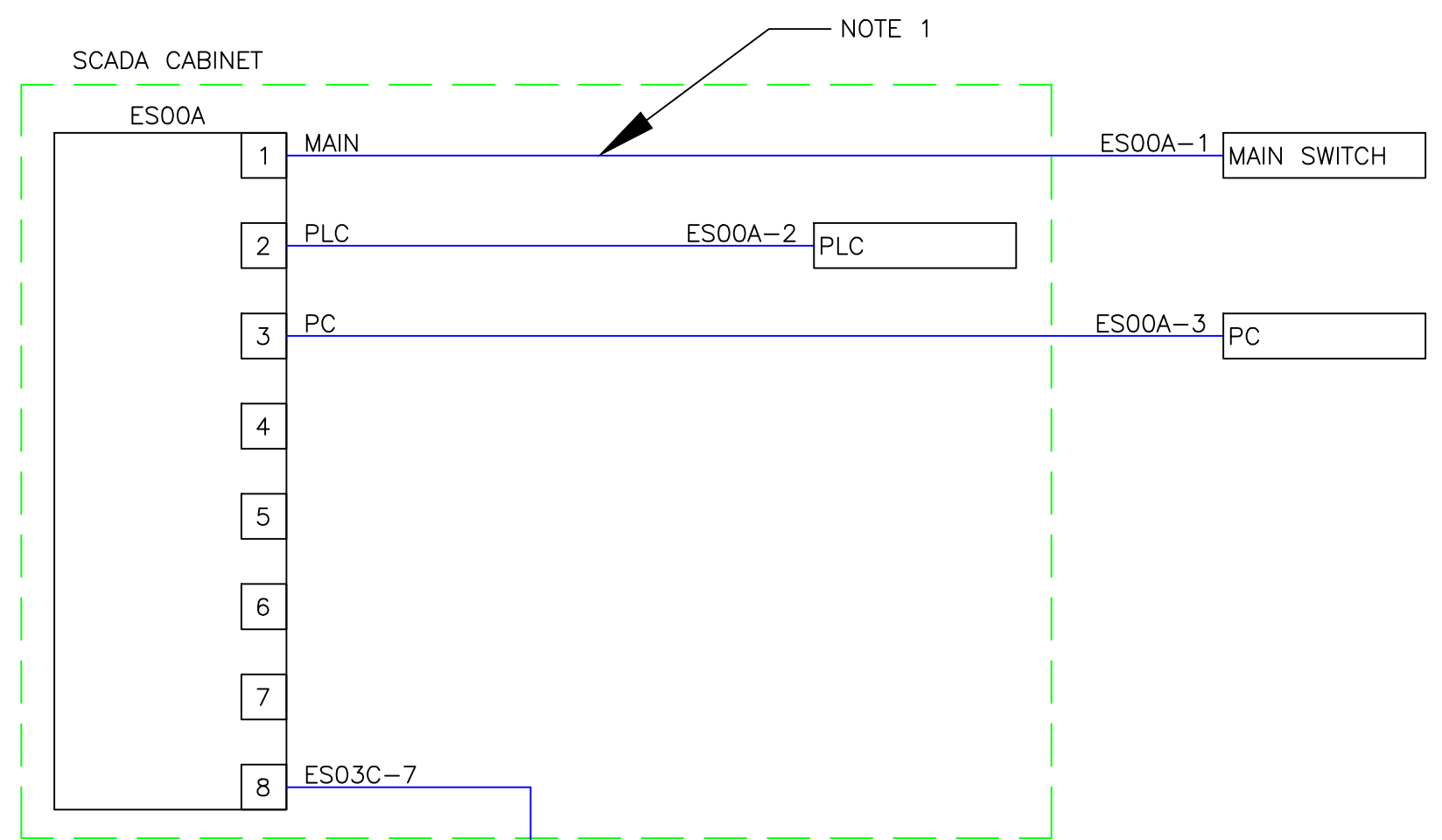
RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 6

PLAN VIEW

DR: BMP	DWG. No. 5113-P2
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 2 OF 14



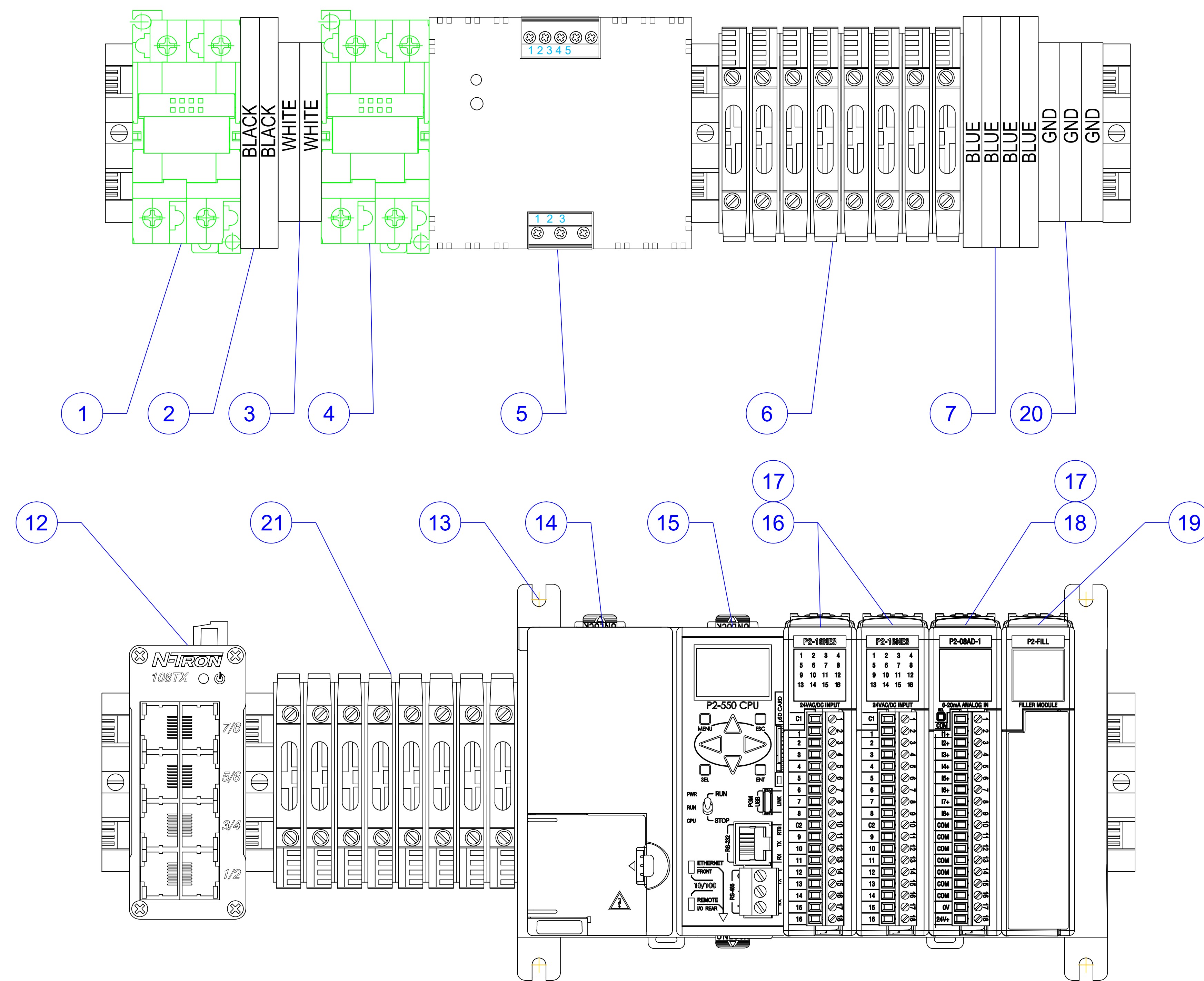
NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

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 REMONT ENGINEERING &
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 6
NETWORK DIAGRAM

DR: BMP	DWG. No. 5113-P3
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 3 OF 14



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
3	2	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

RED GROUP

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Elmwood, LA 70123 Fax: 504.617.6704

www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY
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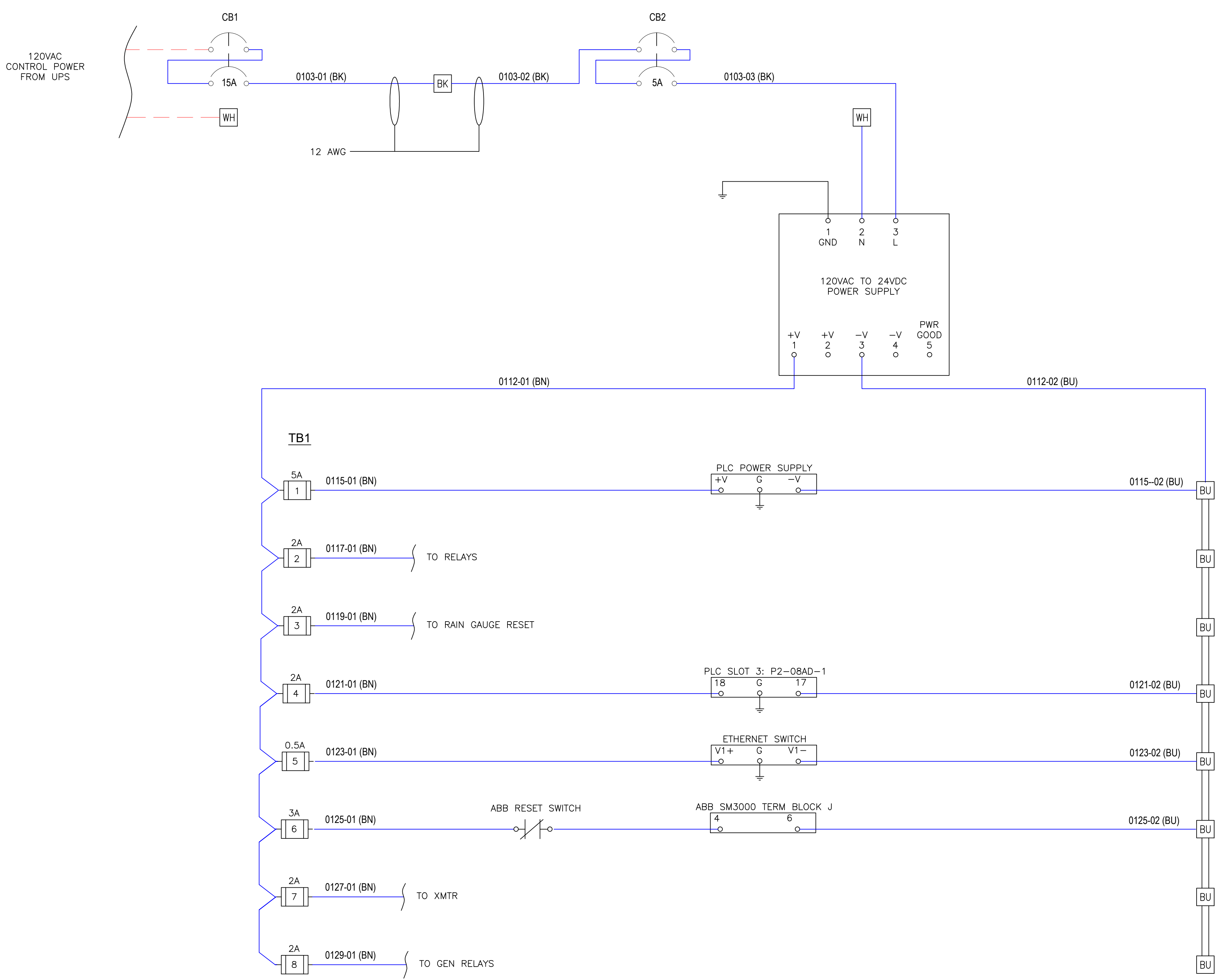
**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 6

PLC LAYOUT

DR: BMP	DWG. No. 5113-P4
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 4 OF 14

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LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 120VAC
- BK 120VAC
- WH NEUTRAL
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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5401 Jefferson Hwy - Suite J Phone: 504.729.5086
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RED GROUP PROJECT ID: VEO1705

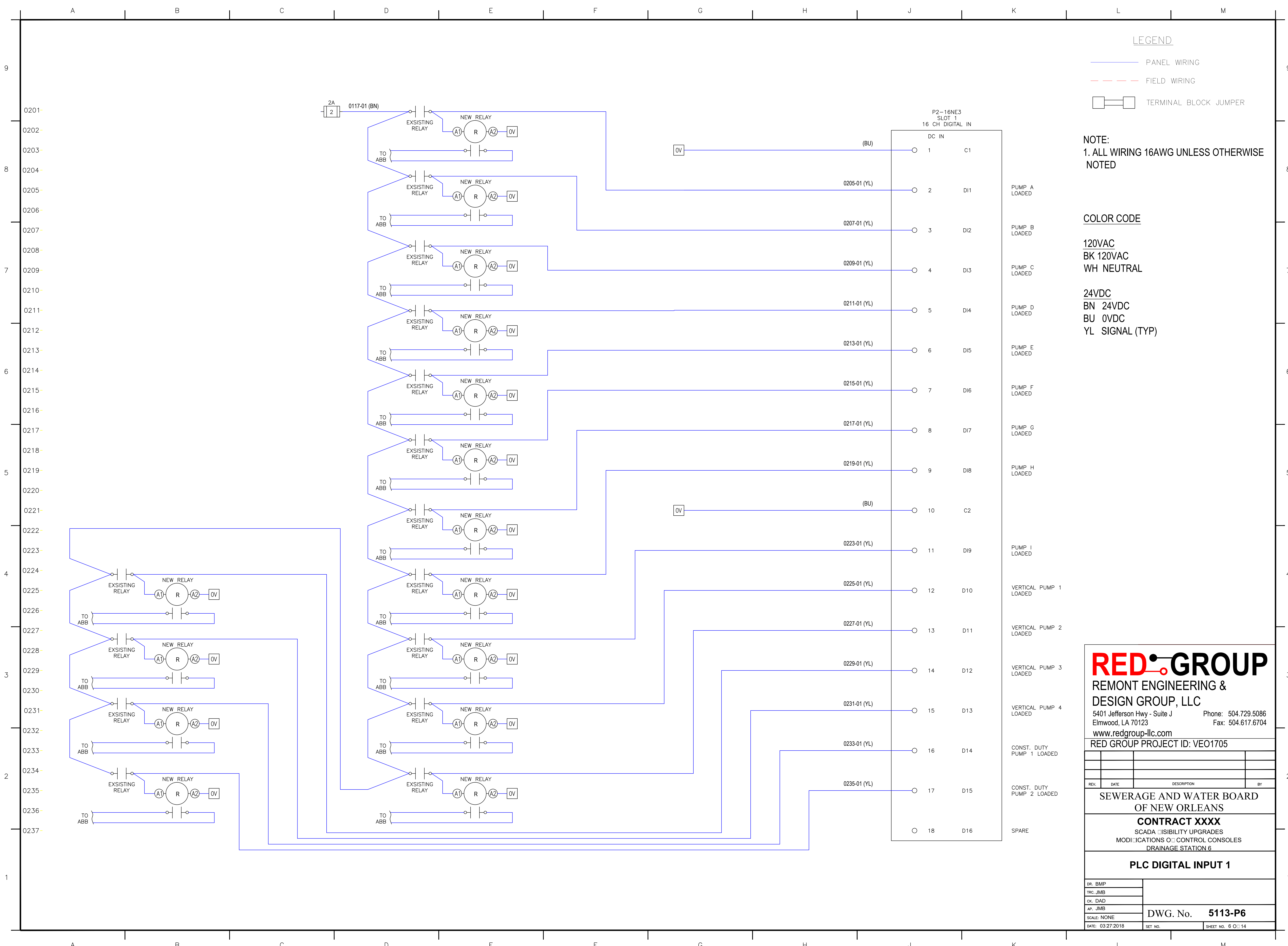
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 6

PLC POWER DISTRIBUTION

DR. BMP	DWG. No. 5113-P5
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 5 OF 14

A B C D E F G H J K L M



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
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COLOR CODE

- 120VAC**
- BK 120VAC
- WH NEUTRAL
- 24VDC**
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

P2-16NE3 SLOT 1 16 CH DIGITAL IN	
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1	C1
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5	D14
6	D15
7	D16
8	D17
9	D18
10	C2
11	D19
12	D10
13	D11
14	D12
15	D13
16	D14
17	D15
18	D16

- PUMP A LOADED
- PUMP B LOADED
- PUMP C LOADED
- PUMP D LOADED
- PUMP E LOADED
- PUMP F LOADED
- PUMP G LOADED
- PUMP H LOADED
- PUMP I LOADED
- VERTICAL PUMP 1 LOADED
- VERTICAL PUMP 2 LOADED
- VERTICAL PUMP 3 LOADED
- VERTICAL PUMP 4 LOADED
- CONST. DUTY PUMP 1 LOADED
- CONST. DUTY PUMP 2 LOADED
- SPARE



REMOVED ENGINEERING & DESIGN GROUP, LLC
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 6

PLC DIGITAL INPUT 1

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5113-P6
DATE: 03.27.2018	SET NO. SHEET NO. 6 OF 14

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LEGEND

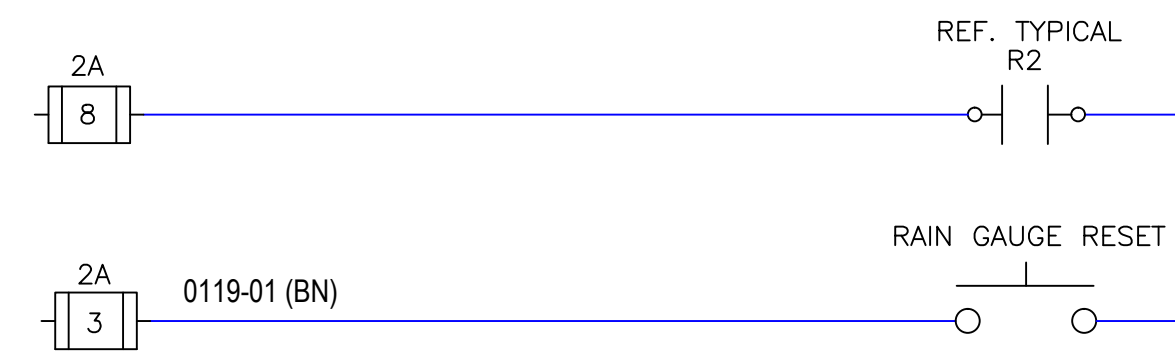
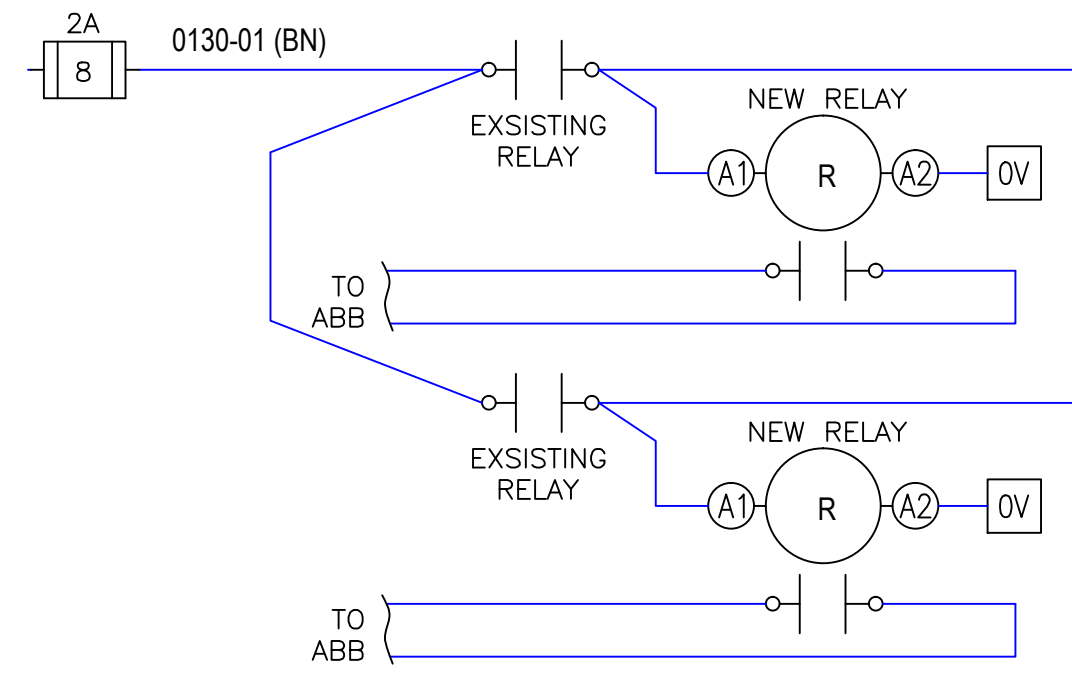
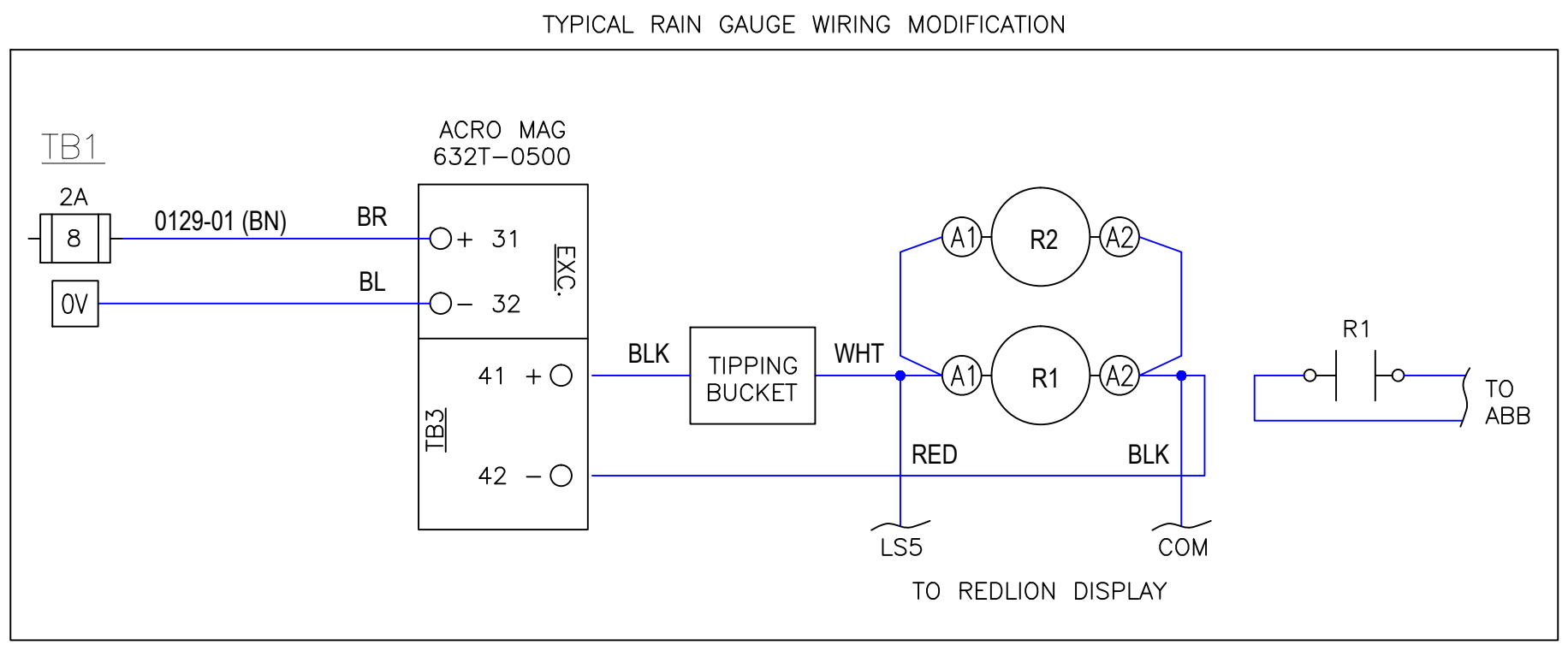


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

120VAC
BK 120VAC
WH NEUTRAL

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



P2-16NE3 SLOT 2 16 CH DIGITAL IN	
DC IN	
1	C1
2	D11
3	D12
4	D13
5	D14
6	D15
7	D16
8	D17
9	D18
10	C2
11	D19
12	D10
13	D11
14	D12
15	D13
16	D14
17	D15
18	D16

GEN 1 RUNNING
GEN 2 RUNNING
SPARE
SPARE
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RAIN GAUGE TIP SIGNAL
RAIN GAUGE RESET SWITCH
SPARE
SPARE
SPARE
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RED GROUP PROJECT ID: VEO1705

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 6
PLC DIGITAL INPUT 2

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5113-P7
DATE: 03.27.2018	SET NO. SHEET NO. 7 OF 14

A B C D E F F G H J K L M

A B C D E F G H J K L M

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LEGEND

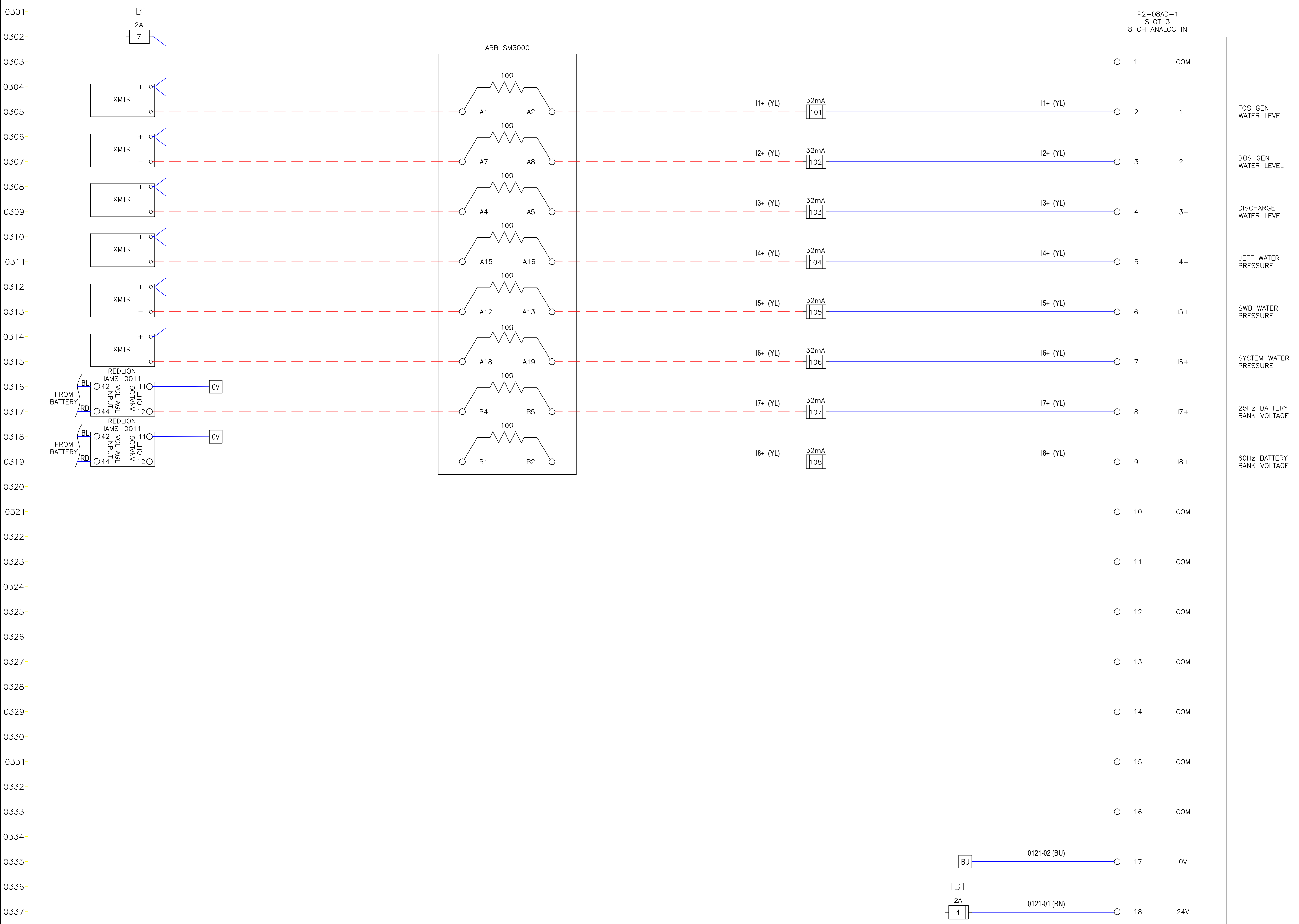


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

120VAC
BK 120VAC
WH NEUTRAL

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



P2-08AD-1
SLOT 3
8 CH ANALOG IN

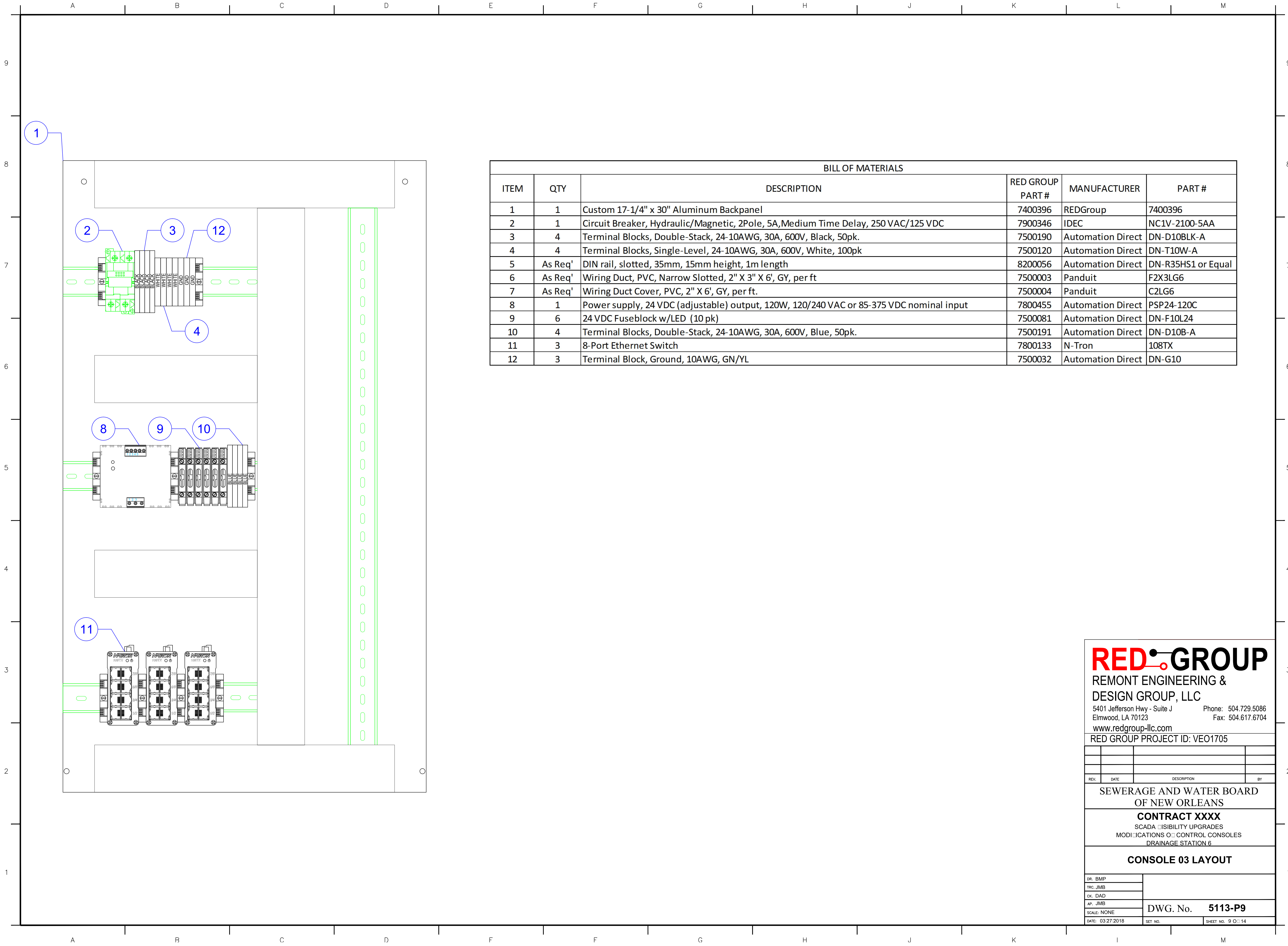
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7	16+
8	17+
9	18+
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11	COM
12	COM
13	COM
14	COM
15	COM
16	COM
17	0V
18	24V

FOS GEN WATER LEVEL
BOS GEN WATER LEVEL
DISCHARGE WATER LEVEL
JEFF WATER PRESSURE
SWB WATER PRESSURE
SYSTEM WATER PRESSURE
25Hz BATTERY BANK VOLTAGE
60Hz BATTERY BANK VOLTAGE

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SEWERAGE AND WATER BOARD
OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 6
PLC ANALOG INPUT 1

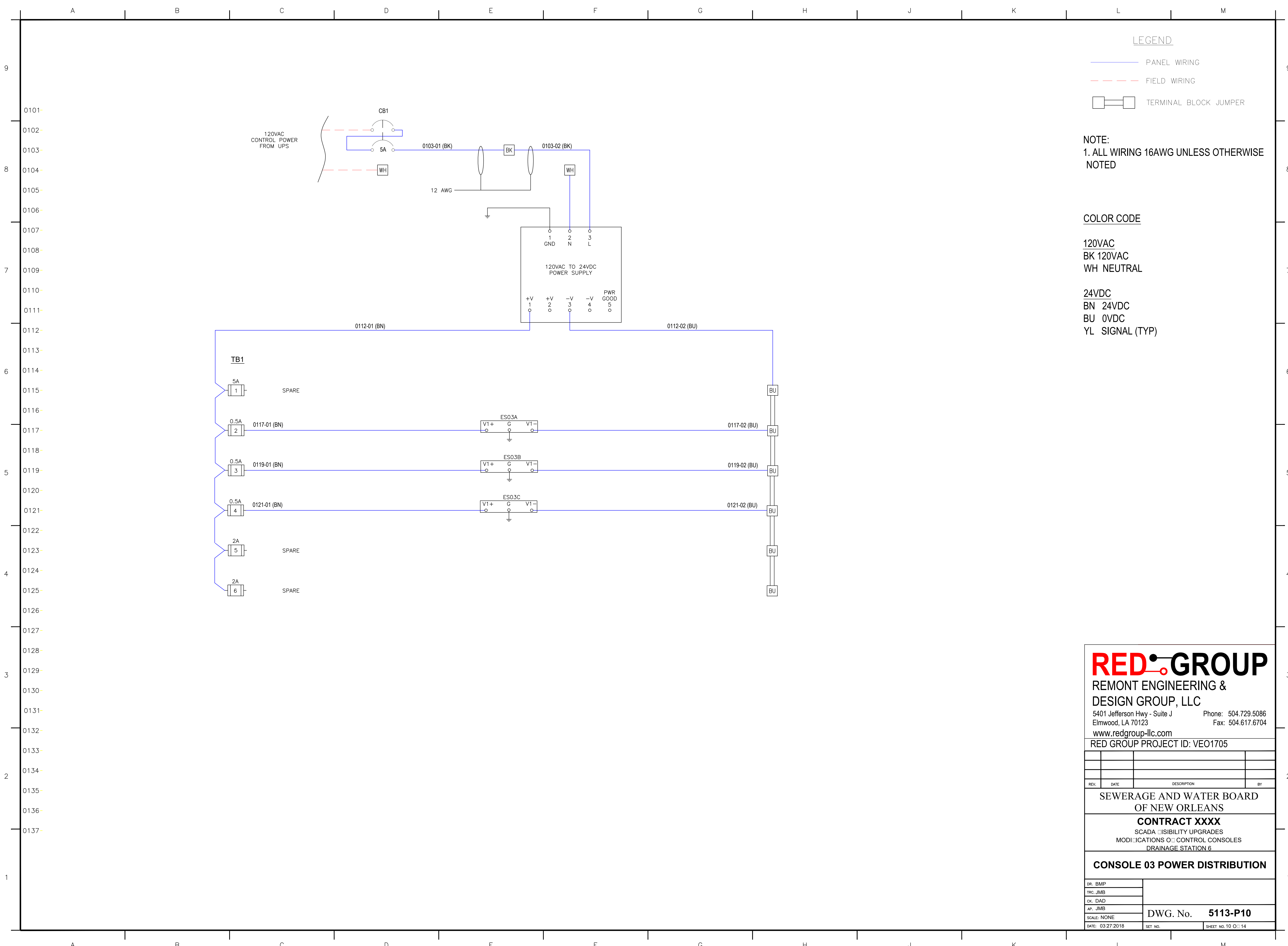
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TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5113-P8
DATE: 03/27/2018	SET NO. SHEET NO. 8 OF 14



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	3	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY
SEWERAGE AND WATER BOARD OF NEW ORLEANS			
CONTRACT XXXX			
SCADA VISIBILITY UPGRADES MODIFICATIONS CONTROL CONSOLES DRAINAGE STATION 6			
CONSOLE 03 LAYOUT			
DR. BMP			
TRC. JMB			
CK. DAD			
AP. JMB			
SCALE: NONE	DWG. No. 5113-P9		
DATE: 03.27.2018	SET NO.	SHEET NO. 9 OF 14	



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 120VAC**
BK 120VAC
WH NEUTRAL
- 24VDC**
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



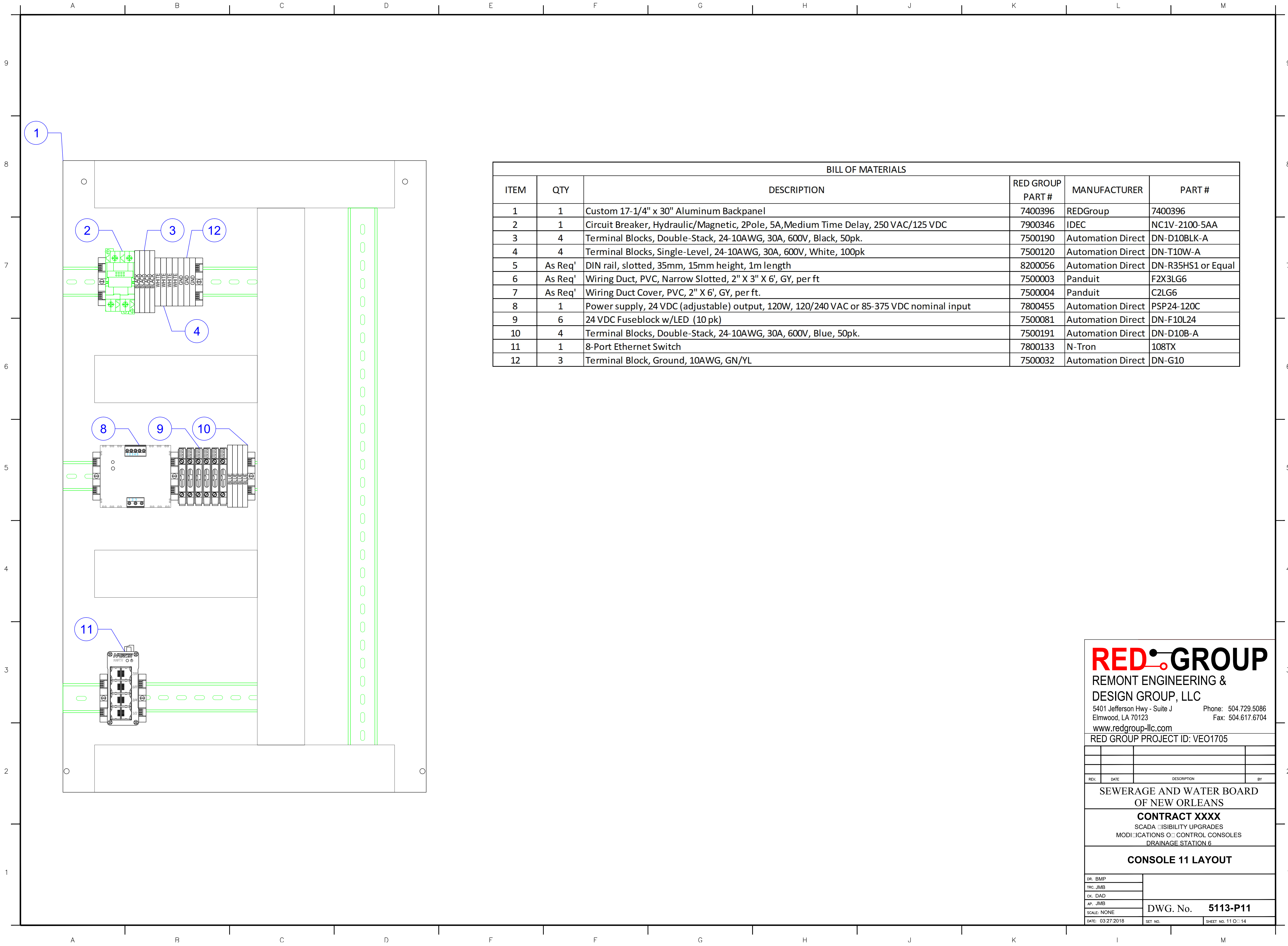
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Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 6

CONSOLE 03 POWER DISTRIBUTION

DR: BMP	DWG. No. 5113-P10
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 10 OF 14



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

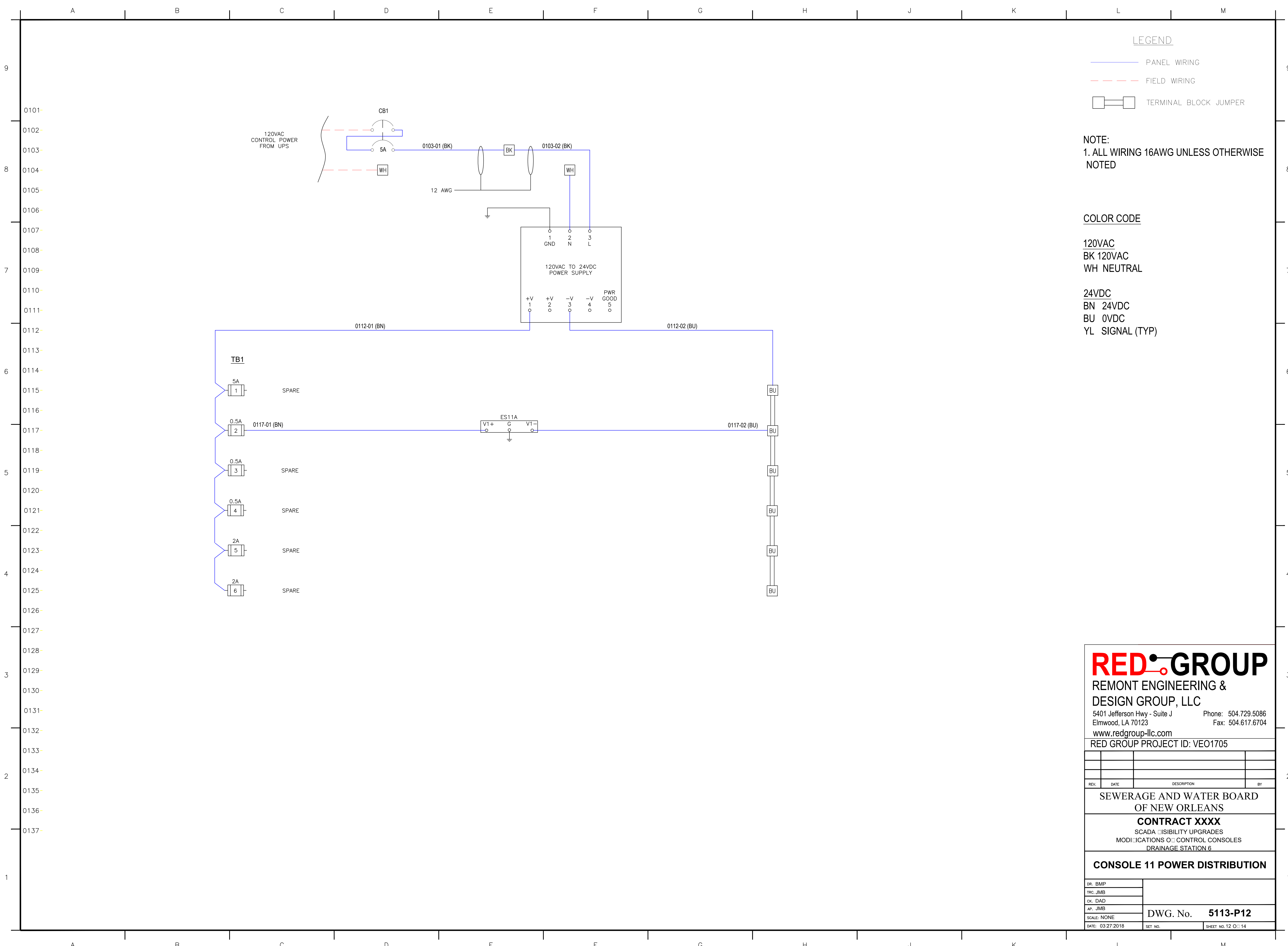
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 DESIGN GROUP, LLC
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 www.redgroup-llc.com
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REV.	DATE	DESCRIPTION	BY

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 OF NEW ORLEANS
CONTRACT XXXX
 SCADA ■ ISIBILITY UPGRADES
 MODIFICATIONS ○ CONTROL CONSOLES
 DRAINAGE STATION 6

CONSOLE 11 LAYOUT

DR: BMP	DWG. No. 5113-P11
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 11 OF 14



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 120VAC**
BK 120VAC
WH NEUTRAL
- 24VDC**
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



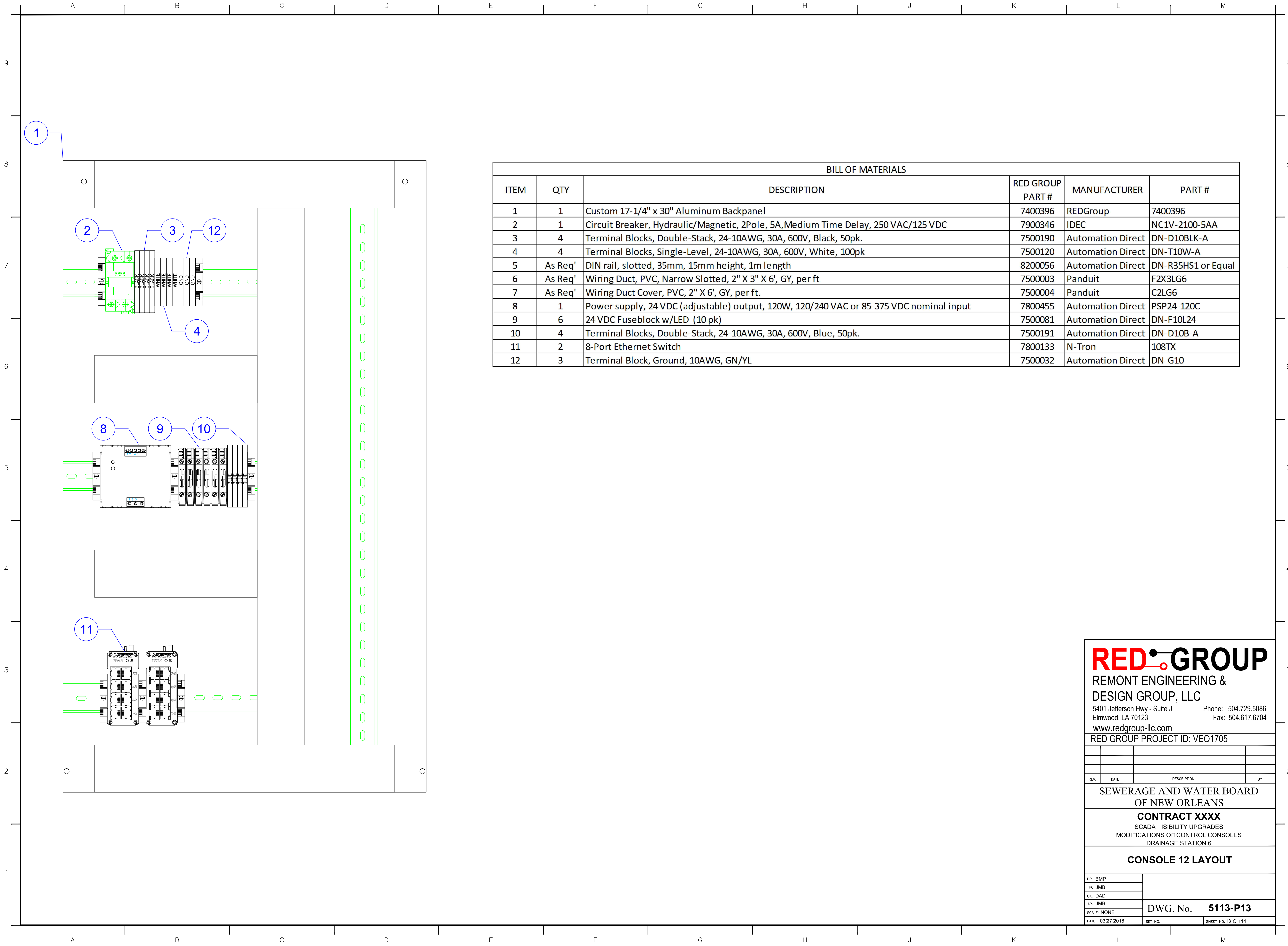
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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 6

CONSOLE 11 POWER DISTRIBUTION

DR: BMP	DWG. No. 5113-P12
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 12 OF 14



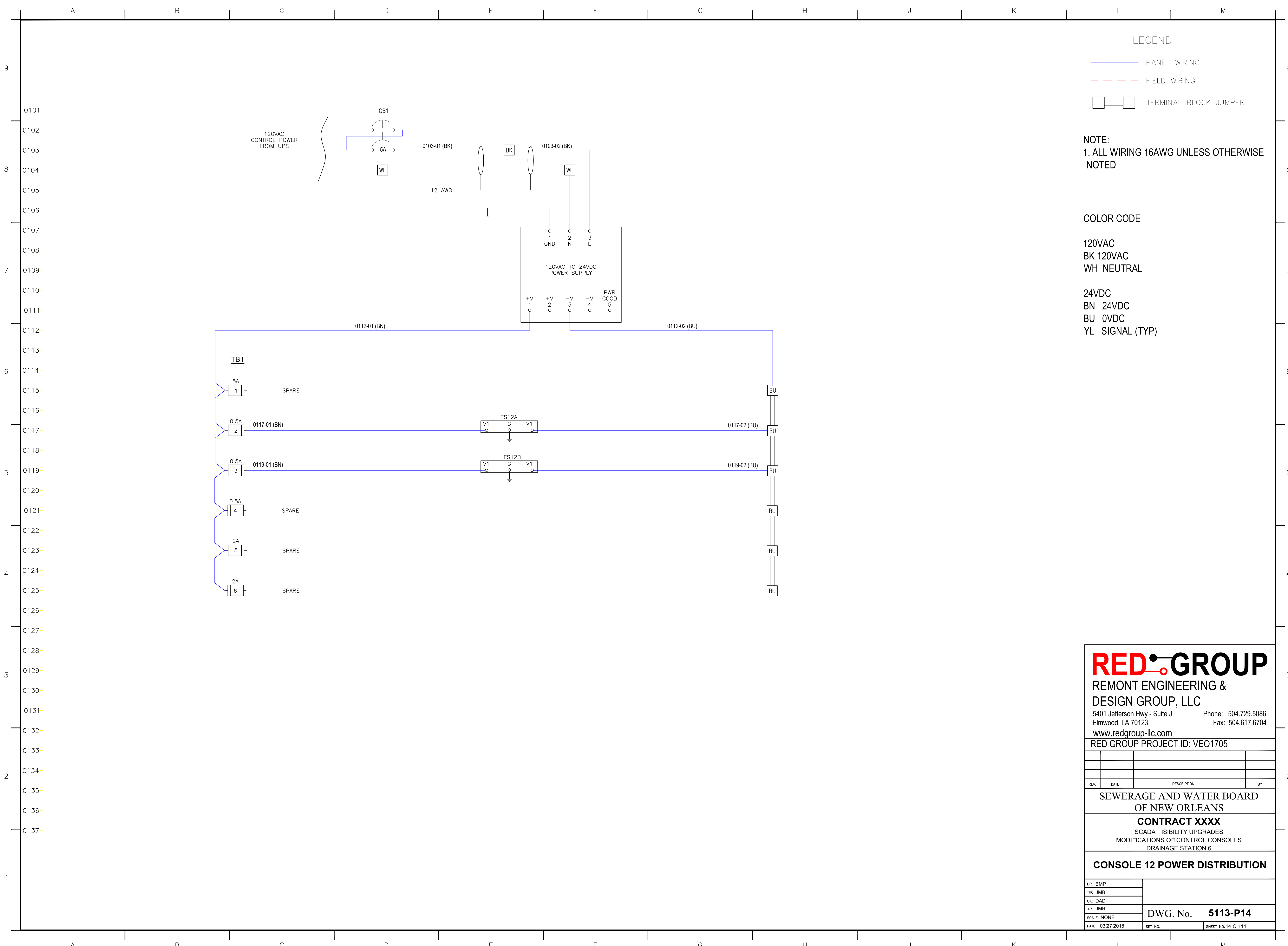
BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 6

CONSOLE 12 LAYOUT

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5113-P13
DATE: 03/27/2018	SET NO. SHEET NO. 13 OF 14



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 120VAC
- BK 120VAC
- WH NEUTRAL
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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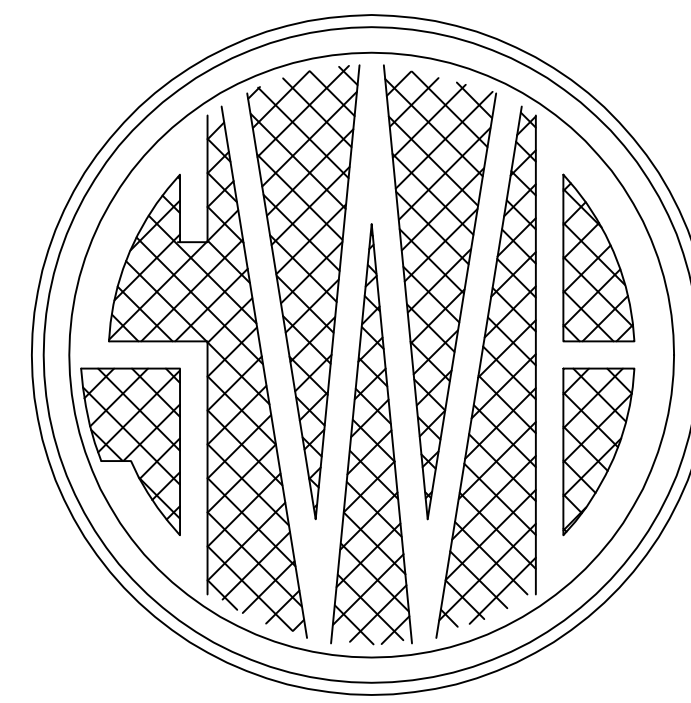
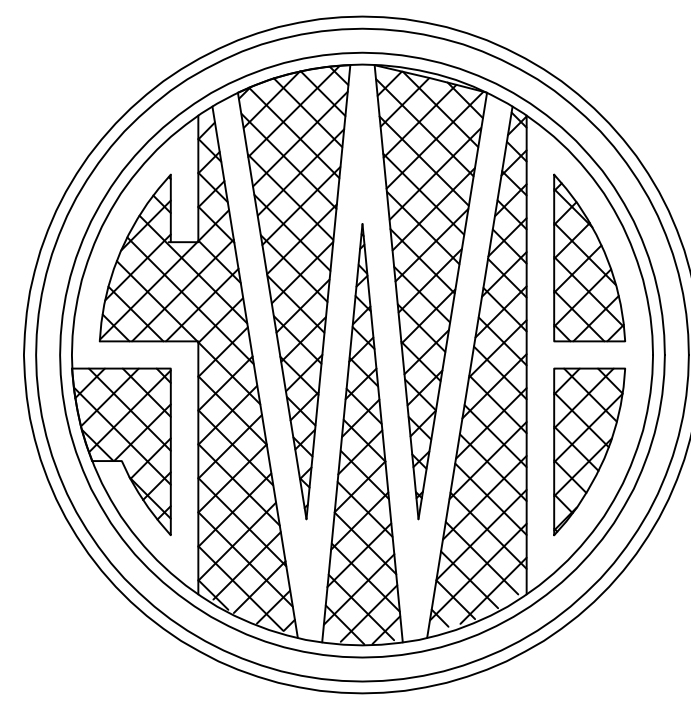
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SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 6

CONSOLE 12 POWER DISTRIBUTION

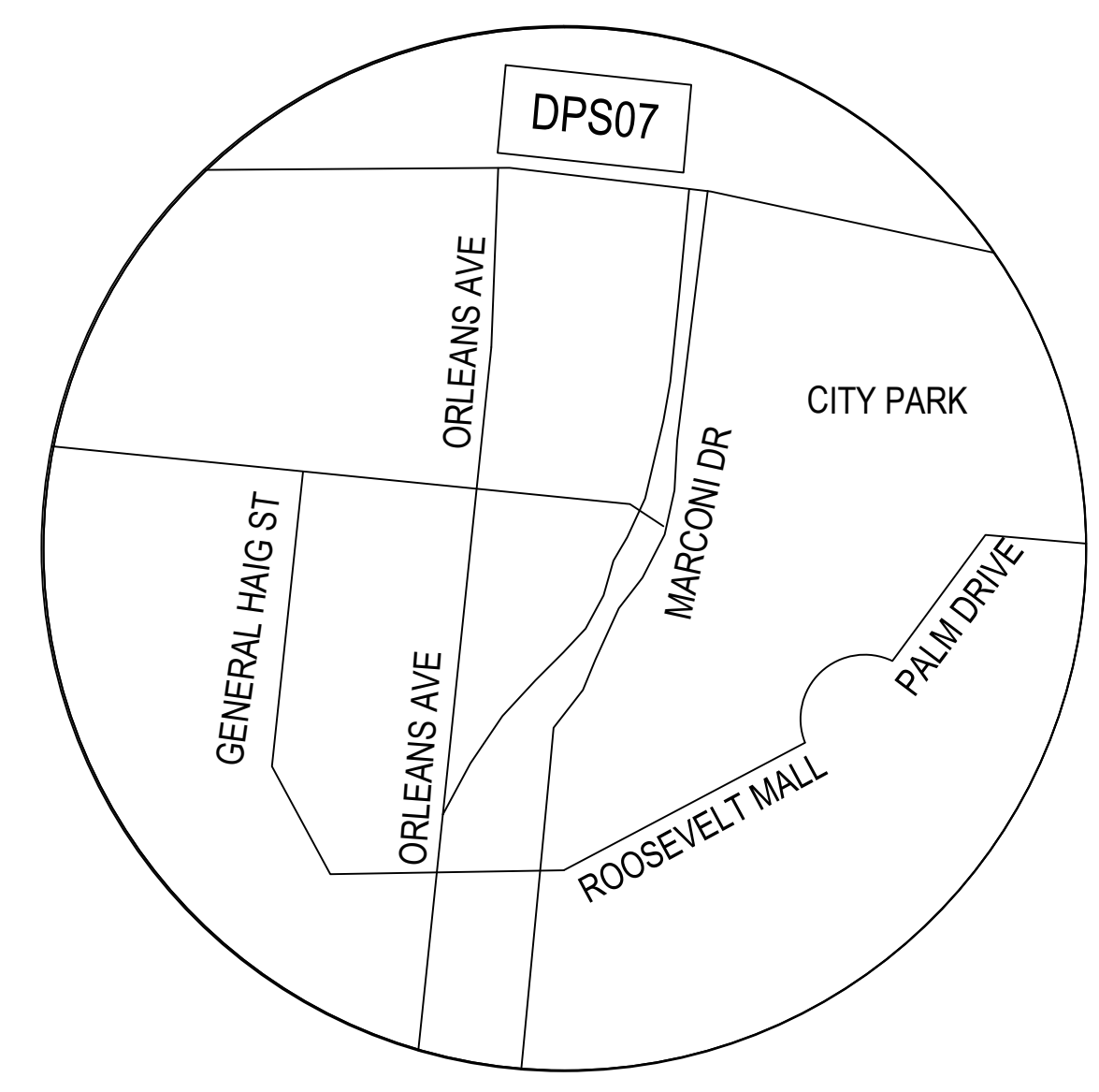
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TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 14 OF 14

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 7



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 04 LAYOUT		
10	CONSOLE 04 POWER DISTRIBUTION		
11	CONSOLE 09 LAYOUT		
12	CONSOLE 09 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

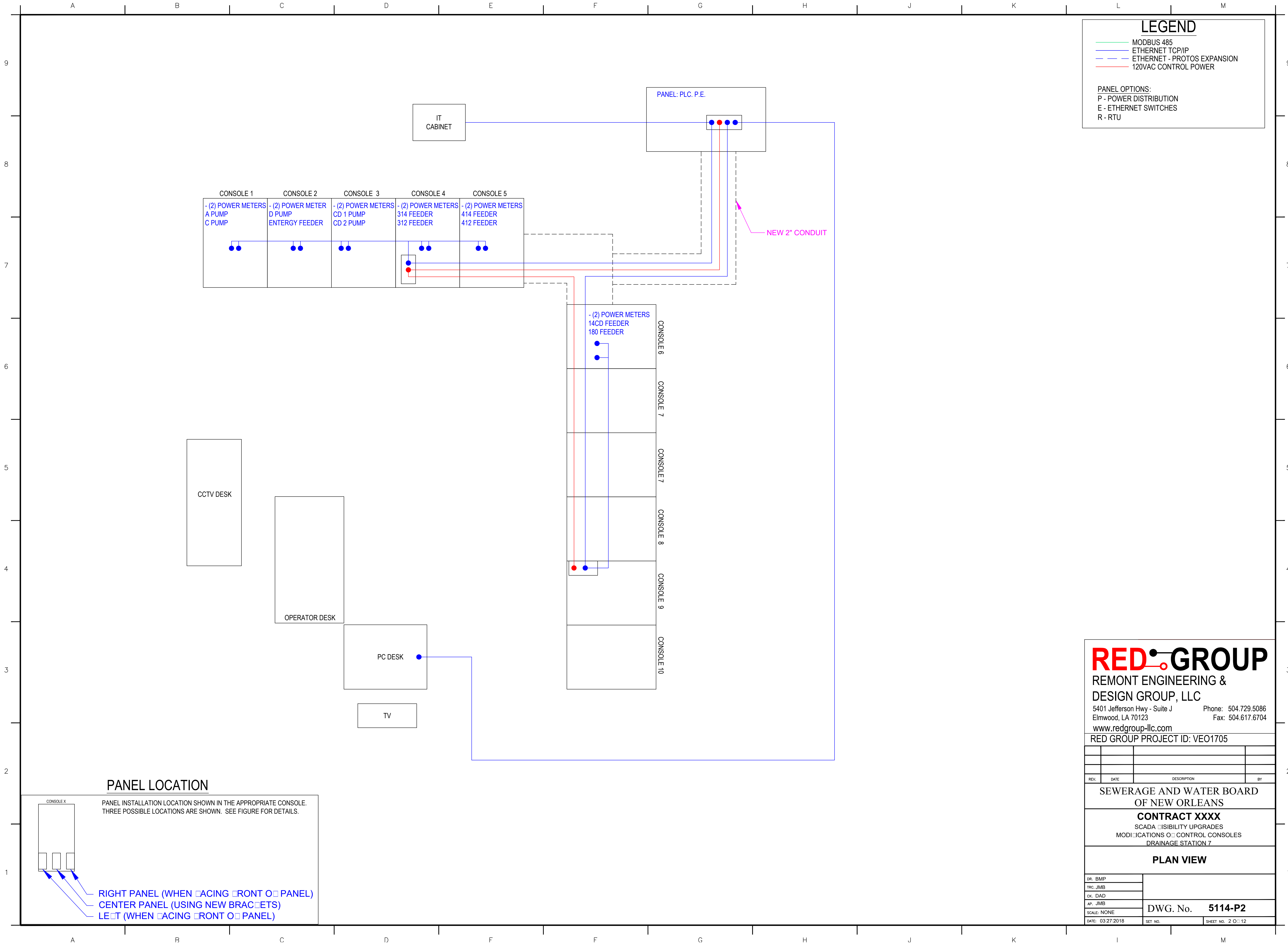
INTERIM GENERAL SUPERINTENDENT

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SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 7

INDEX OF SHEETS

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5114-P1
DATE: 03/27/2018	SET NO. SHEET NO. 1 OF 12

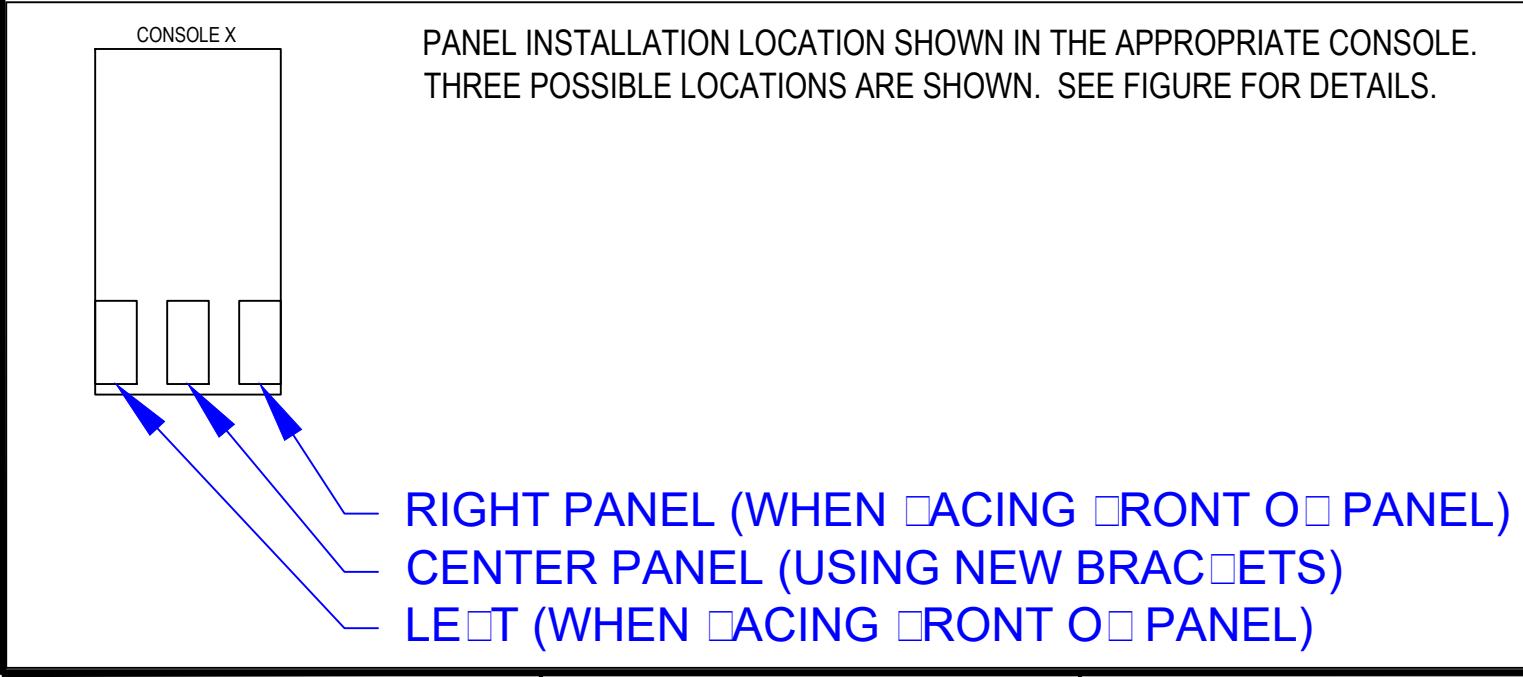


LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- ETHERNET - PROTOS EXPANSION
- 120VAC CONTROL POWER

PANEL OPTIONS:
P - POWER DISTRIBUTION
E - ETHERNET SWITCHES
R - RTU

PANEL LOCATION



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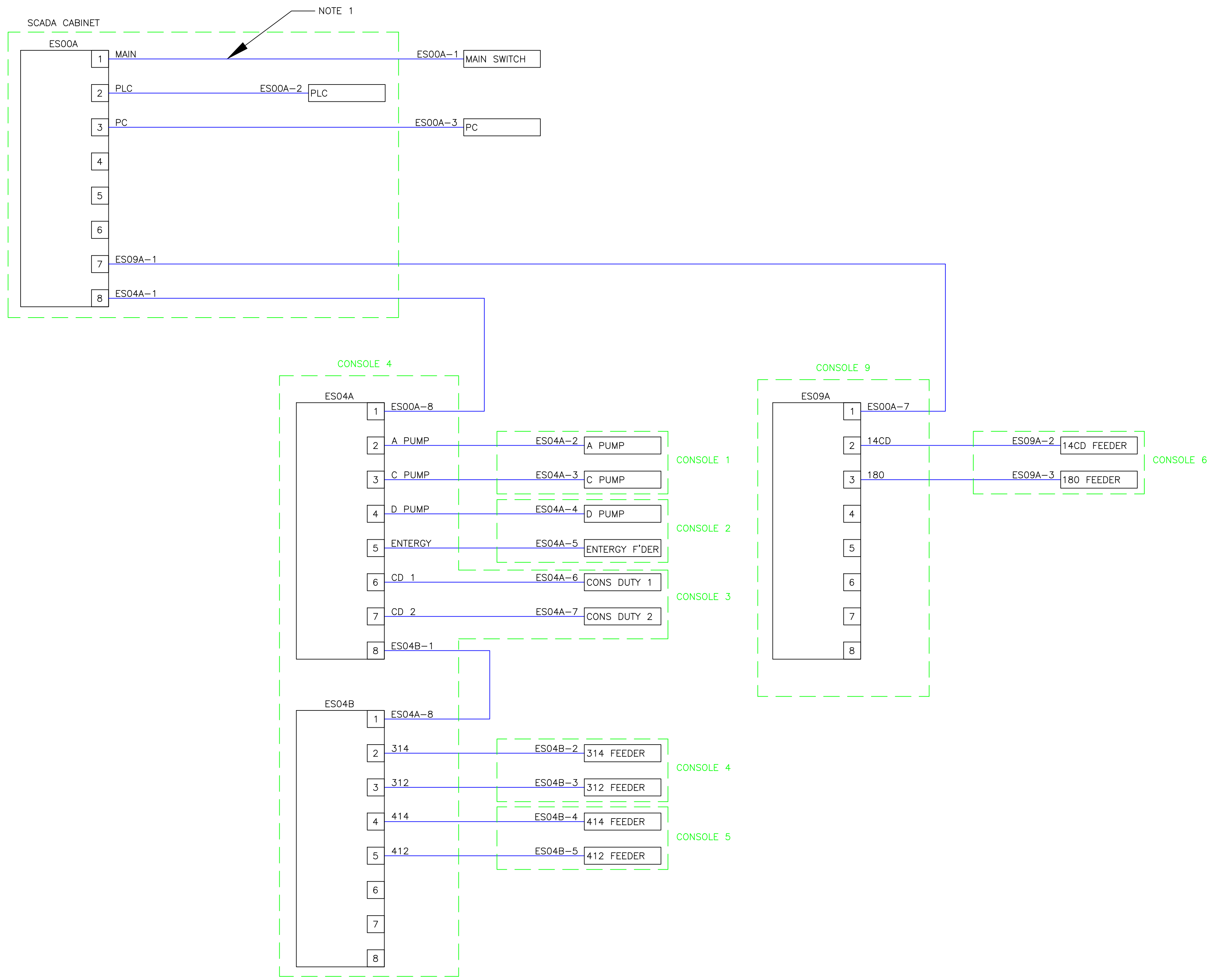
SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 7

PLAN VIEW

DR: BMP	DWG. No. 5114-P2
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 2 OF 12

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NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

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RED GROUP PROJECT ID: VEO1705

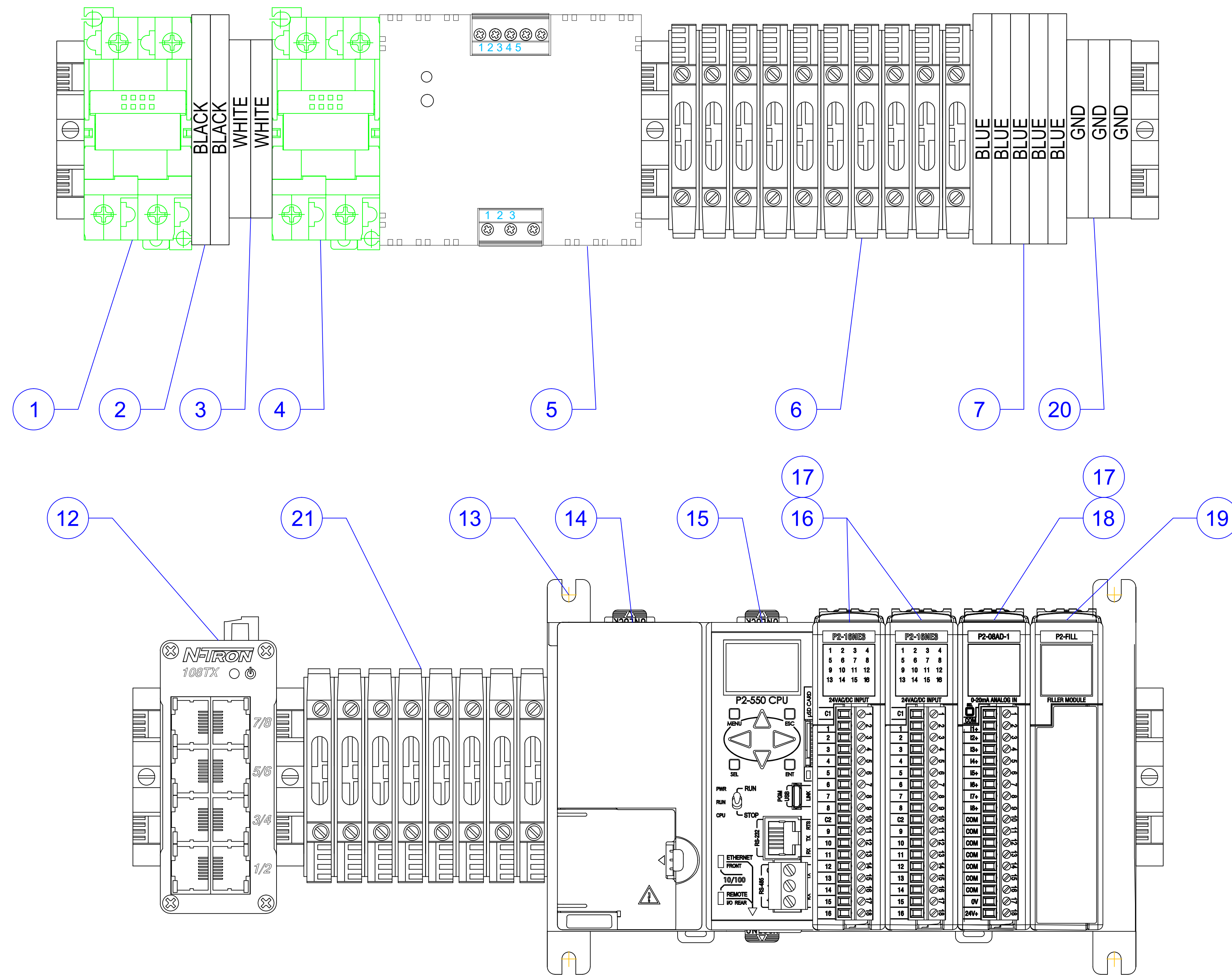
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 7

NETWORK DIAGRAM

DR: BMP	DWG. No. 5114-P3
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 3 OF 12



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
3	2	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	10	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

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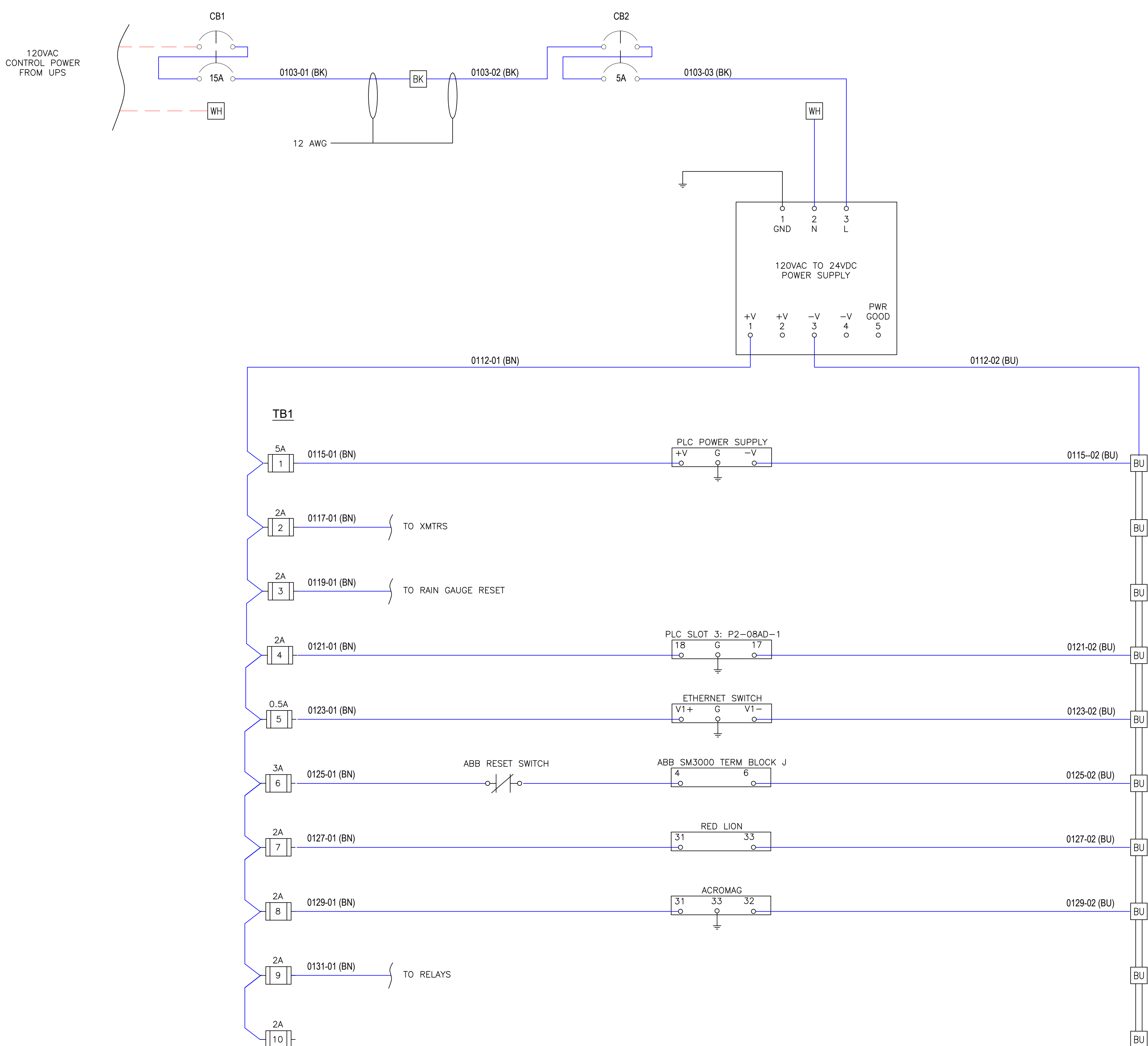
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 7

PLC LAYOUT

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5114-P4
DATE: 03.27.2018	SET NO. SHEET NO. 4 OF 12

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LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 120VAC
- BK 120VAC
- WH NEUTRAL
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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REV.	DATE	DESCRIPTION	BY

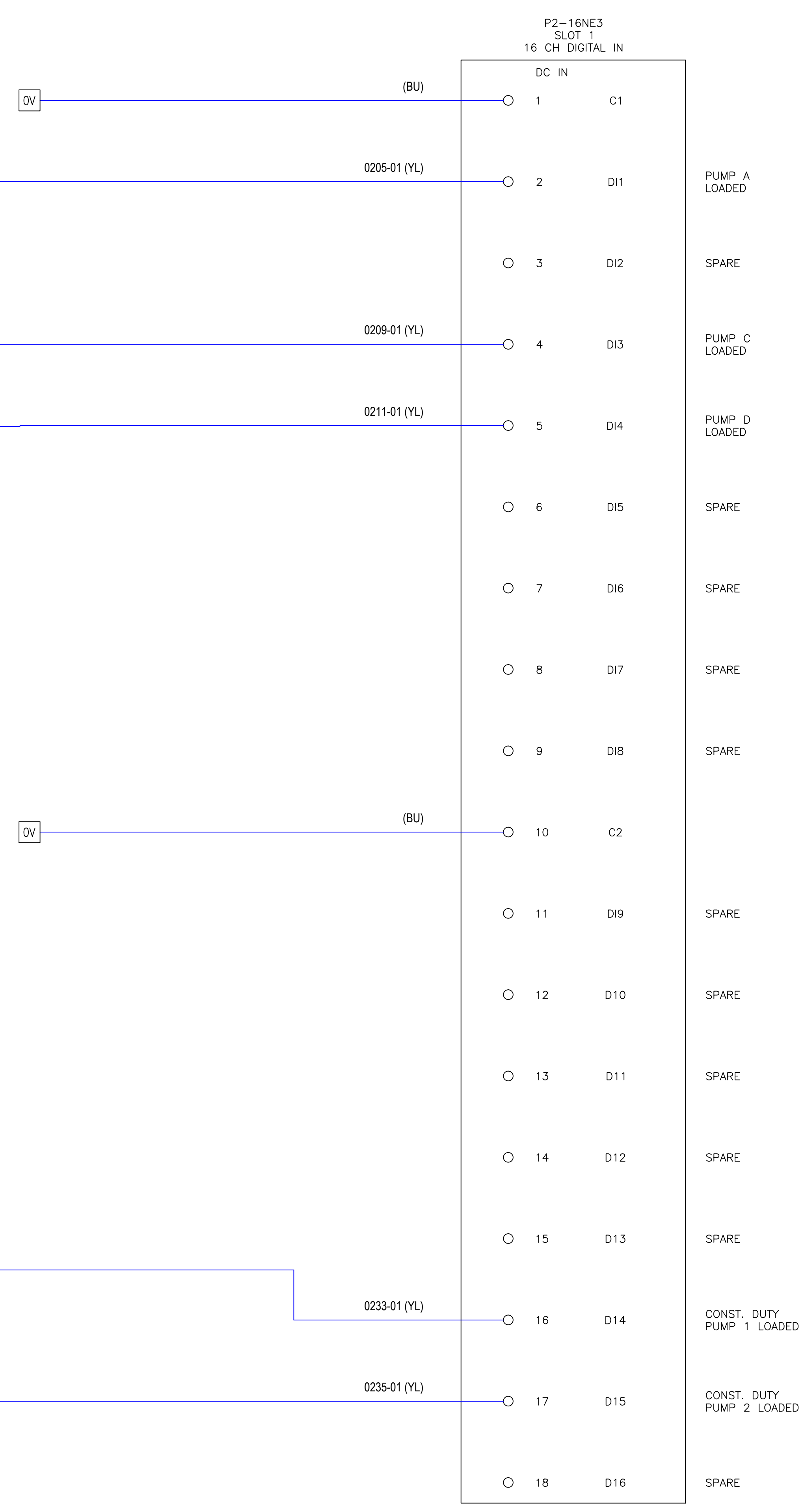
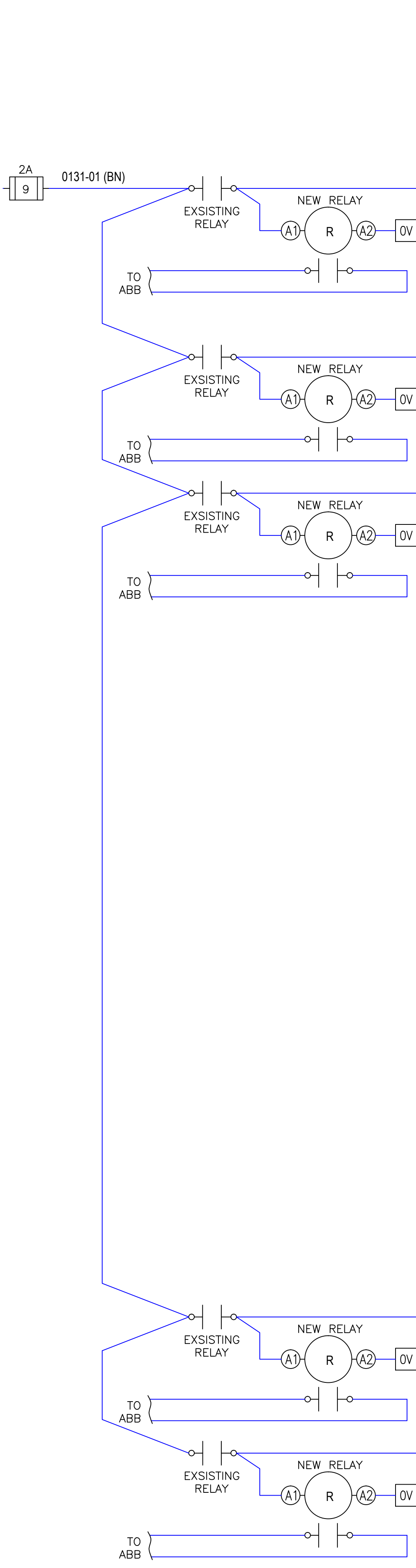
SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 7
PLC POWER DISTRIBUTION

DR. BMP	DWG. No. 5114-P5
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	
DATE: 03.27.2018	SET NO. SHEET NO. 5 OF 12

A B C D E F G H J K L M

A B C D E F G H J K L M

9
8
7
6
5
4
3
2
1



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

120VAC
BK 120VAC
WH NEUTRAL

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

RED GROUP
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5401 Jefferson Hwy - Suite J Phone: 504.729.5086
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www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 7

PLC DIGITAL INPUT 1

DR: BMP	DWG. No. 5114-P6
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 6 OF 12

LEGEND

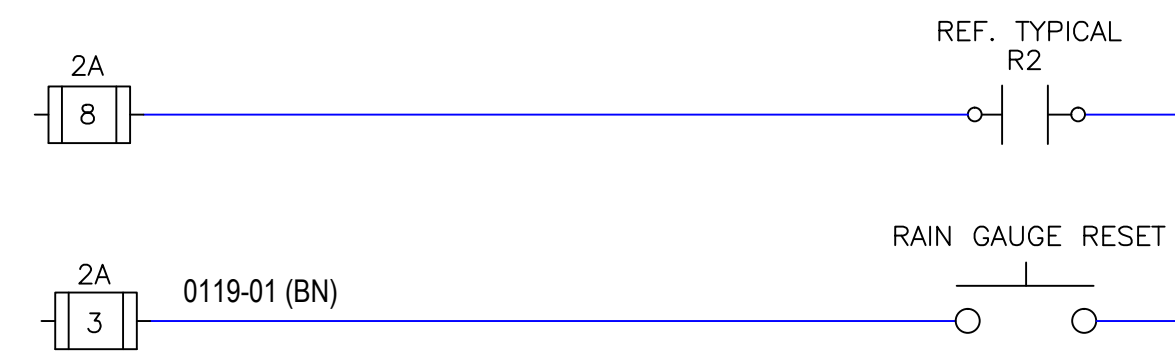
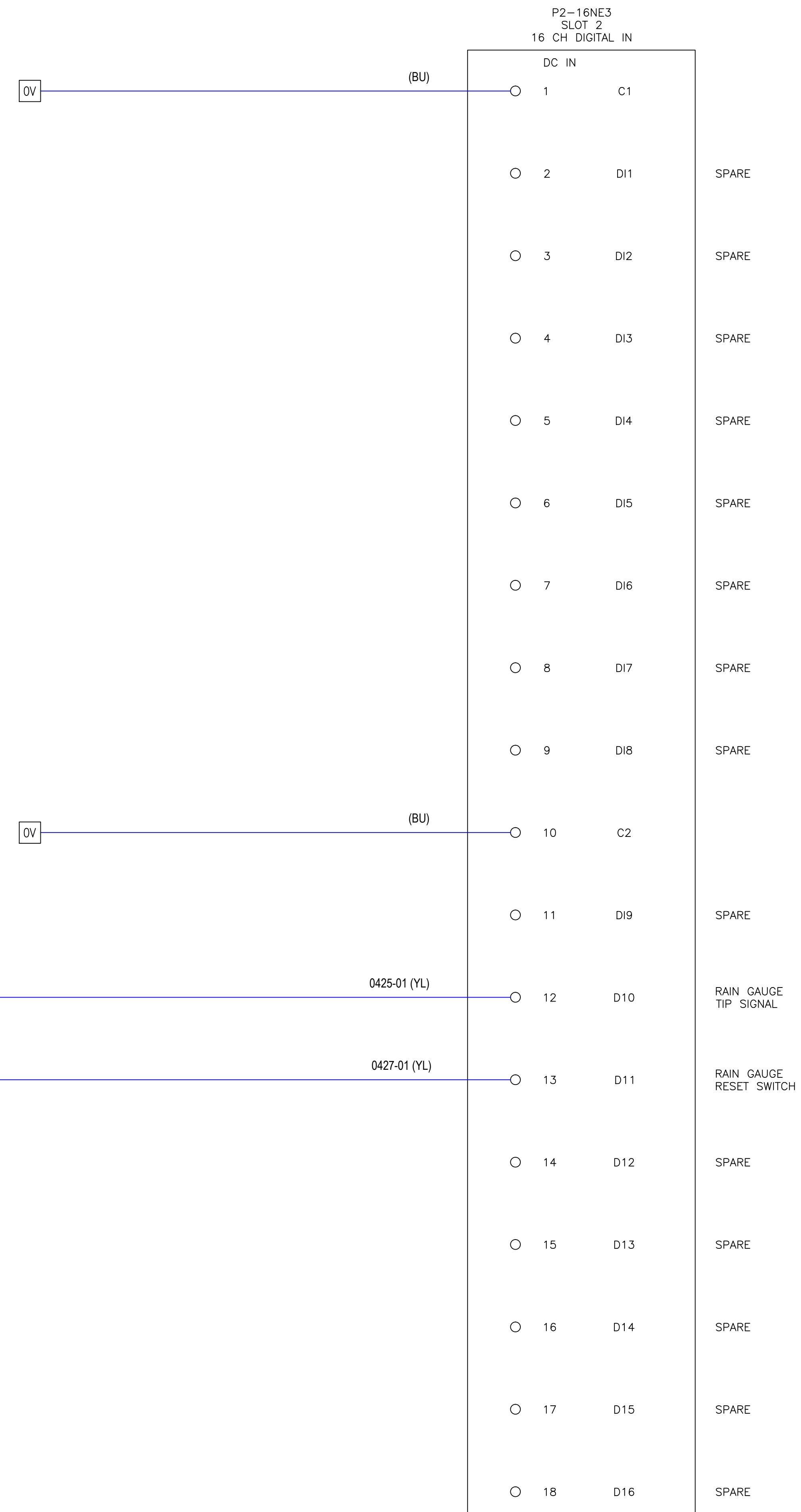
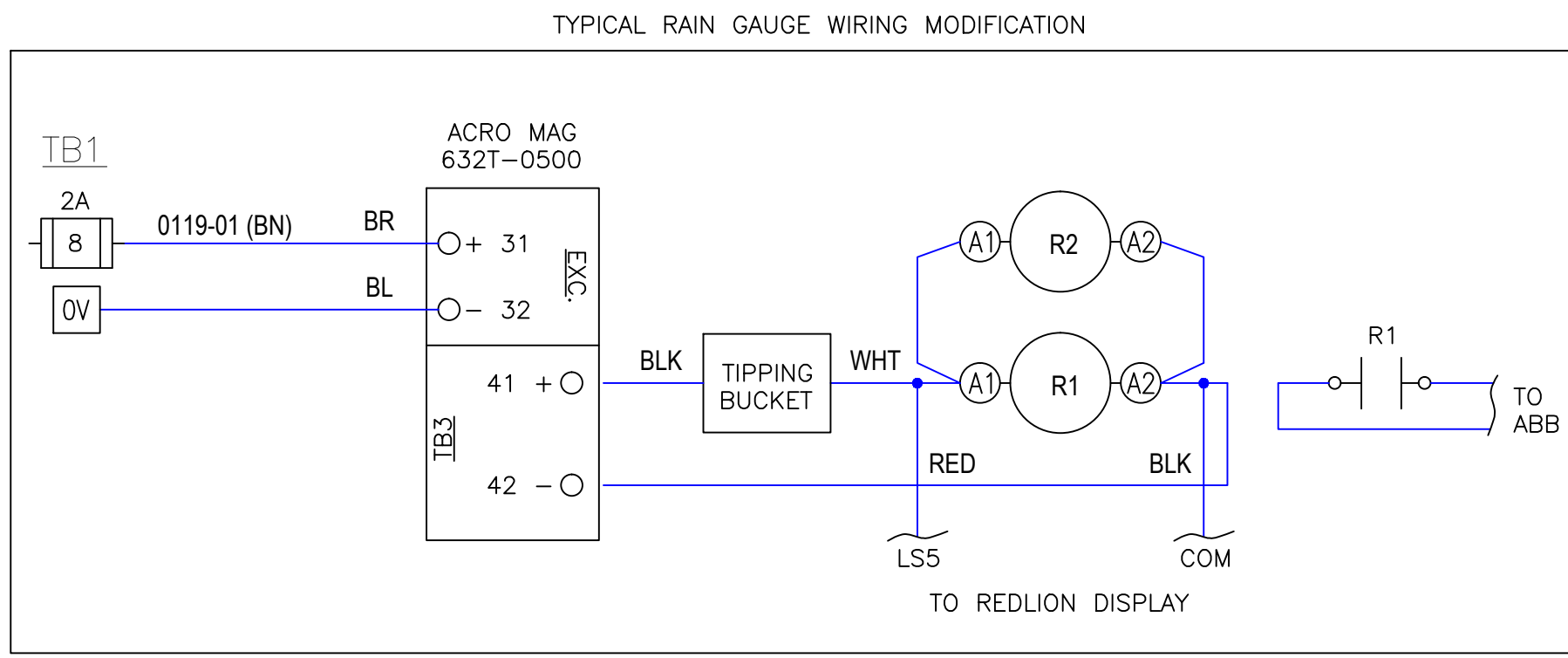


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

120VAC
BK 120VAC
WH NEUTRAL

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



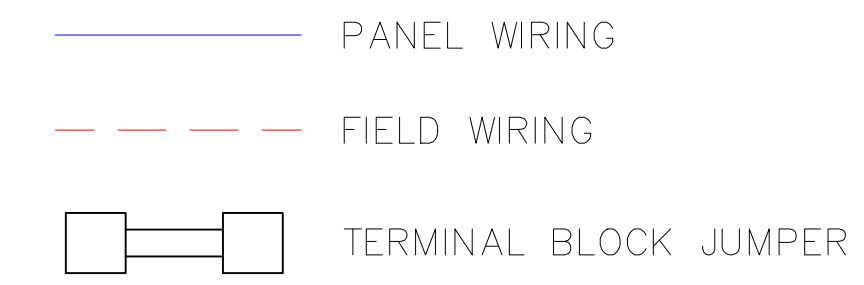
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REV.	DATE	DESCRIPTION	BY
SEWERAGE AND WATER BOARD OF NEW ORLEANS			
CONTRACT XXXX SCADA VISIBILITY UPGRADES MODIFICATIONS TO CONTROL CONSOLES DRAINAGE STATION 7			
PLC DIGITAL INPUT 2			
DR: BMP			
TRC: JMB			
CK: DAD			
AP: JMB			
SCALE: NONE	DWG. No. 5114-P7		
DATE: 03/27/2018	SET NO.	SHEET NO. 7 OF 12	

A B C D E F G H J K L M

9
8
7
6
5
4
3
2
1

LEGEND

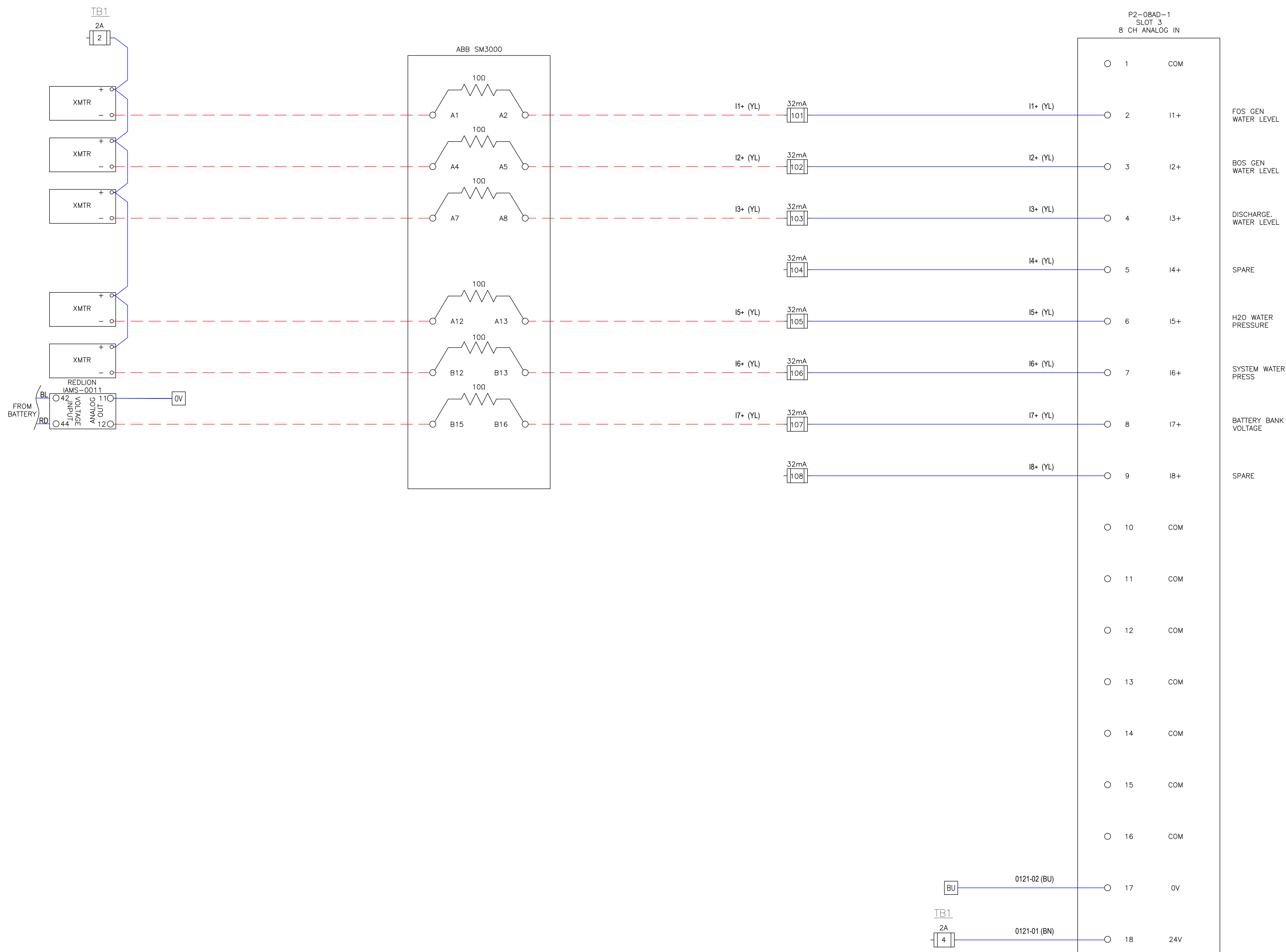


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 120VAC
- BK 120VAC
- WH NEUTRAL

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



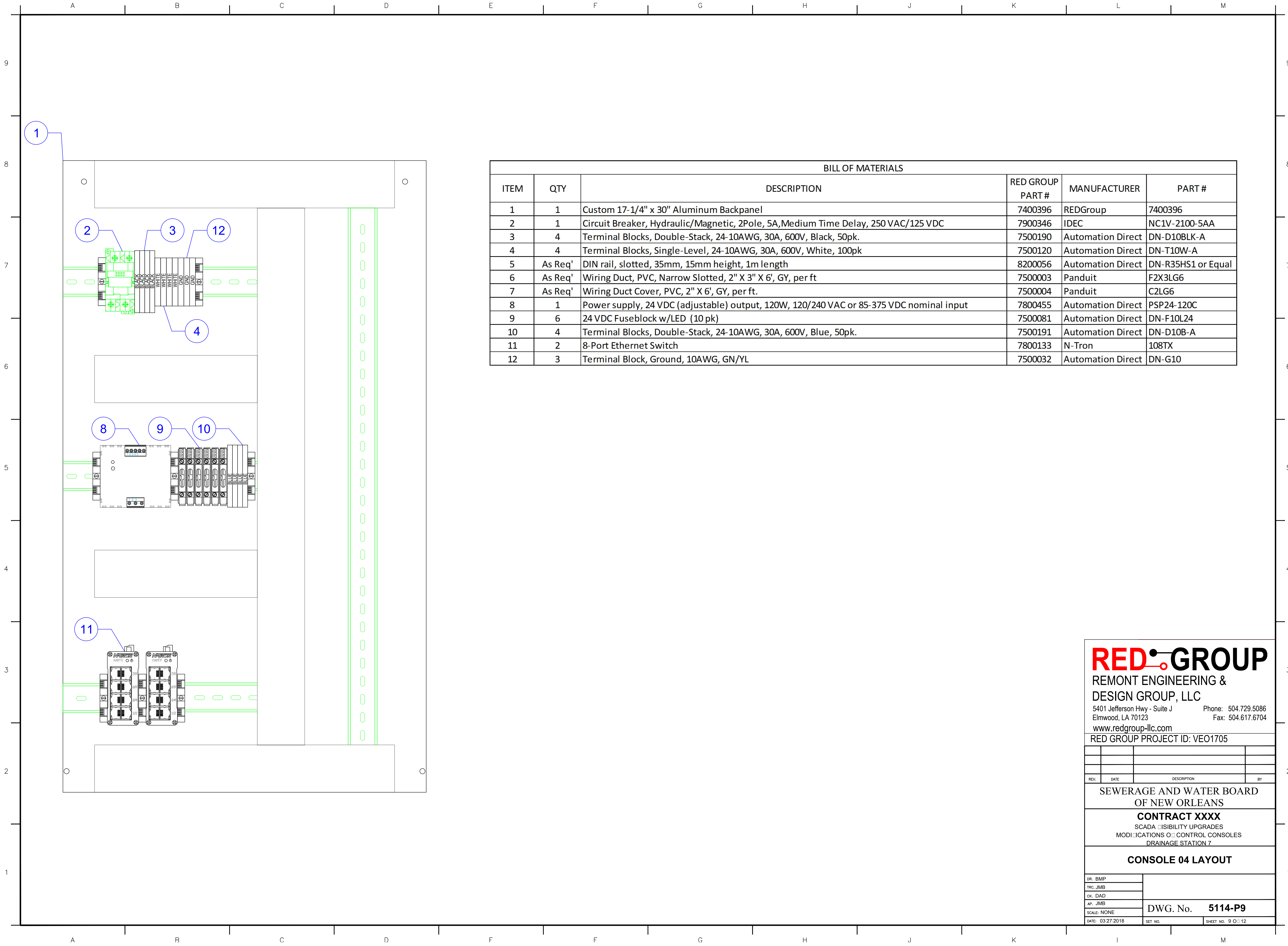
- 1 COM
- 2 11+ FOS GEN WATER LEVEL
- 3 12+ BOS GEN WATER LEVEL
- 4 13+ DISCHARGE WATER LEVEL
- 5 14+ SPARE
- 6 15+ H2O WATER PRESSURE
- 7 16+ SYSTEM WATER PRESS
- 8 17+ BATTERY BANK VOLTAGE
- 9 18+ SPARE
- 10 COM
- 11 COM
- 12 COM
- 13 COM
- 14 COM
- 15 COM
- 16 COM
- 17 0V
- 18 24V

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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 7

PLC ANALOG INPUT 1

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5114-P8
DATE: 03/27/2018	SET NO. SHEET NO. 8 OF 12



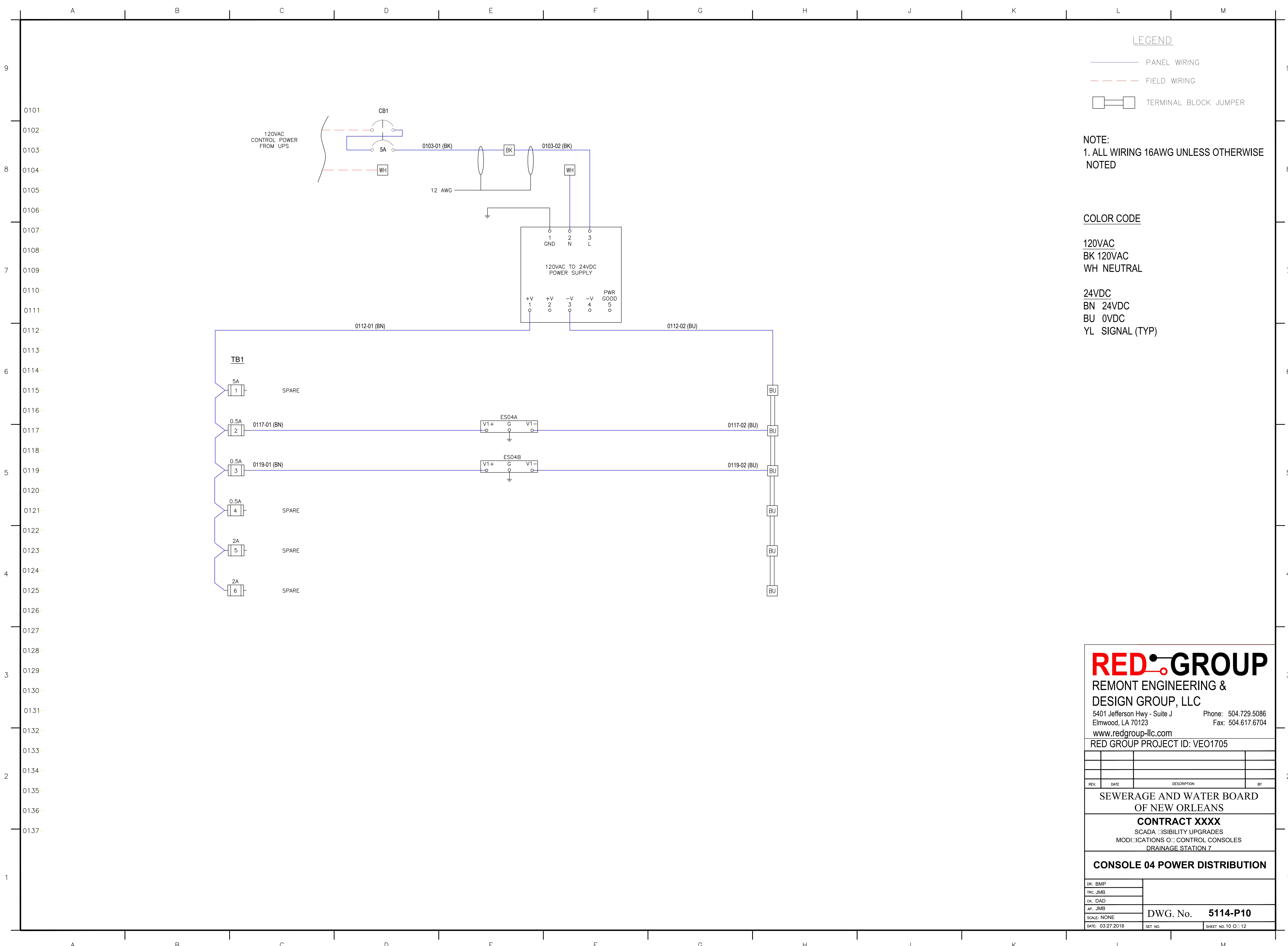
BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 7

CONSOLE 04 LAYOUT

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5114-P9
DATE: 03.27.2018	SET NO. SHEET NO. 9 OF 12



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 120VAC
- BK 120VAC
- WH NEUTRAL
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



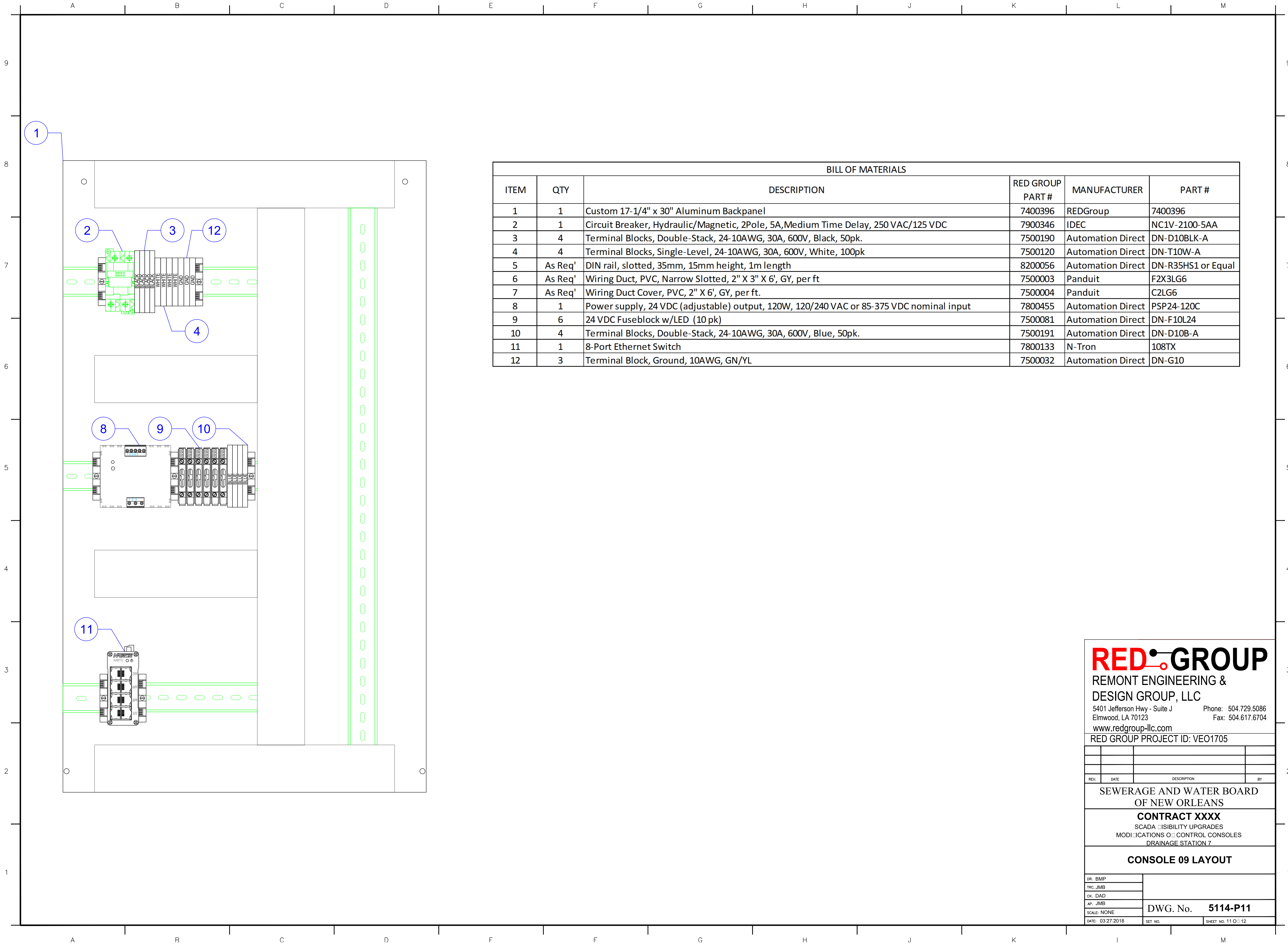
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SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 7

CONSOLE 04 POWER DISTRIBUTION

DR: BMP	DWG. No. 5114-P10
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 10 OF 12



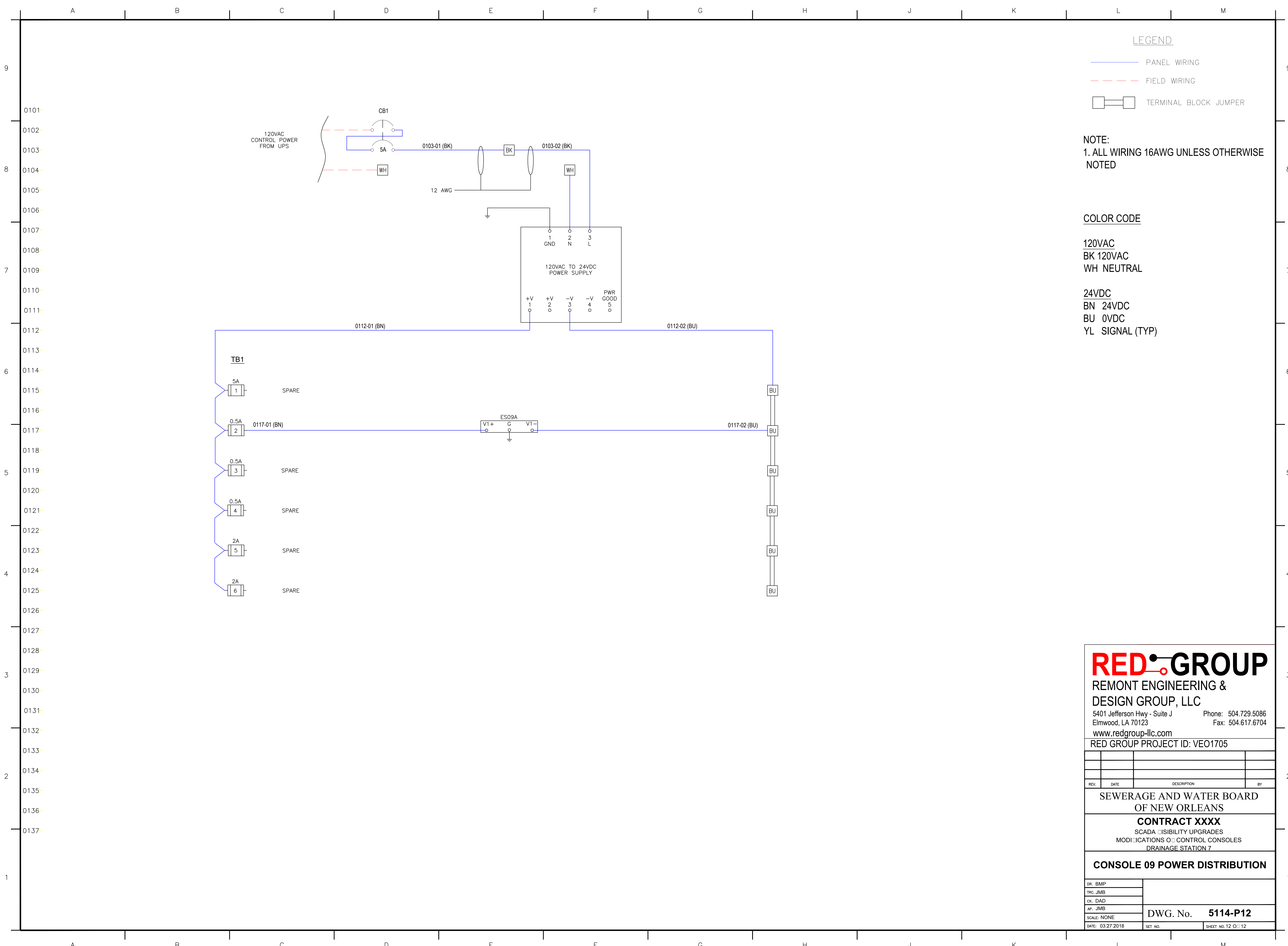
BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 7

CONSOLE 09 LAYOUT

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5114-P11
DATE: 03/27/2018	SET NO. SHEET NO. 11 OF 12



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 120VAC
- BK 120VAC
- WH NEUTRAL
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



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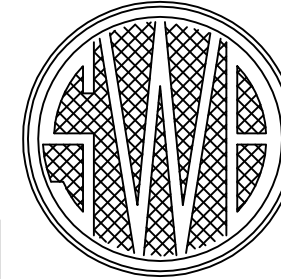
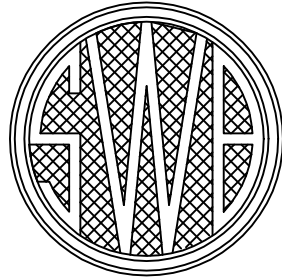
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 7

CONSOLE 09 POWER DISTRIBUTION

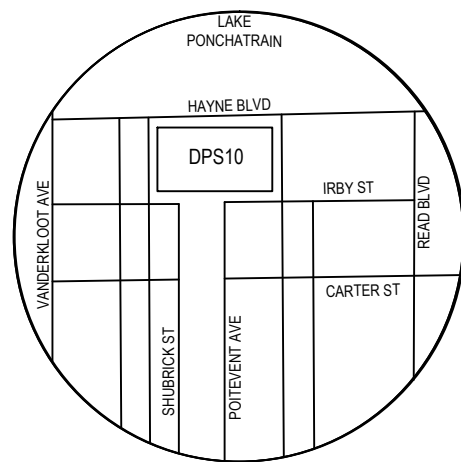
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TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/27/2018	SET NO. SHEET NO. 12 OF 12

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 10



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 04 LAYOUT		
10	CONSOLE 04 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 10

INDEX OF SHEETS

DR: BMP	
TWC: JMB	
CC: DAD	
AP: JMB	DWG. No. 5115-P1
SCALE: NONE	
DATE: 03/28/2018	SET NO. SHEET NO. 1 OF 10

A B C D E F G H J K L M

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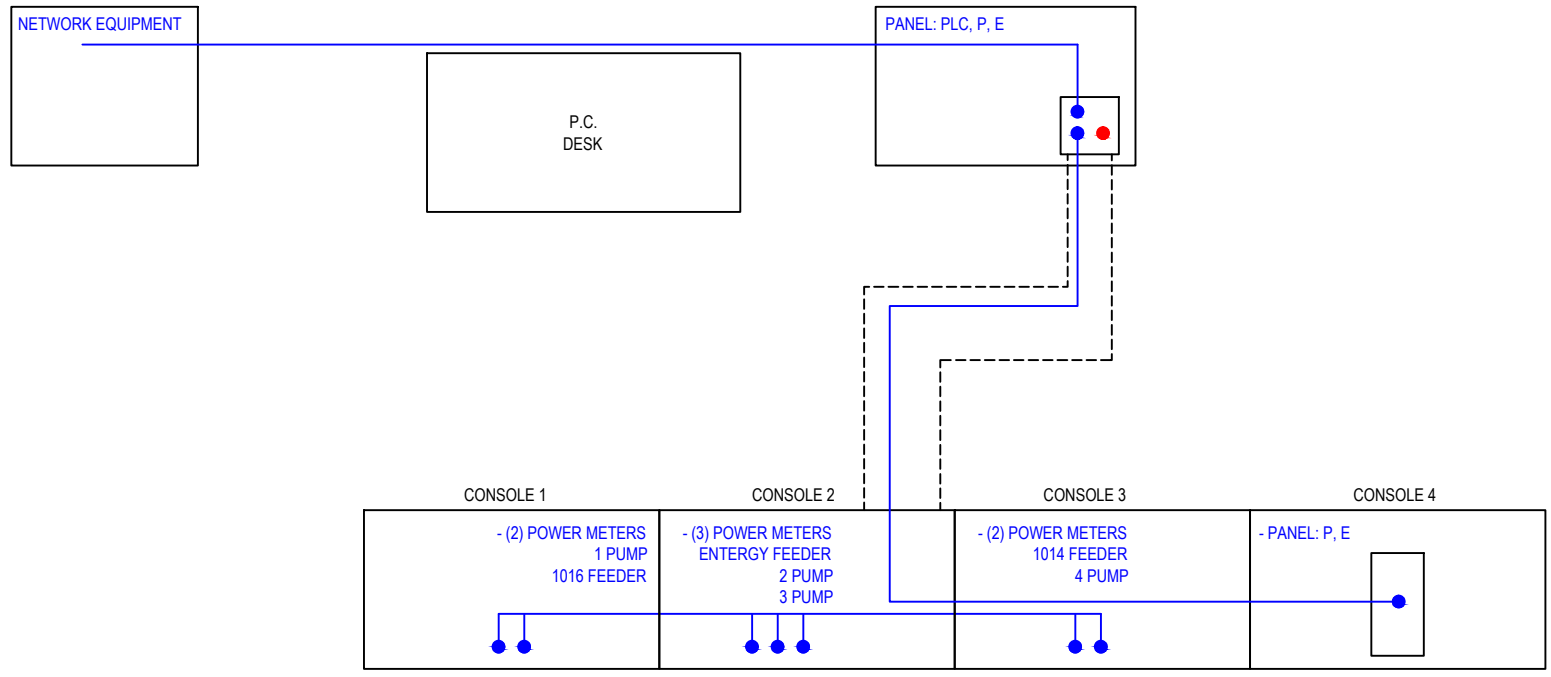
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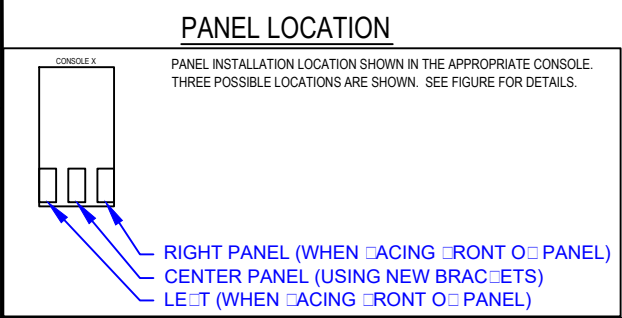
LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU



CABINET 1



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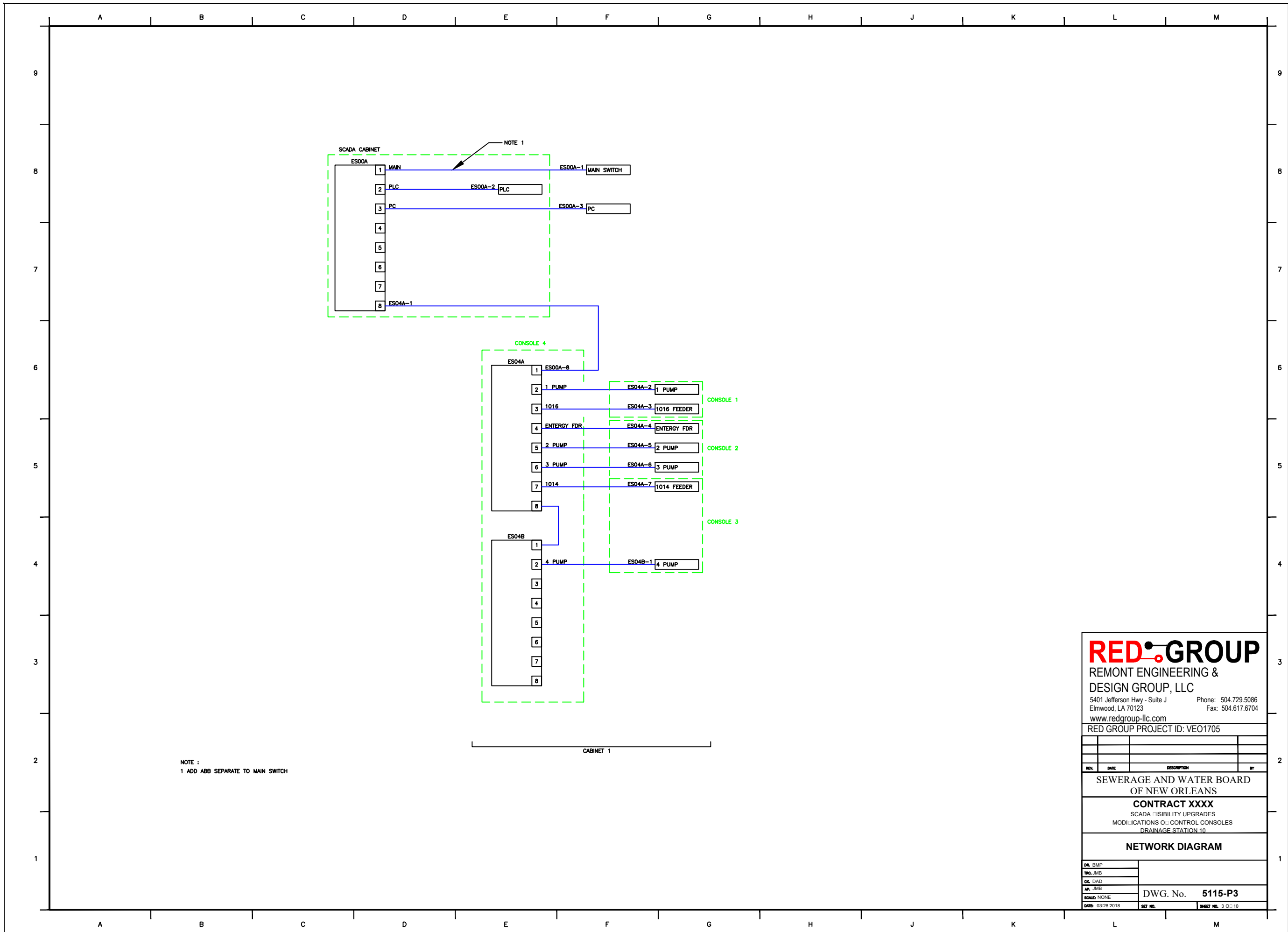
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 10

PLAN VIEW

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5115-P2
DATE: 03/28/2018	SET NO. SHEET NO. 2 OF 10

A B C D E F G H J K L M



NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

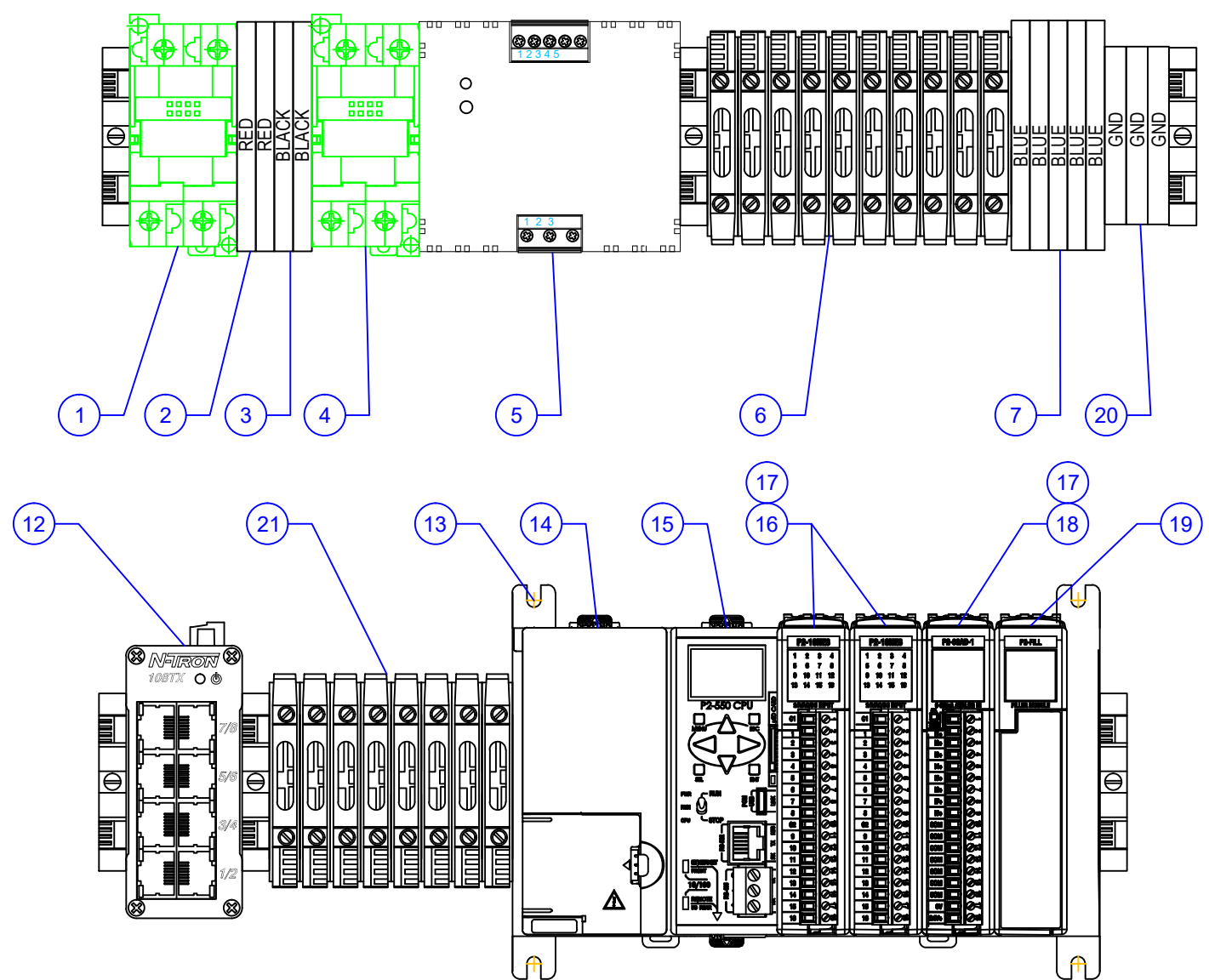
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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS OF CONTROL CONSOLES
 DRAINAGE STATION 10

NETWORK DIAGRAM

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5115-P3
DATE: 03/28/2018	SET NO. SHEET NO. 3 OF 10



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input.	7800455	Automation Direct	PSP24-120C
6	10	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

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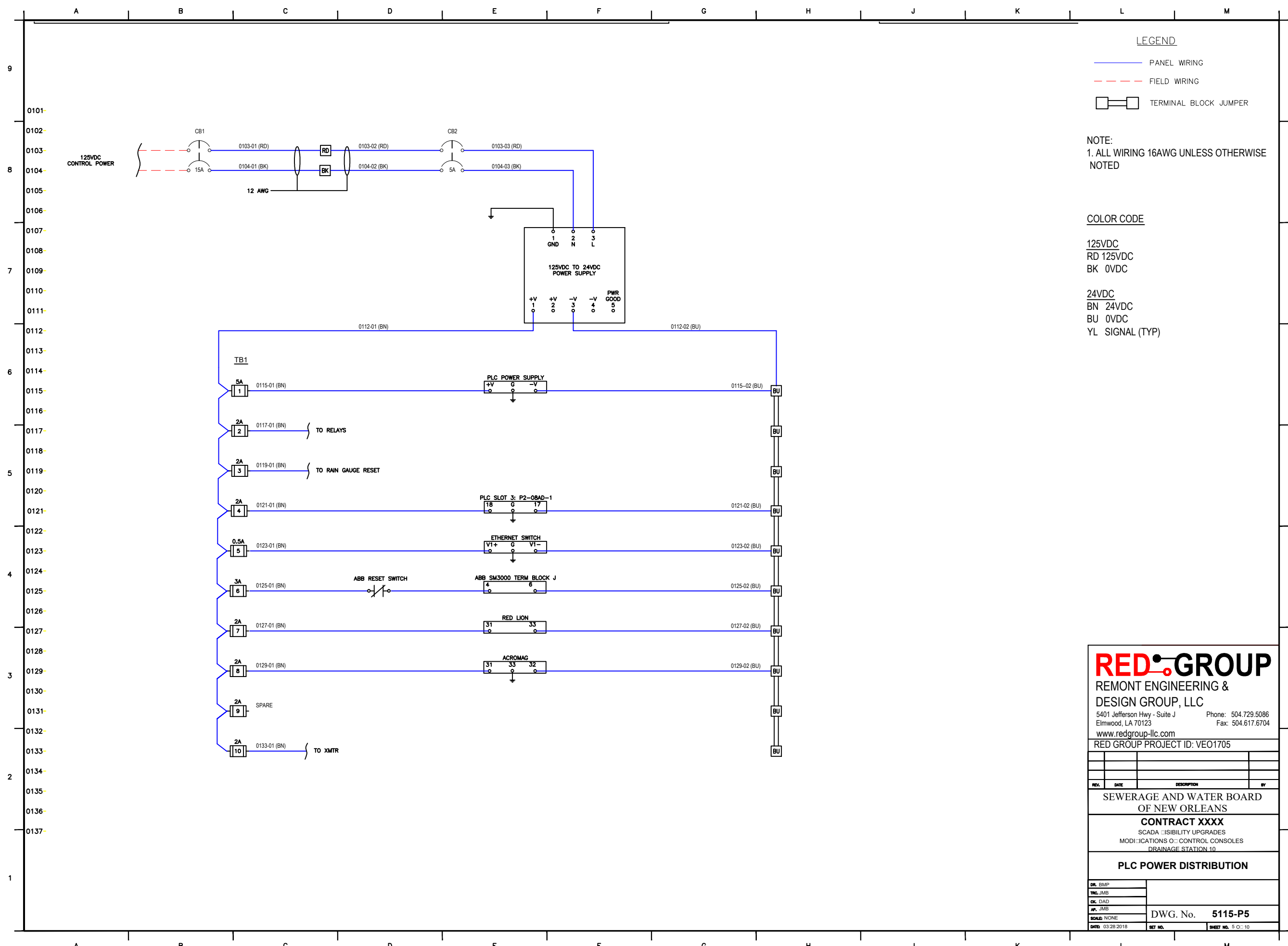
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 10

PLC LAYOUT

DL: BMP
 TRC: JMB
 CK: DAD
 AP: JMB
 SCALE: NONE
 DATE: 03/28/2018

DWG. No. **5115-P4**

SET NO. SHEET NO. 4 OF 10



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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REMONT ENGINEERING & DESIGN GROUP, LLC

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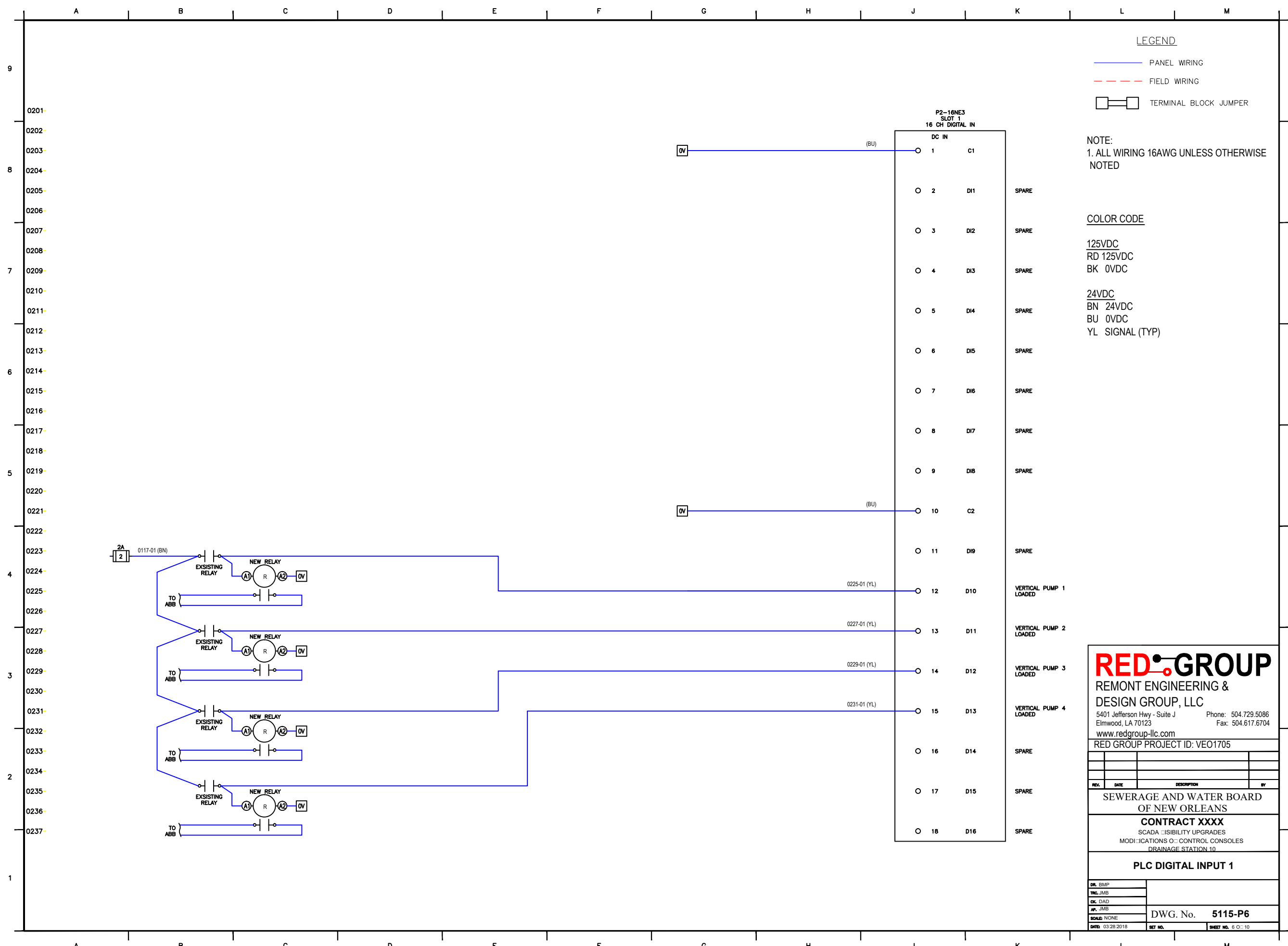
SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 10

PLC POWER DISTRIBUTION

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5115-P5
DWG: 03/28/2018	SET NO. SHEET NO. 5 OF 10



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

P2-16NE3 SLOT 1 16 CH DIGITAL IN		
DC IN		
1	C1	
2	D1	SPARE
3	D2	SPARE
4	D3	SPARE
5	D4	SPARE
6	D5	SPARE
7	D6	SPARE
8	D7	SPARE
9	D8	SPARE
10	C2	
11	D9	SPARE
12	D10	VERTICAL PUMP 1 LOADED
13	D11	VERTICAL PUMP 2 LOADED
14	D12	VERTICAL PUMP 3 LOADED
15	D13	VERTICAL PUMP 4 LOADED
16	D14	SPARE
17	D15	SPARE
18	D16	SPARE

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REV.	DATE	DESCRIPTION	BY

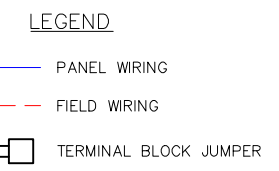
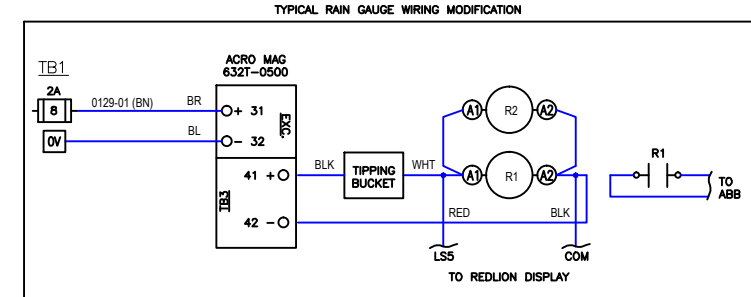
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 10

PLC DIGITAL INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5115-P6
DATE: 03/28/2018	SHEET NO. 6 OF 10

A B C D E F G H J K L M

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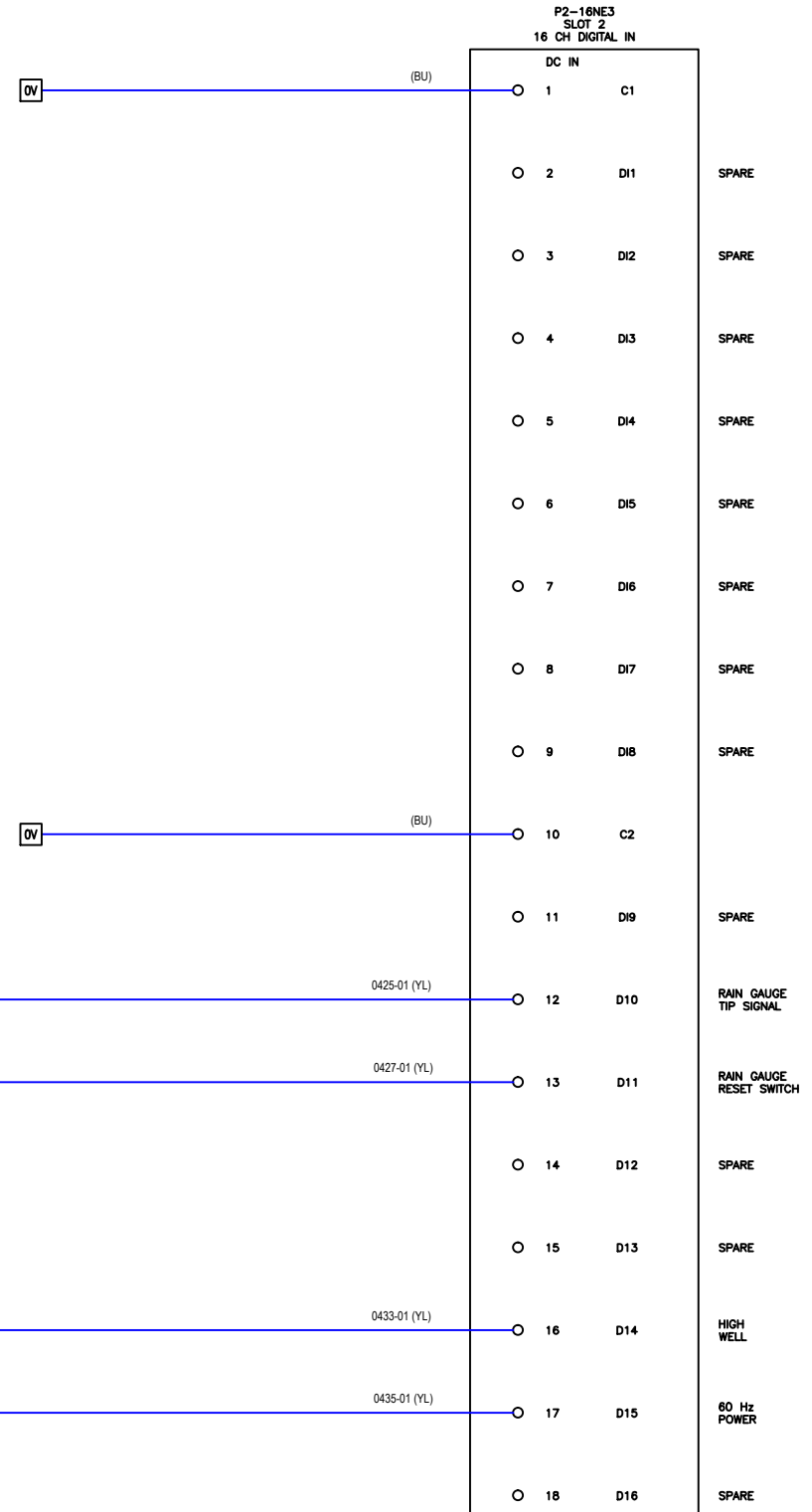


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



RED GROUP
REMONT ENGINEERING & DESIGN GROUP, LLC
5401 Jefferson Hwy - Suite J Phone: 504.729.5086
Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

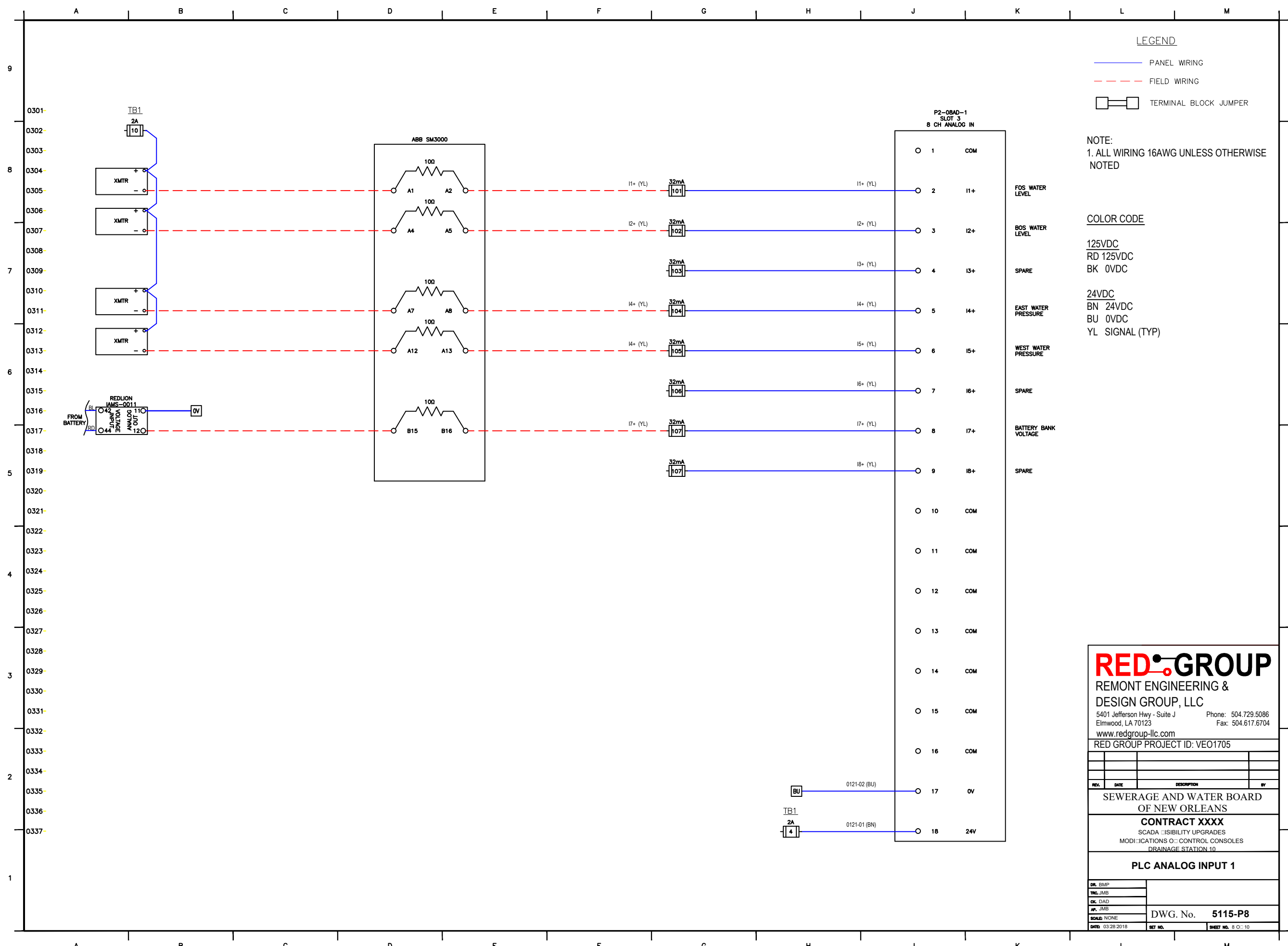
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 10

PLC DIGITAL INPUT 2

DL BMP	
TNG JMB	
CK DAD	
JR JMB	
SCALE: NONE	DWG. No. 5115-P7
DATE: 03/28/2018	SHEET NO. 7 OF 10

A B C D E F G H J K L M



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

RED GROUP

REMONT ENGINEERING & DESIGN GROUP, LLC

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

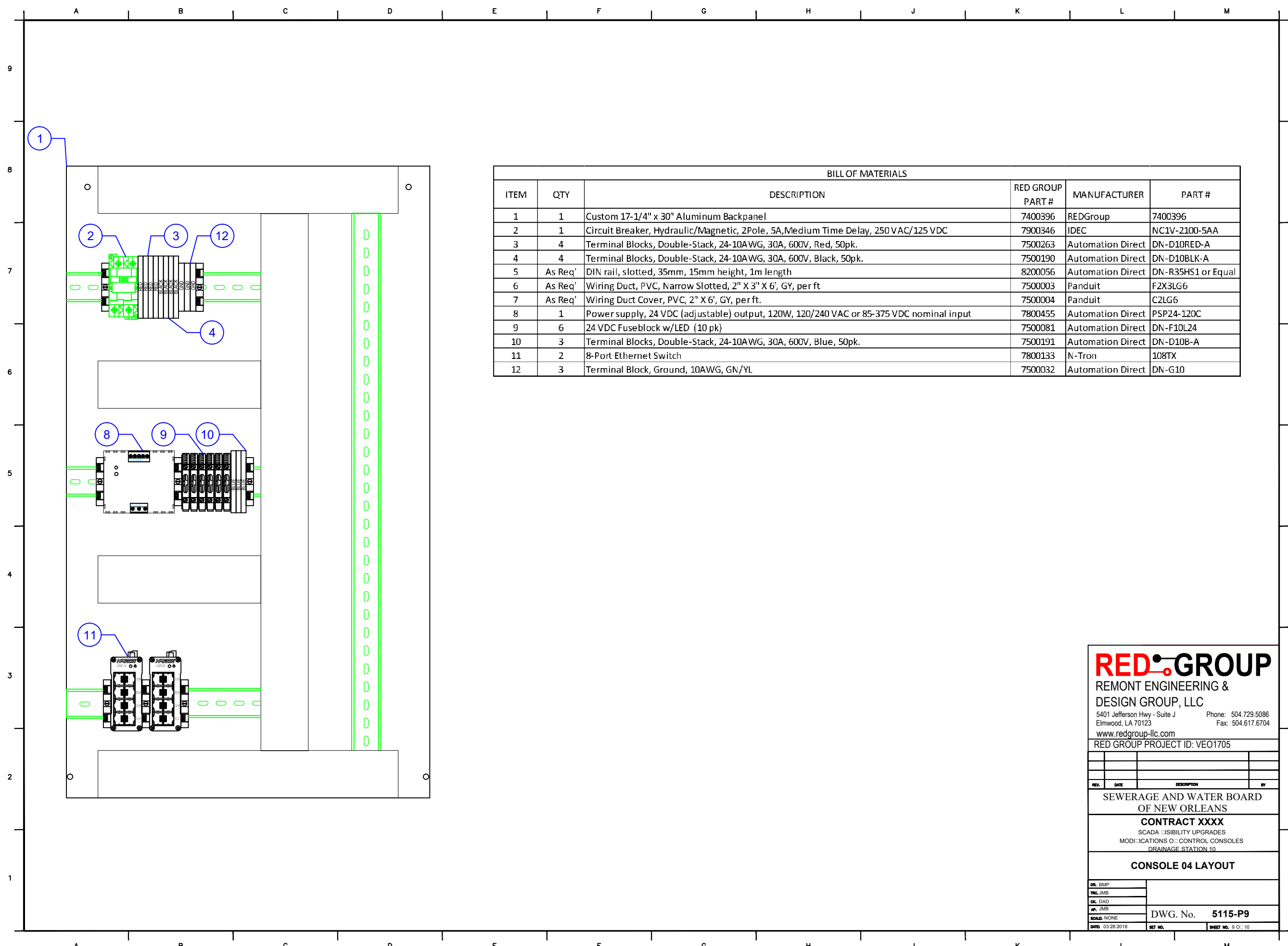
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 10

PLC ANALOG INPUT 1

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="font-size: 0.6em;">DR. BMP</td><td> </td></tr> <tr><td style="font-size: 0.6em;">TRG. JMB</td><td> </td></tr> <tr><td style="font-size: 0.6em;">CK. DAD</td><td> </td></tr> <tr><td style="font-size: 0.6em;">AP. JMB</td><td> </td></tr> <tr><td style="font-size: 0.6em;">SCALE: NONE</td><td> </td></tr> </table>	DR. BMP		TRG. JMB		CK. DAD		AP. JMB		SCALE: NONE		<p style="font-weight: bold;">DWG. No. 5115-P8</p> <p style="font-size: 0.6em;">DATE: 03/28/2018 SET NO. SHEET NO. 8 OF 10</p>
DR. BMP											
TRG. JMB											
CK. DAD											
AP. JMB											
SCALE: NONE											



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

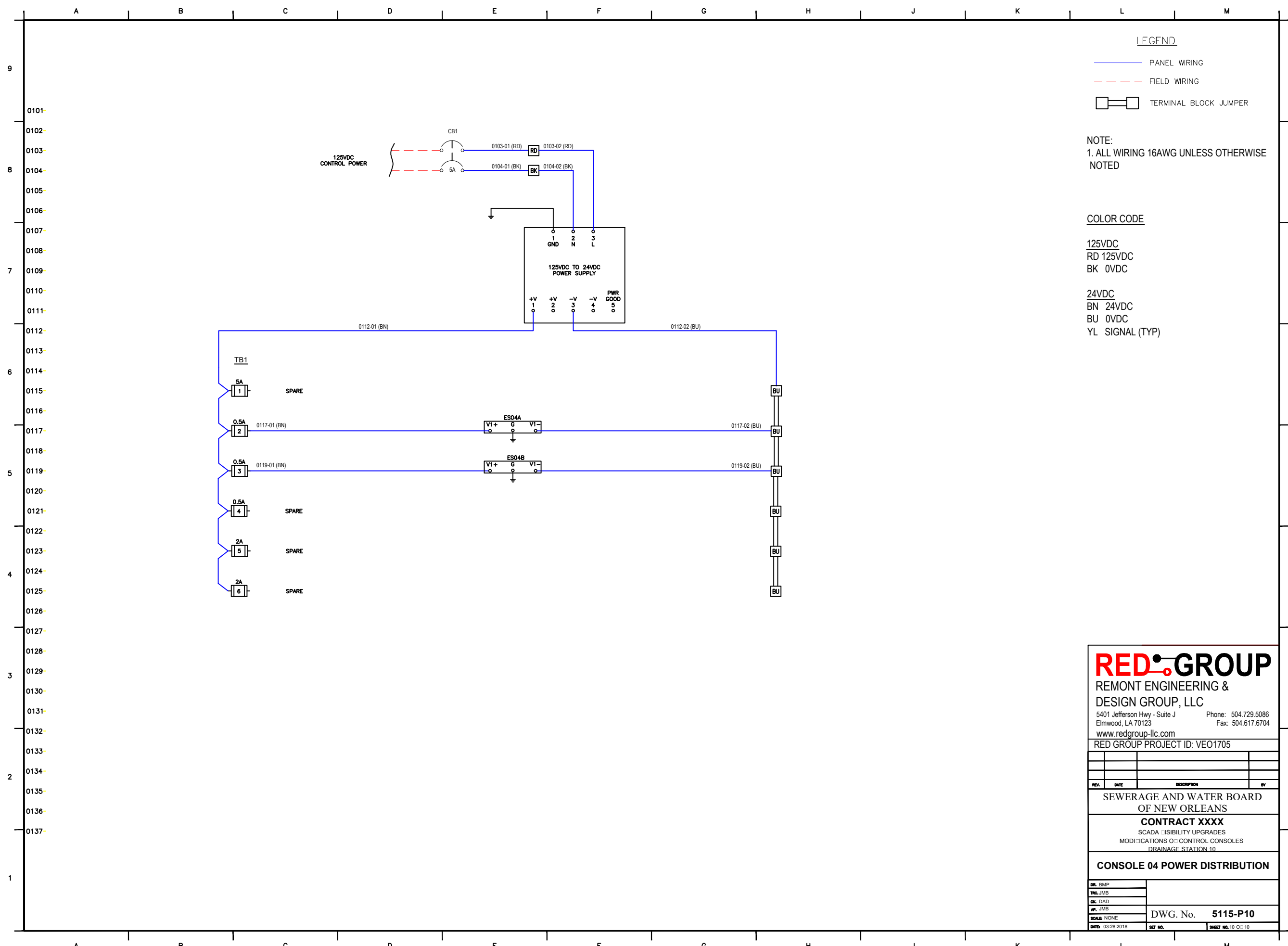
RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 10

CONSOLE 04 LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5115-P9
DATE: 03/28/2018	SHEET NO. SHEET NO. 9 OF 10



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:

1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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REV.	DATE	DESCRIPTION	BY

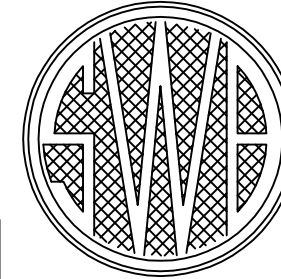
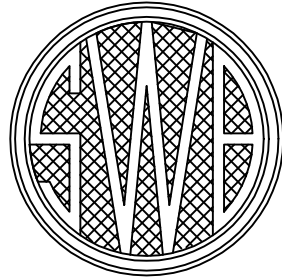
SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 10

CONSOLE 04 POWER DISTRIBUTION

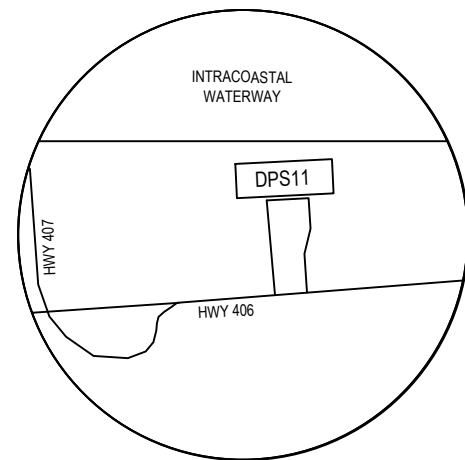
DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5115-P10
DATE: 03/28/2018	SET NO. SHEET NO. 10 OF 10

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 11



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 10 LAYOUT		
10	CONSOLE 10 POWER DISTRIBUTION		
11	MCC POWER RAIL		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

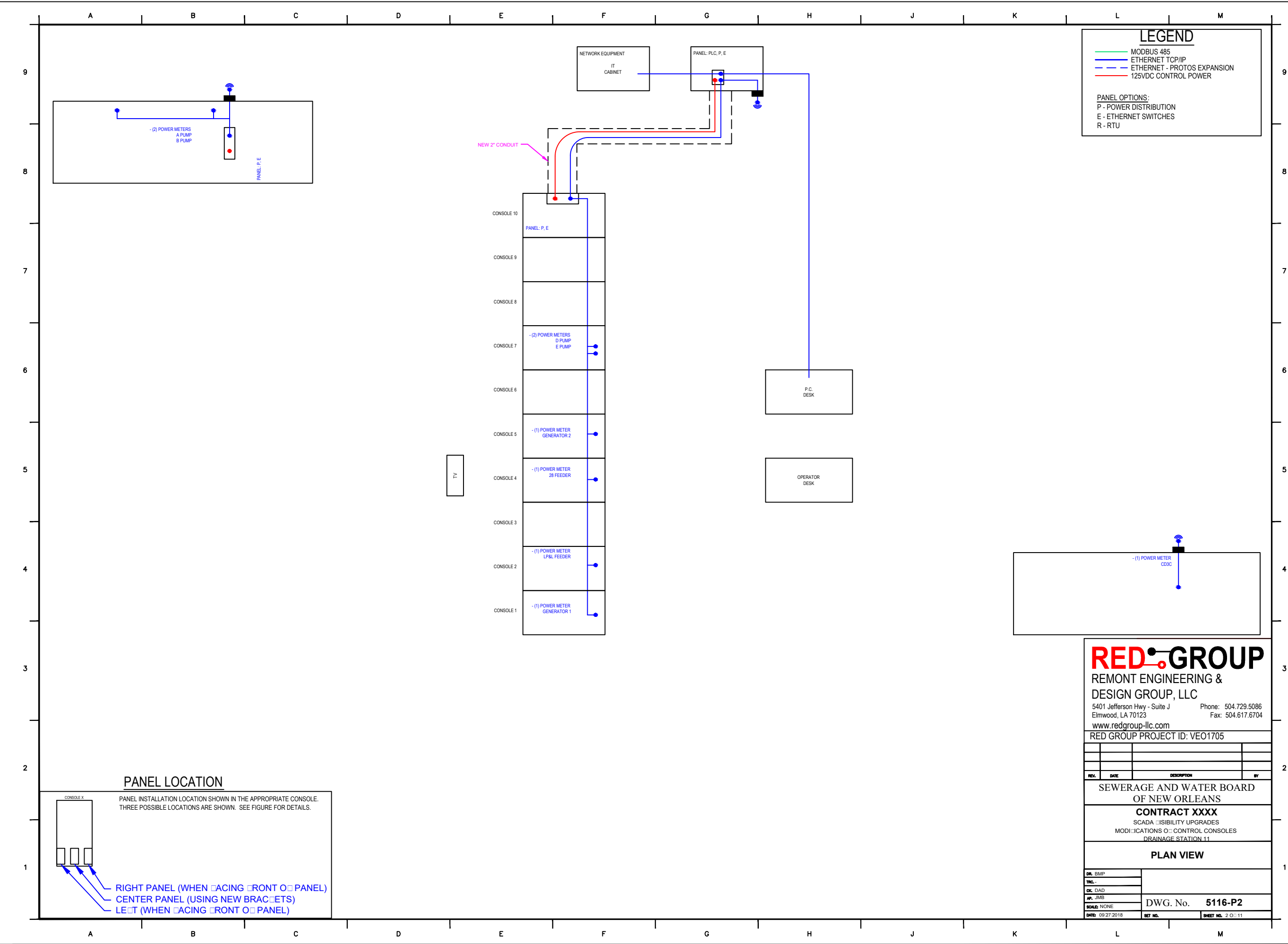
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 11

INDEX OF SHEETS

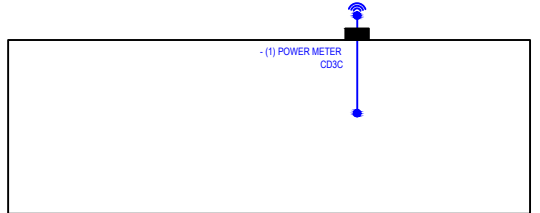
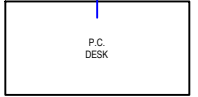
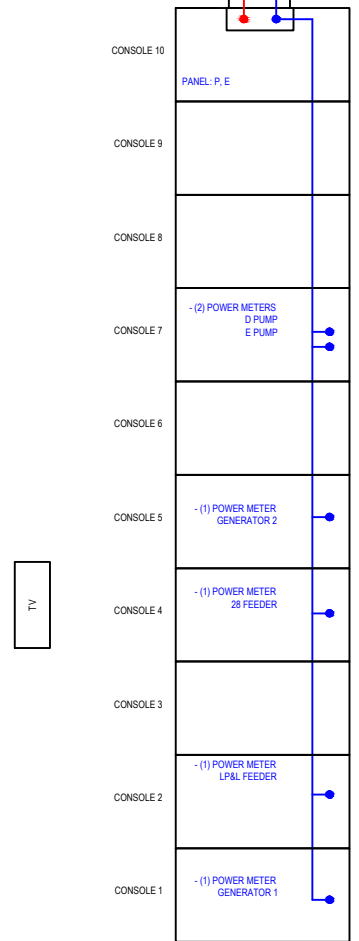
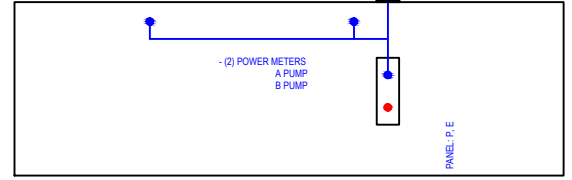
DR. BMP	
TNC.	
CK. DAD	
AP. JMB	DWG. No. 5116-P1
SCALE: NONE	
DATE: 09/27/2018	SHEET NO. 1 OF 11



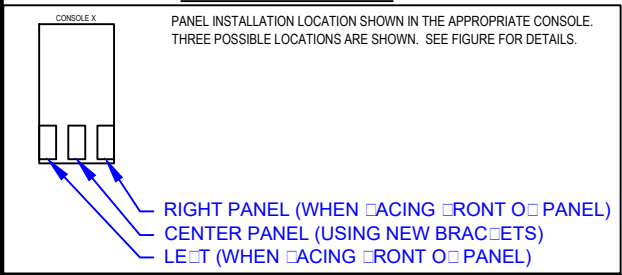
LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
P - POWER DISTRIBUTION
E - ETHERNET SWITCHES
R - RTU



PANEL LOCATION



RED GROUP
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Elmwood, LA 70123 Fax: 504.617.6704

www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

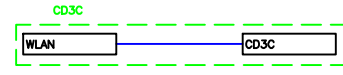
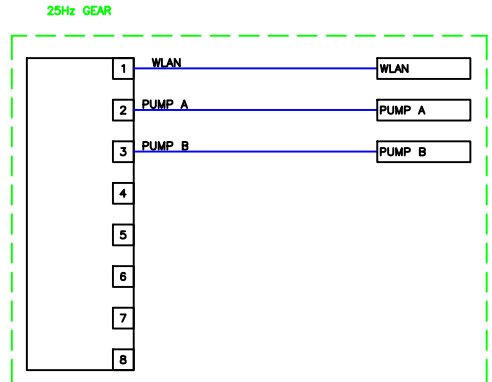
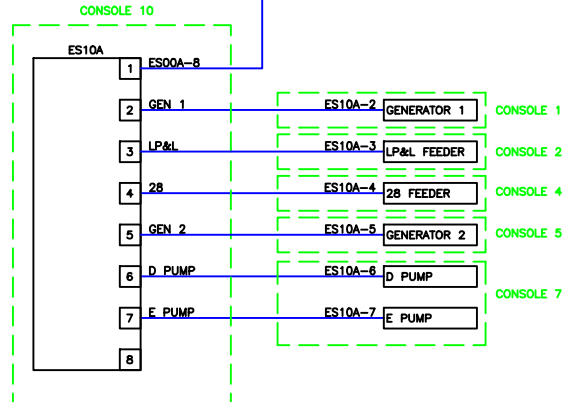
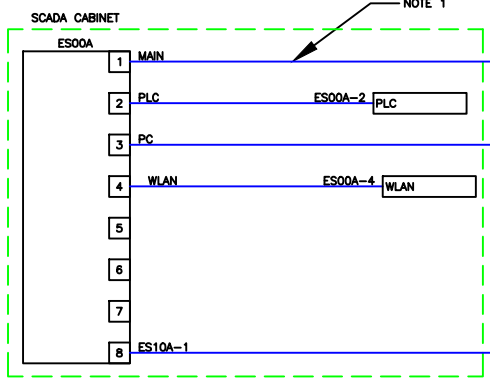
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 11

PLAN VIEW

DR. BMP	
TNC.	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5116-P2
DATE: 09/27/2018	SET NO. SHEET NO. 2 OF 11

A B C D E F G H J K L M

9 8 7 6 5 4 3 2 1



NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

CABINET 1

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 DESIGN GROUP, LLC
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

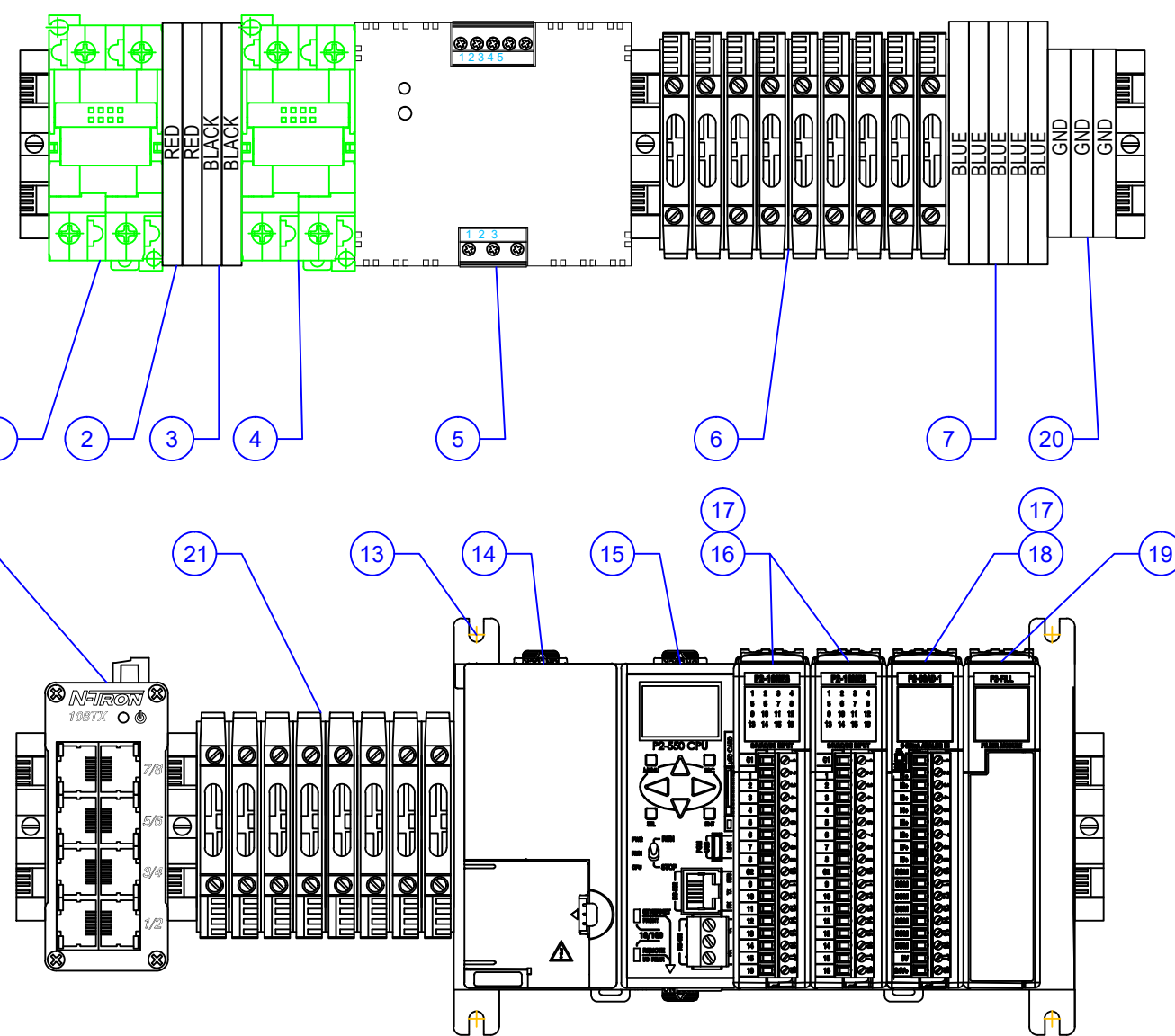
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 11

NETWORK DIAGRAM

DR. BMP	
TNC.	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5116-P3
DATE: 09/27/2018	SET NO. SHEET NO. 3 OF 11

A B C D E F G H J K L M

9 8 7 6 5 4 3 2 1



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input.	7800455	Automation Direct	PSP24-120C
6	9	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

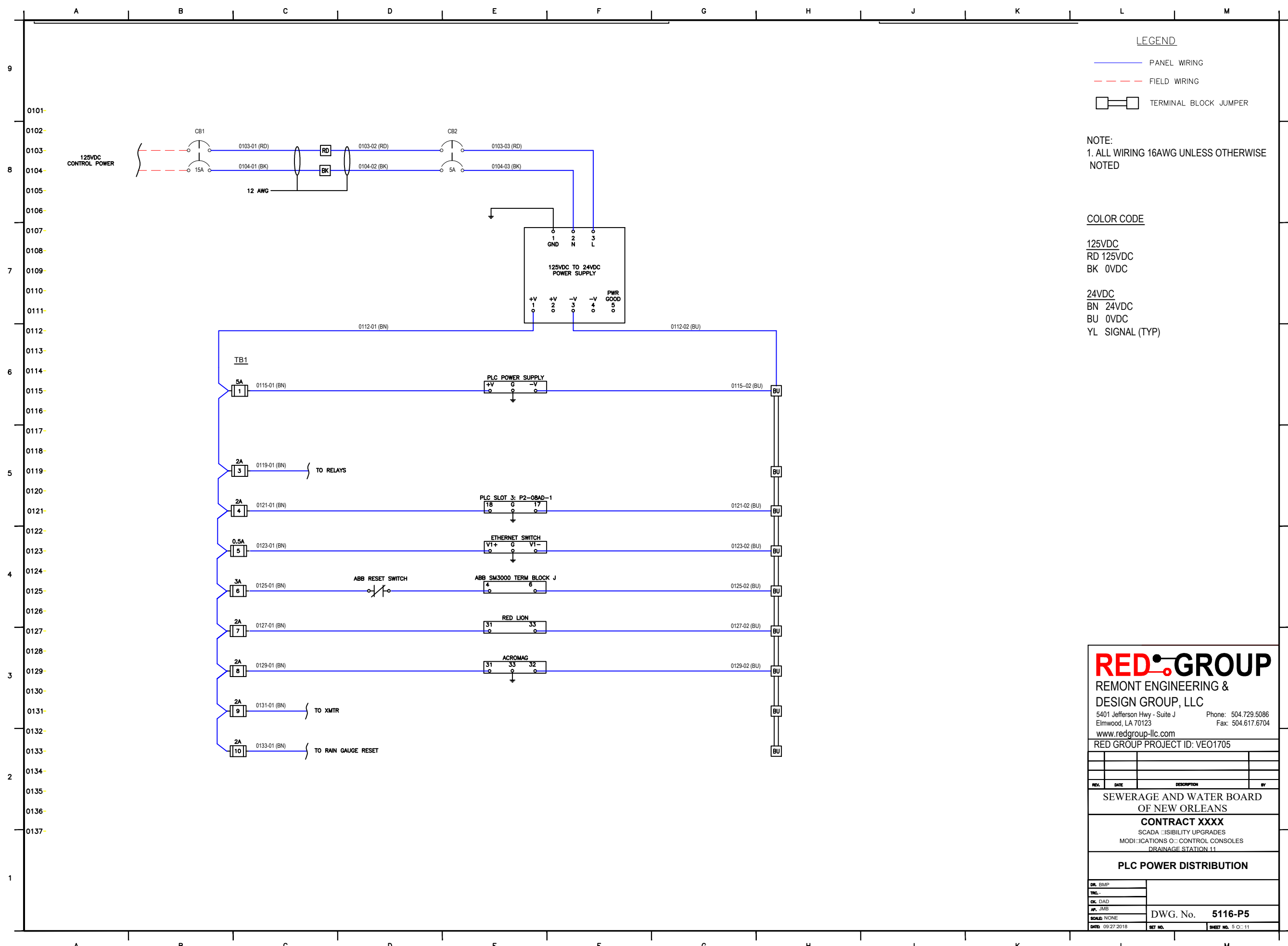
RED GROUP
 REMONT ENGINEERING & DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 11

PLC LAYOUT

DR. BMP	
TNC.	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5116-P4
DATE: 09/27/2018	SET NO. SHEET NO. 4 OF 11



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

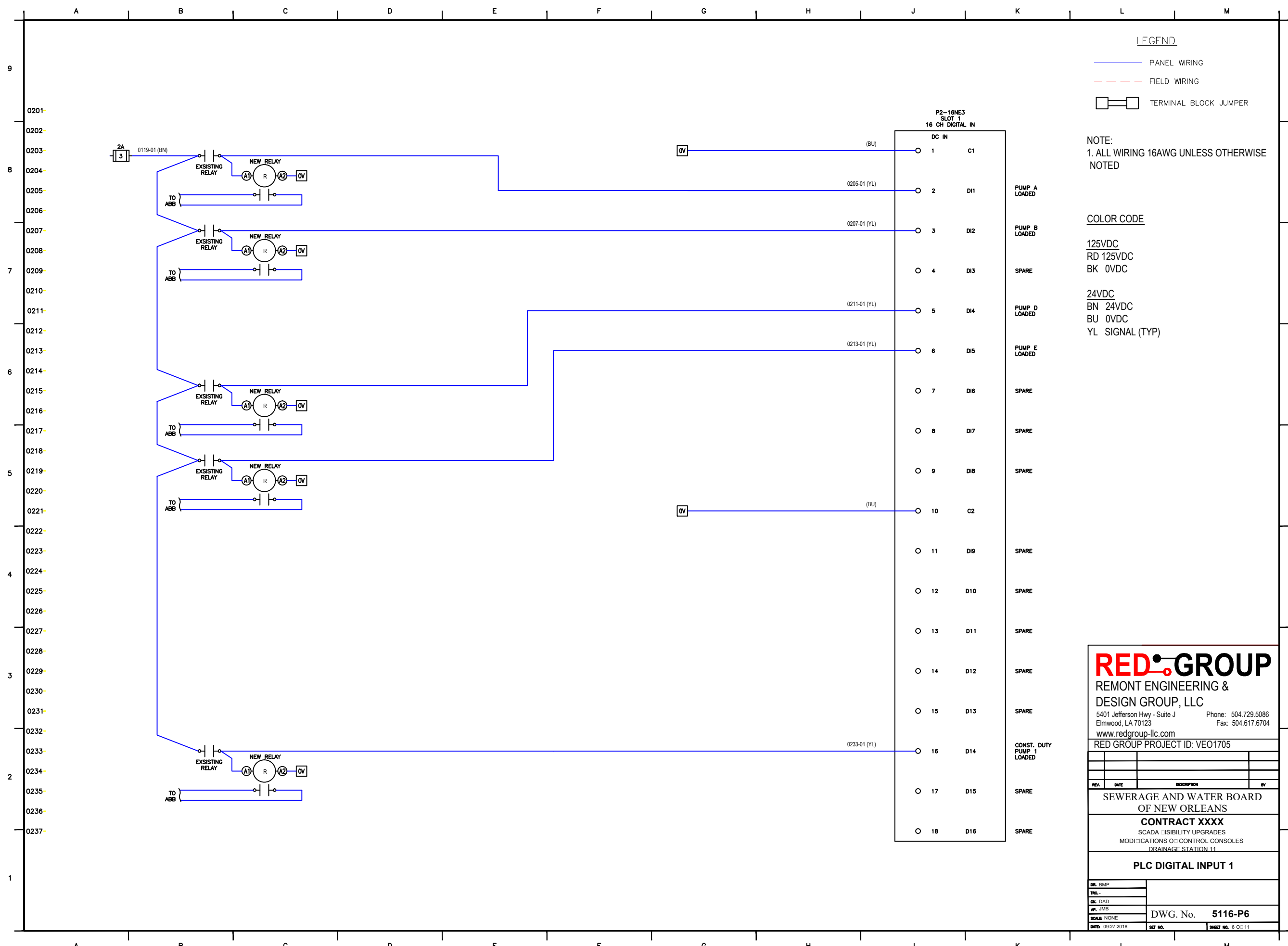
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 11

PLC POWER DISTRIBUTION

DR. BMP INC. CK. DAD AP. JMB SCALE: NONE DATE: 09/27/2018	DWG. No. 5116-P5 SET NO. SHEET NO. 5 OF 11
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 DESIGN GROUP, LLC
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

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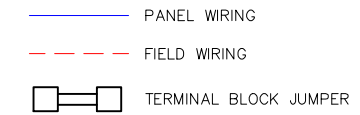
**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 11

PLC DIGITAL INPUT 1

DR. BMP	
TNC.	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5116-P6
DATE: 09/27/2018	SET NO. SHEET NO. 6 OF 11

LEGEND

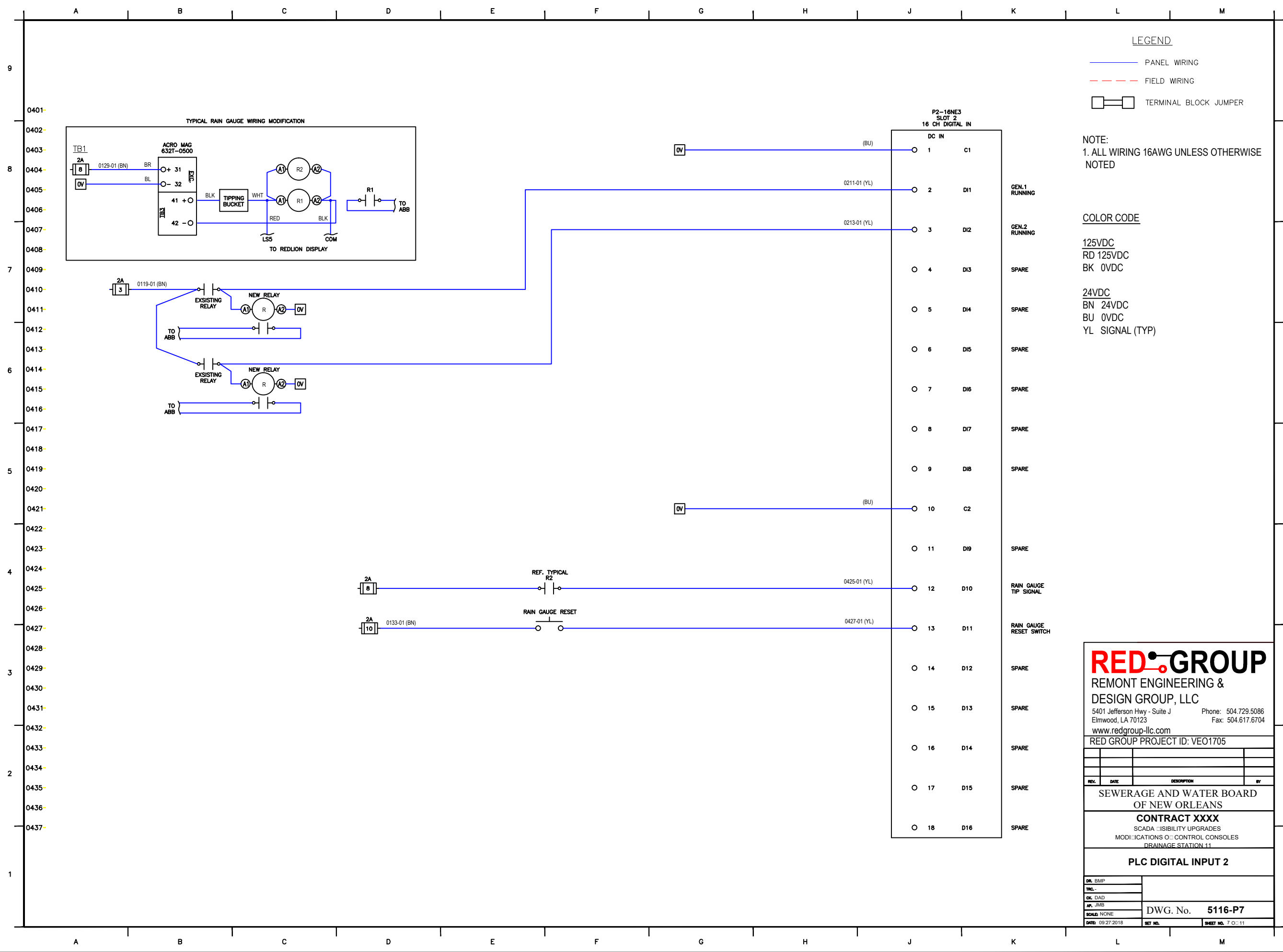


NOTE:
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COLOR CODE

125VDC
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 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)



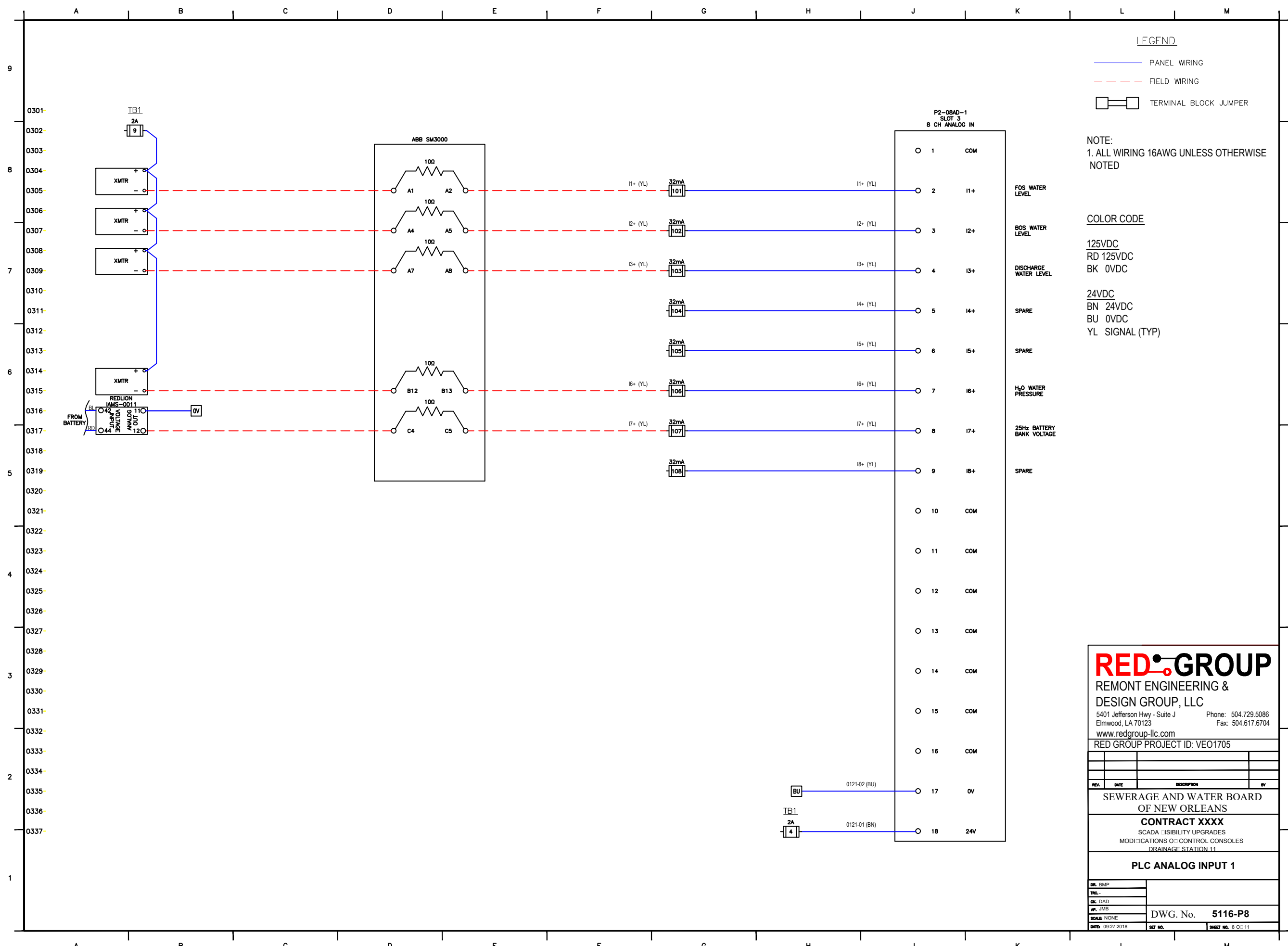
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 www.redgroup-llc.com
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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 11

PLC DIGITAL INPUT 2

DR. BMP	
TNC.	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5116-P7
DATE: 09/27/2018	SET NO. SHEET NO. 7 OF 11



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:
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COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

P2-08AD-1 SLOT 3 8 CH ANALOG IN	
1	COM
2	I1+
3	I2+
4	I3+
5	I4+
6	I5+
7	I6+
8	I7+
9	I8+
10	COM
11	COM
12	COM
13	COM
14	COM
15	COM
16	COM
17	0V
18	24V

RED GROUP
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www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

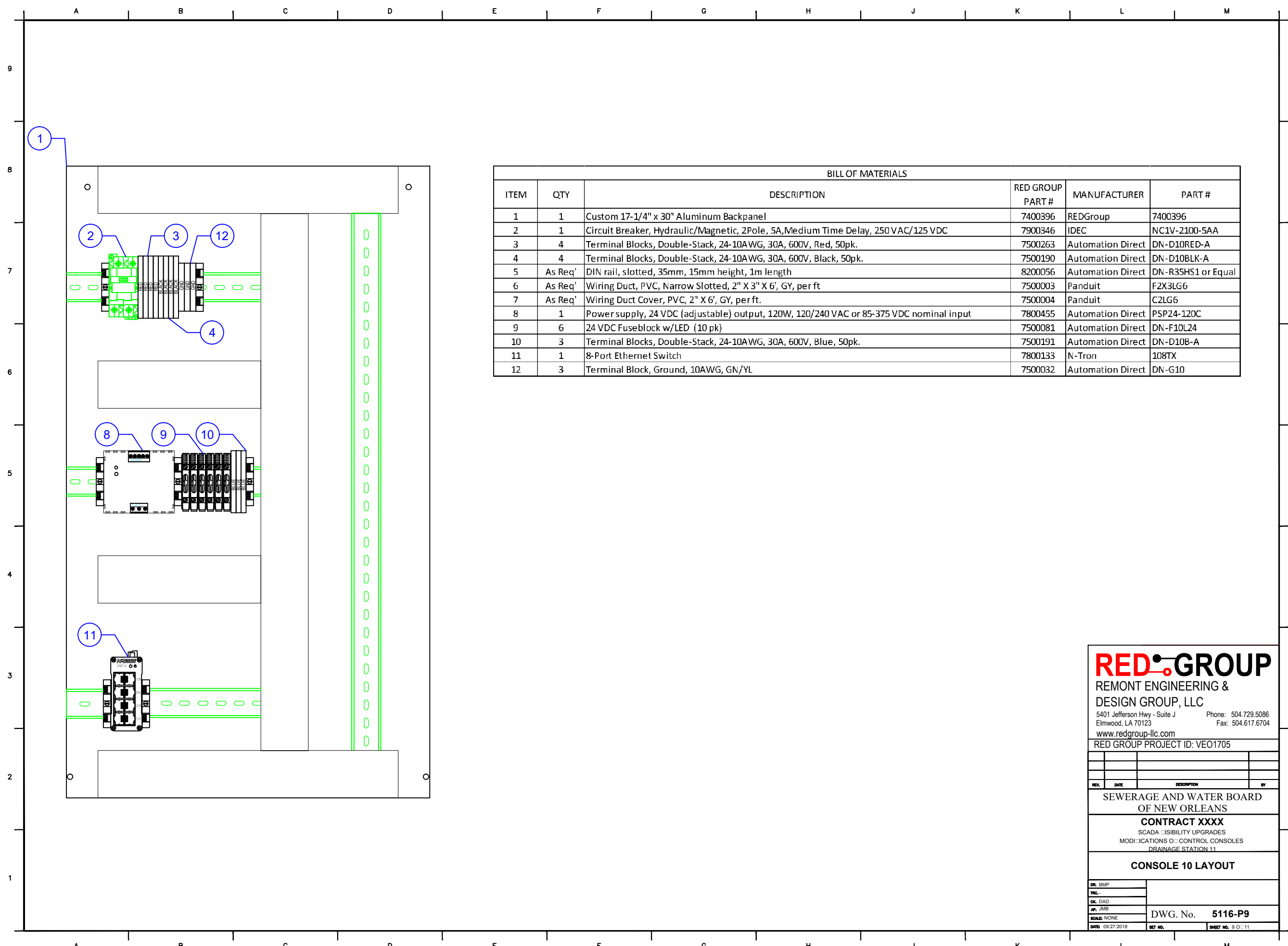
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 11

PLC ANALOG INPUT 1

DR. BMP INC. CK. DAD AP. JMB SCALE: NONE DATE: 09/27/2018	DWG. No. 5116-P8 SET NO. SHEET NO. 8 OF 11
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BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

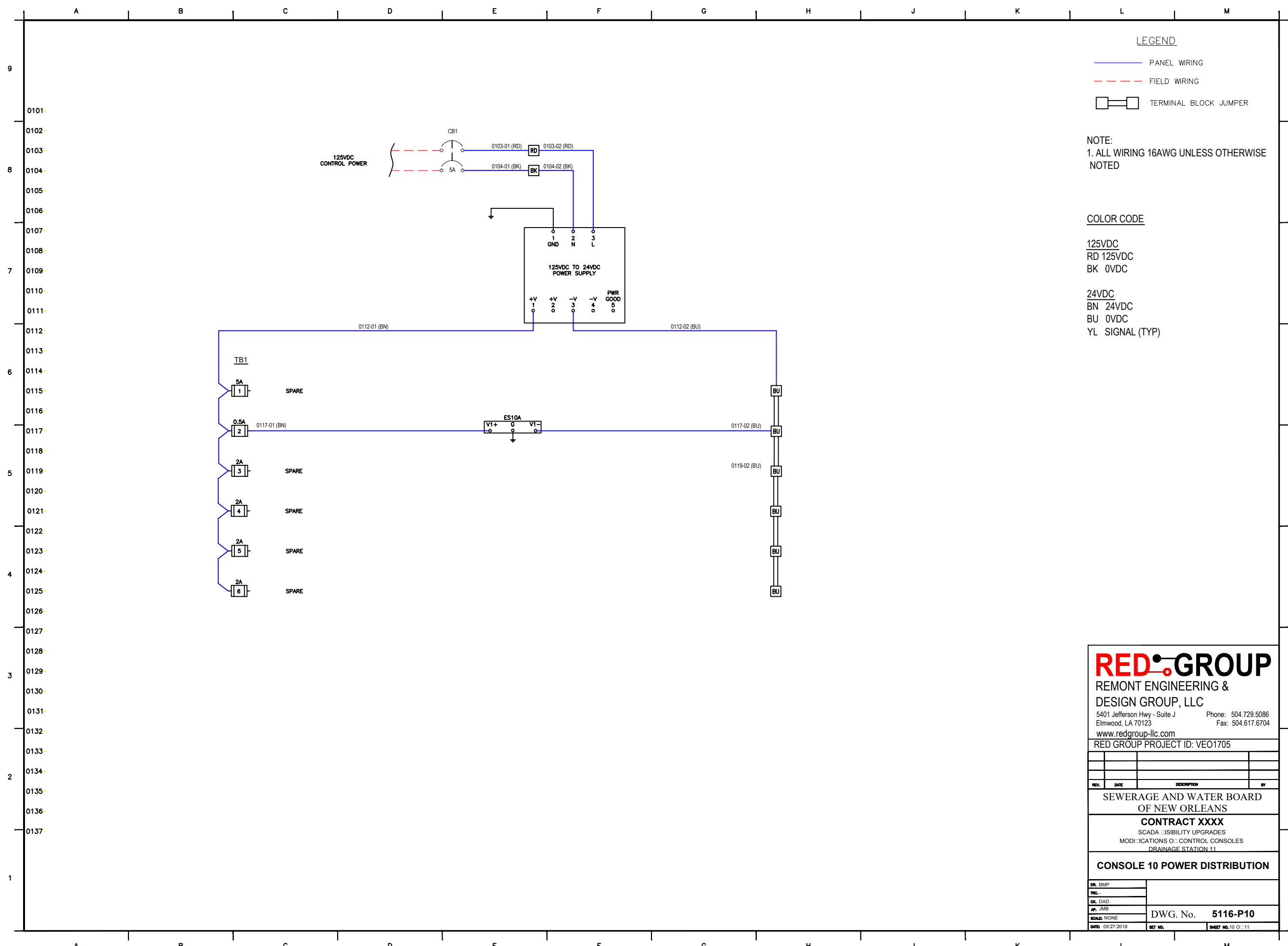
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 REMONT ENGINEERING &
 DESIGN GROUP, LLC
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 11

CONSOLE 10 LAYOUT

DR. BMP	
TNC.	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5116-P9
DATE: 09/27/2018	SHEET NO. 9 OF 11



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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REV.	DATE	DESCRIPTION	BY

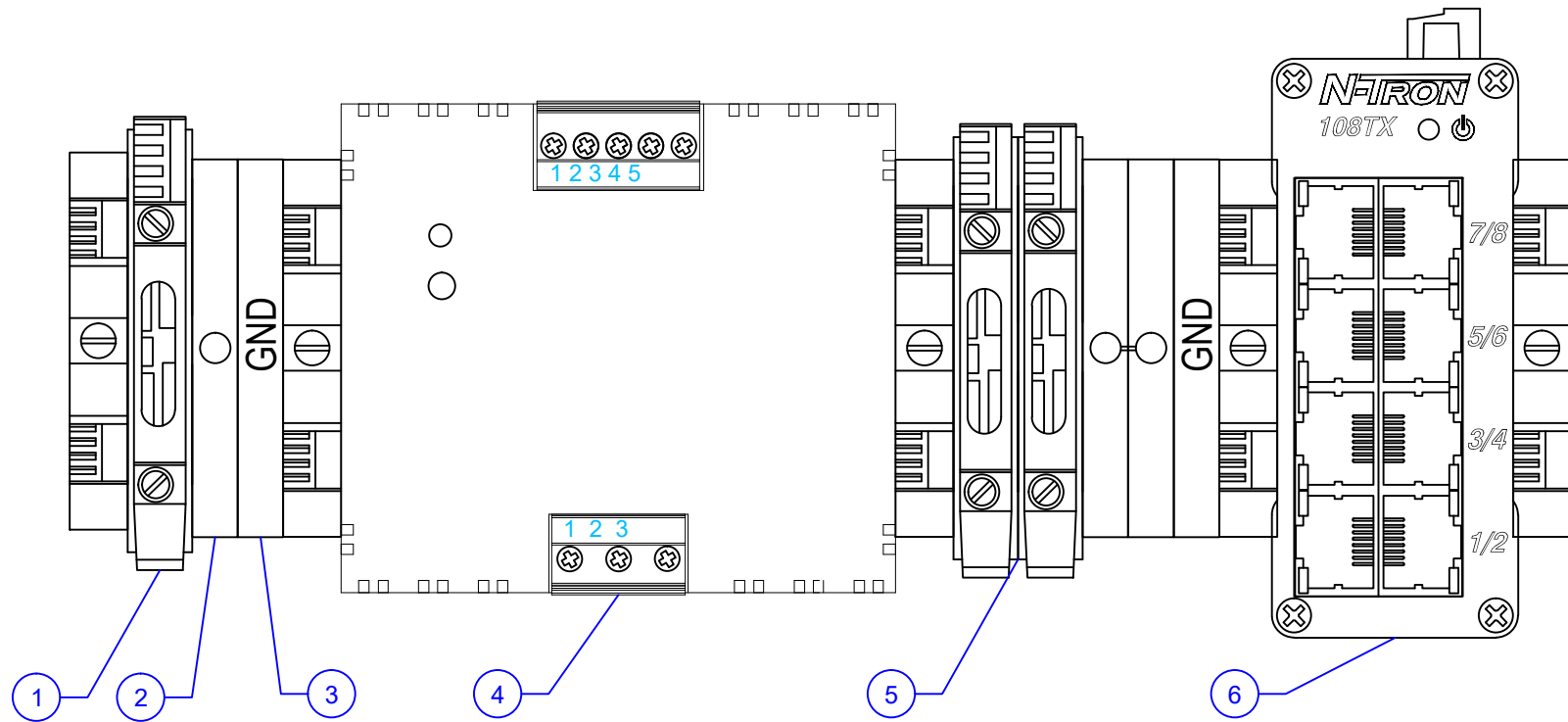
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

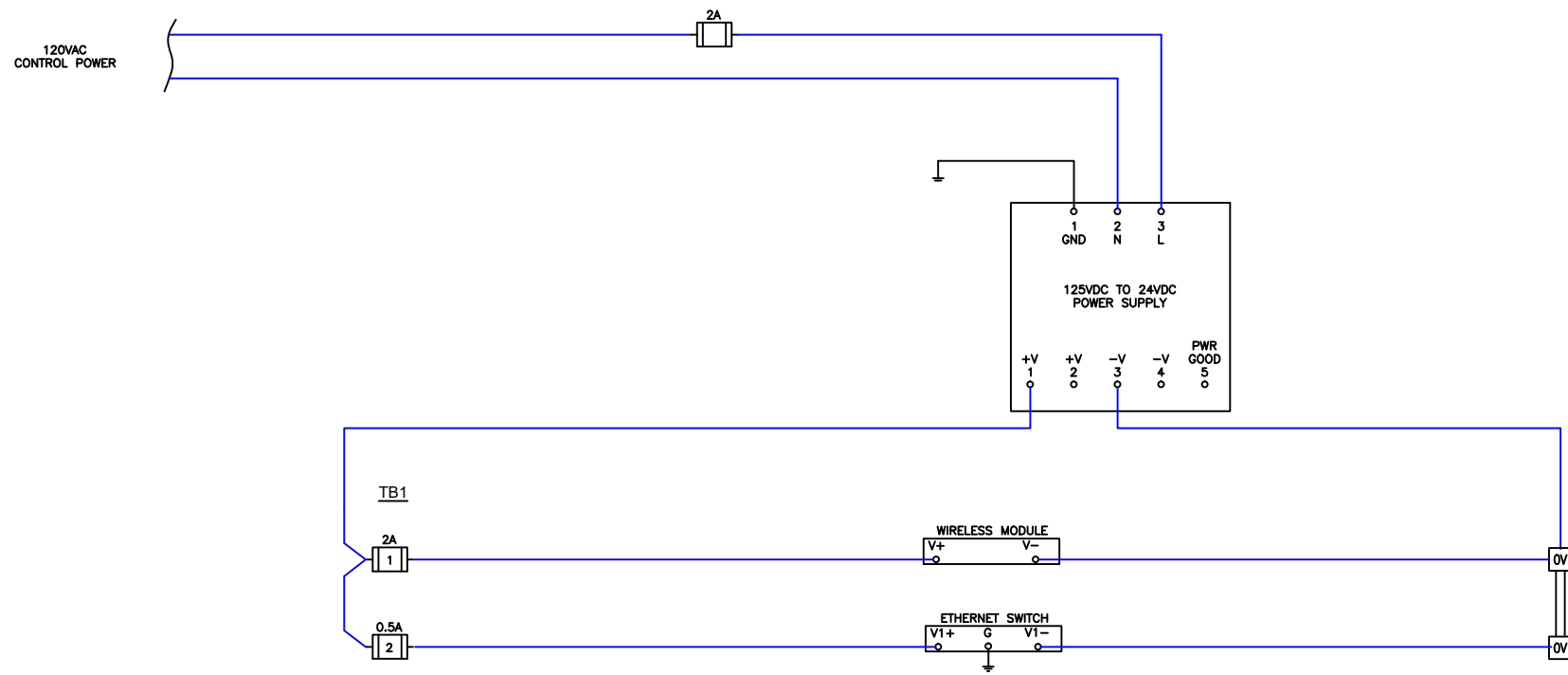
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 11

CONSOLE 10 POWER DISTRIBUTION

DR. BMP	
TNC.	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5116-P10
DATE: 09/27/2018	SHEET NO. 10 OF 11



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10
2	3	Terminal Block, 100EA / Box	7500029	Automation Direct	DN-T10-A
3	1	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
4	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
5	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
6	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
7	1	WLAN module with integrated antennas	7800463	Phoenix Contact	2702538



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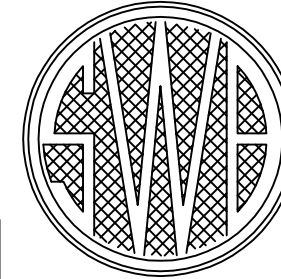
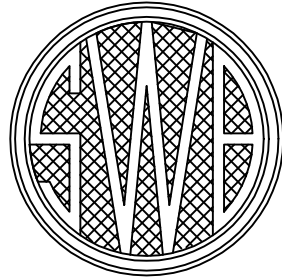
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 11

MCC POWER RAIL

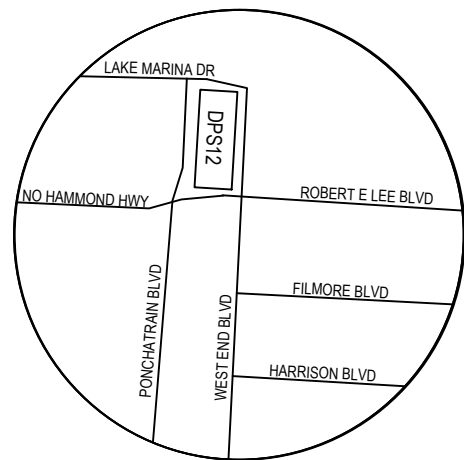
DR. BMP	
TRC.	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5116-P11
DATE: 09/27/2018	SET NO. SHEET NO. 11 OF 11

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 12



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 01 LAYOUT		
10	CONSOLE 01 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 12

INDEX OF SHEETS

DR. BMP	
TNC. JMB	
CC. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5117-P1
DATE: 04/04/2018	SET NO. SHEET NO. 1 OF 10

A B C D E F G H J K L M

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6

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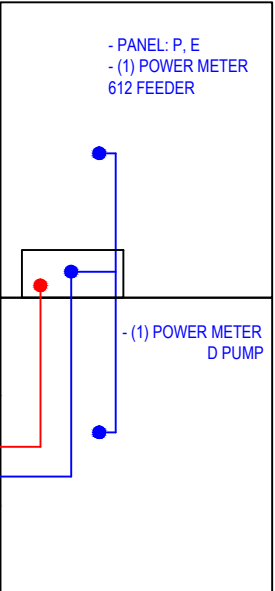
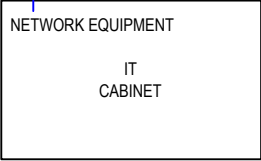
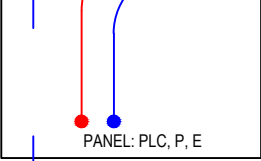
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LEGEND

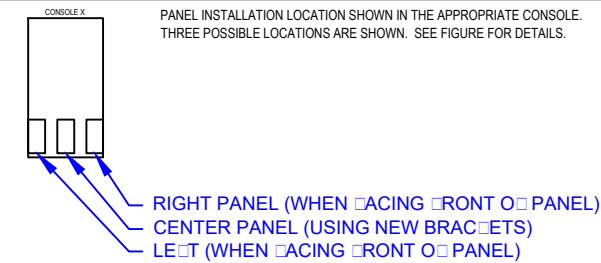
- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOX EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU



EXISTING CONDUIT

PANEL LOCATION



NOTE:
1 ADD ABB CABLE.

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REV.	DATE	DESCRIPTION	BY

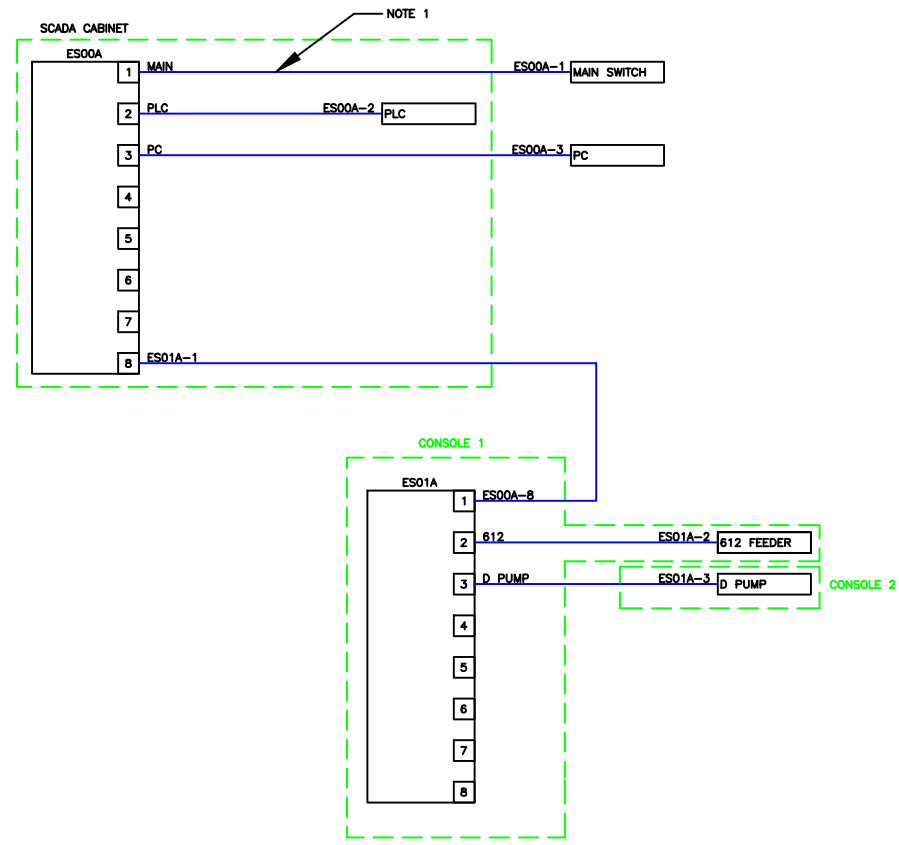
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 12

PLAN VIEW

DR: BMP	
TIC: JMB	
CC: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5117-P2
DATE: 04/04/2018	SET NO. SHEET NO. 2 OF 10

A B C D E F G H J K L M



NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

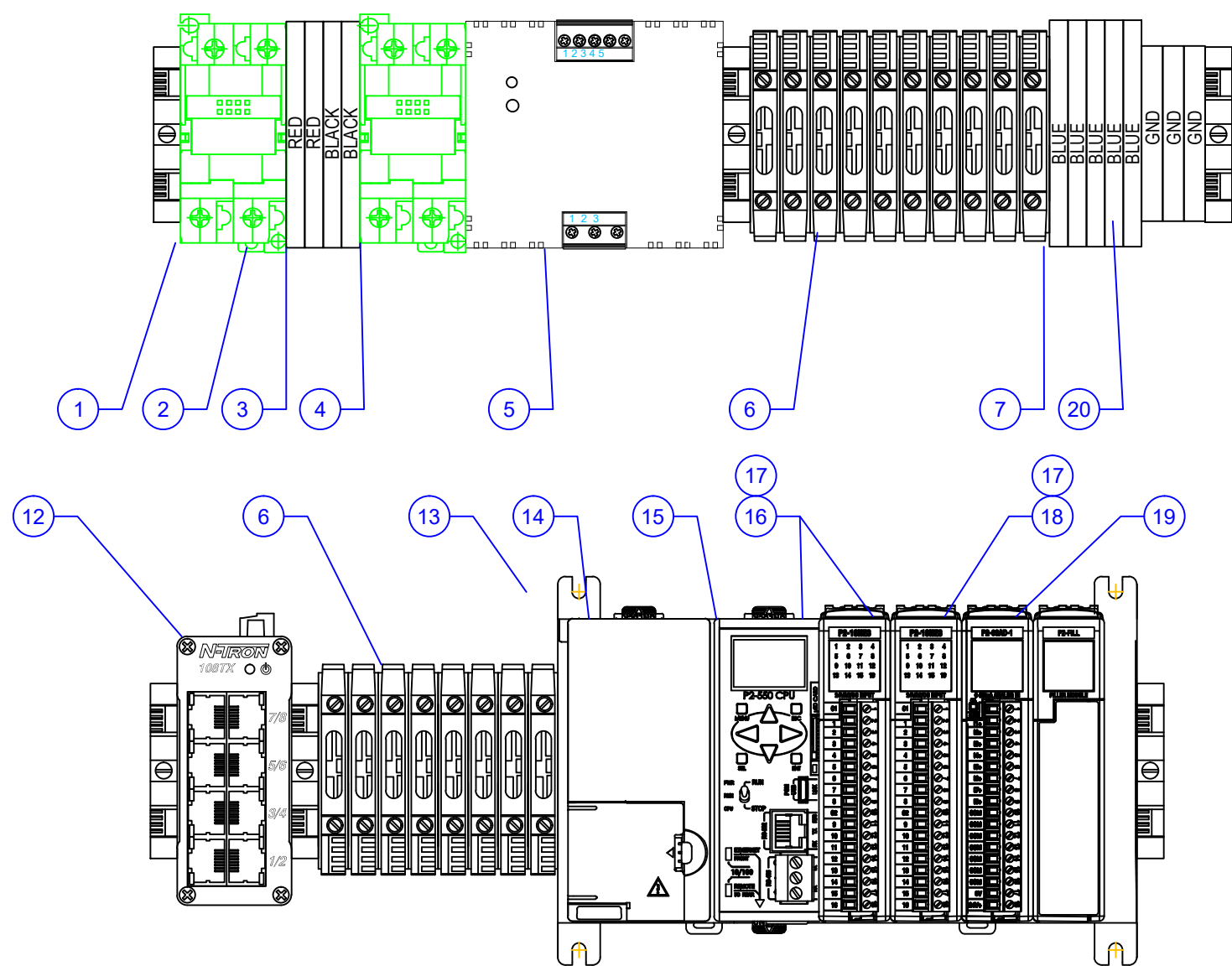
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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 12

NETWORK DIAGRAM

DR. BMP	
TNG. JMB	
CK. DAD	
JR. JMB	
SCALE: NONE	DWG. No. 5117-P3
DWG: 04/04/2018	SET NO. SHEET NO. 3 OF 10



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input.	7800455	Automation Direct	PSP24-120C
6	10	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

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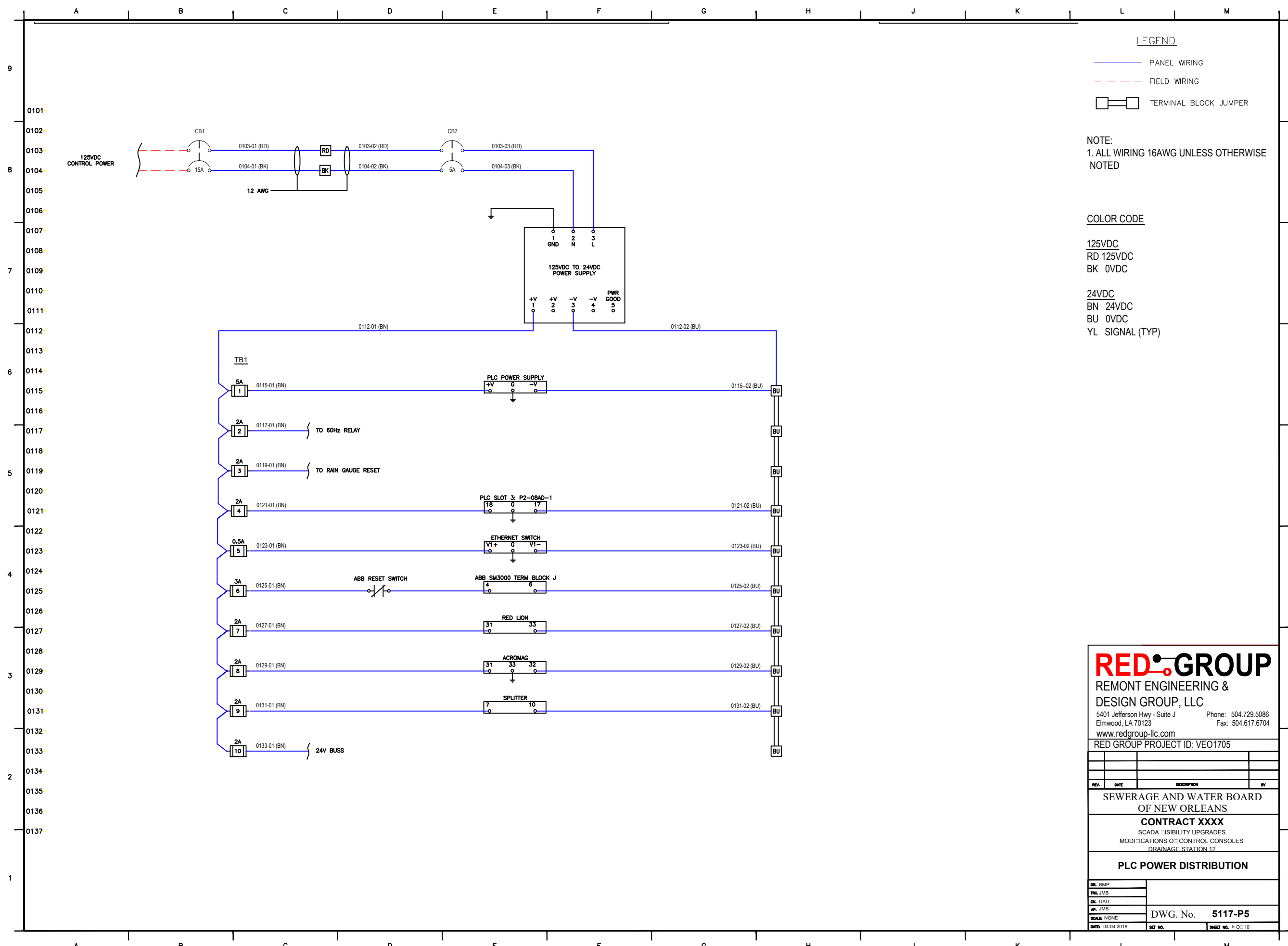
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 12

PLC LAYOUT

DL BMP
 TRC JMB
 CK DAD
 AP JMB
 SCALE: NONE
 DATE: 04/04/2018

DWG. No. **5117-P4**

SET NO. SHEET NO. 4 OF 10



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA SIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 12

PLC POWER DISTRIBUTION

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5117-P5
DWG: 04/04/2018	SET NO. SHEET NO. 5 OF 10

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LEGEND

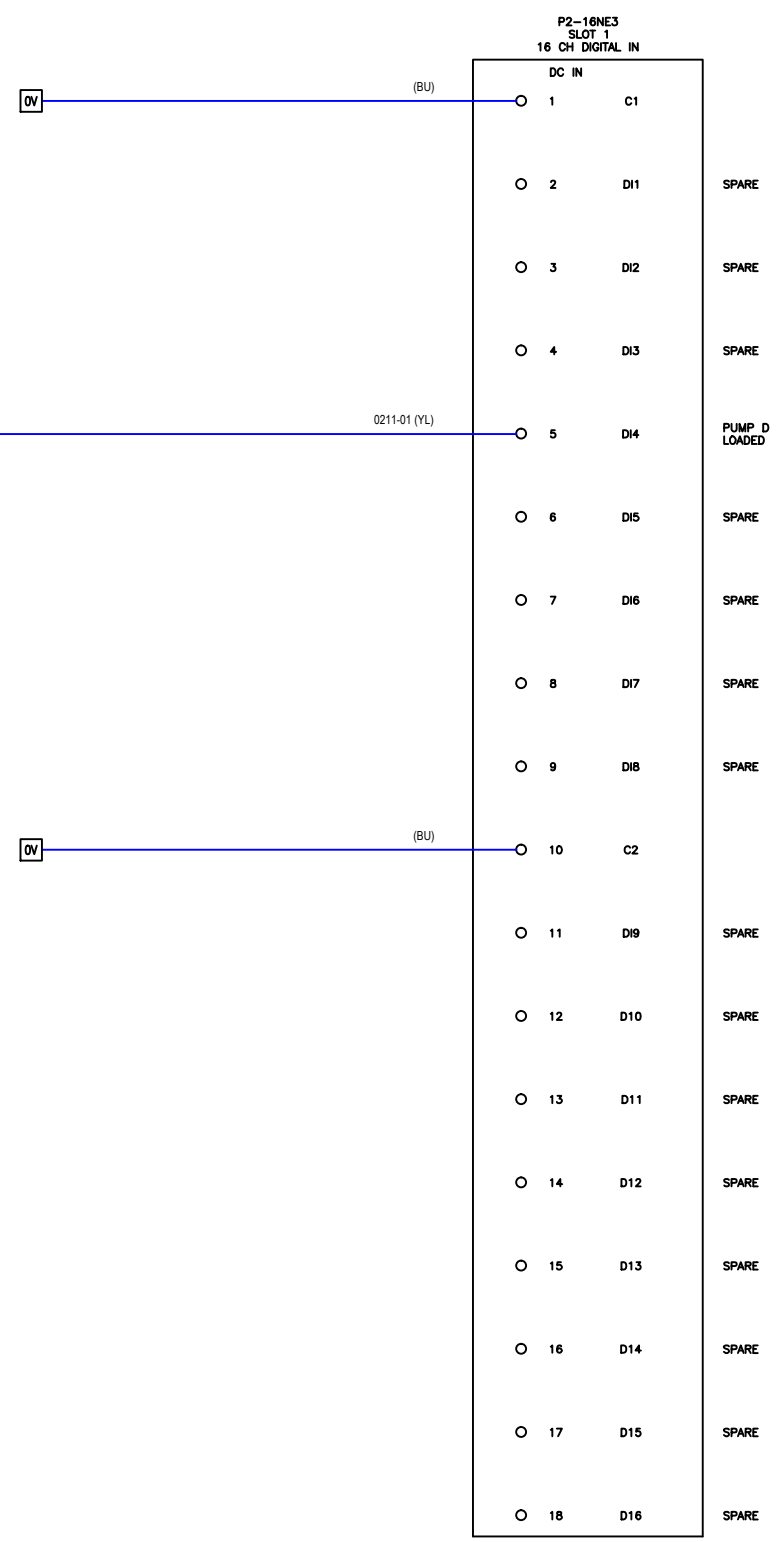
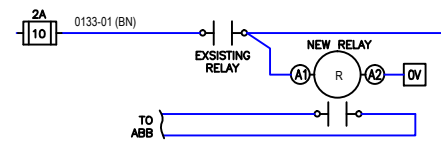
- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 12

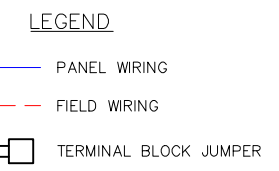
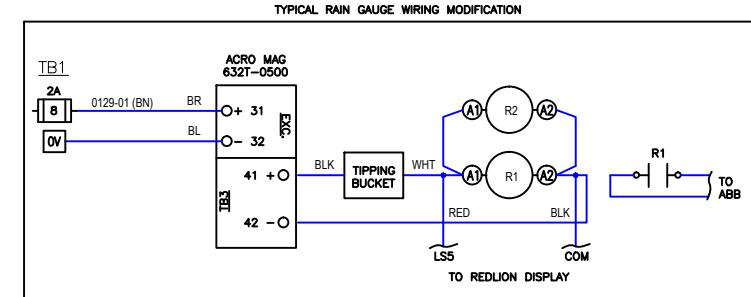
PLC DIGITAL INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5117-P6
DATE: 04/04/2018	SET NO. SHEET NO. 6 OF 10

A B C D E F G H J K L M

A B C D E F G H J K L M

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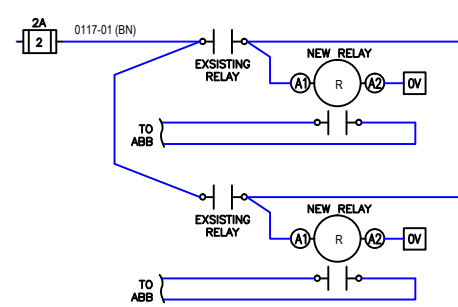
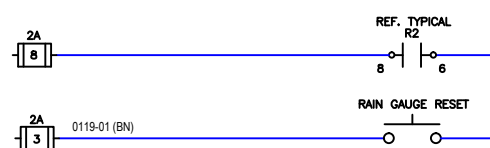
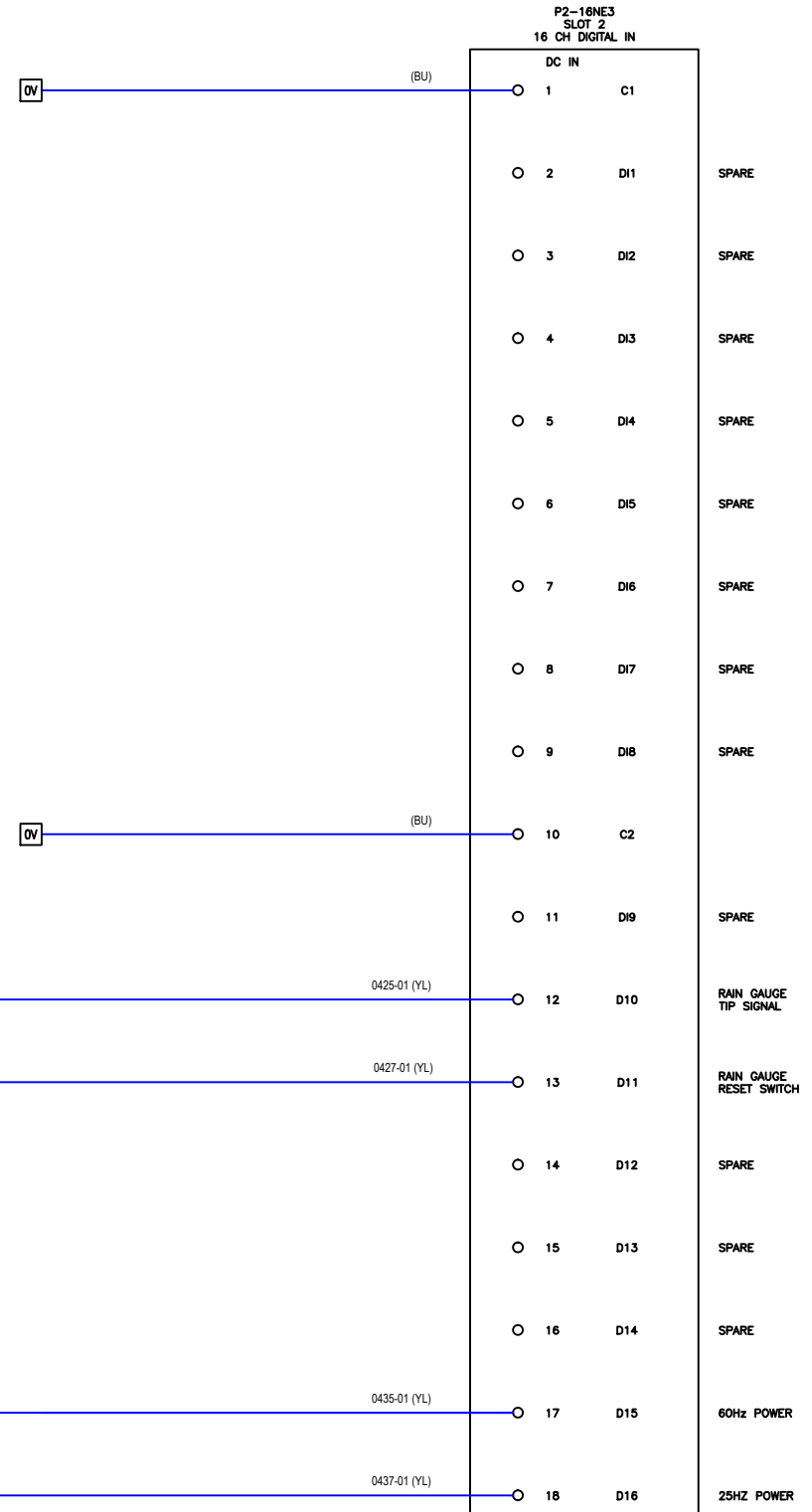


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 12

PLC DIGITAL INPUT 2

DR. BMP	
TNG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5117-P7
DATE: 04/04/2018	SHEET NO. 7 OF 10

A B C D E F G H J K L M

LEGEND

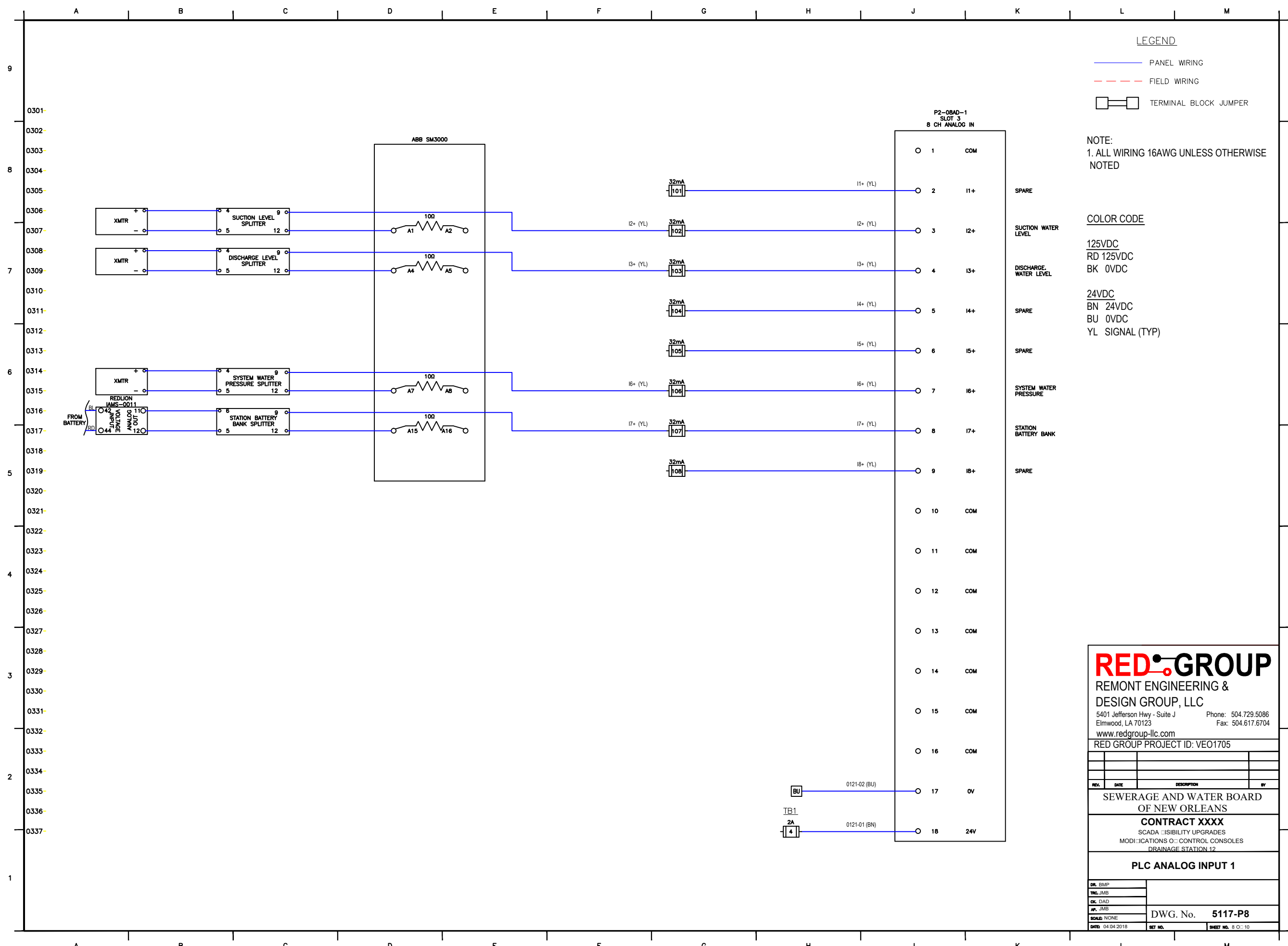
- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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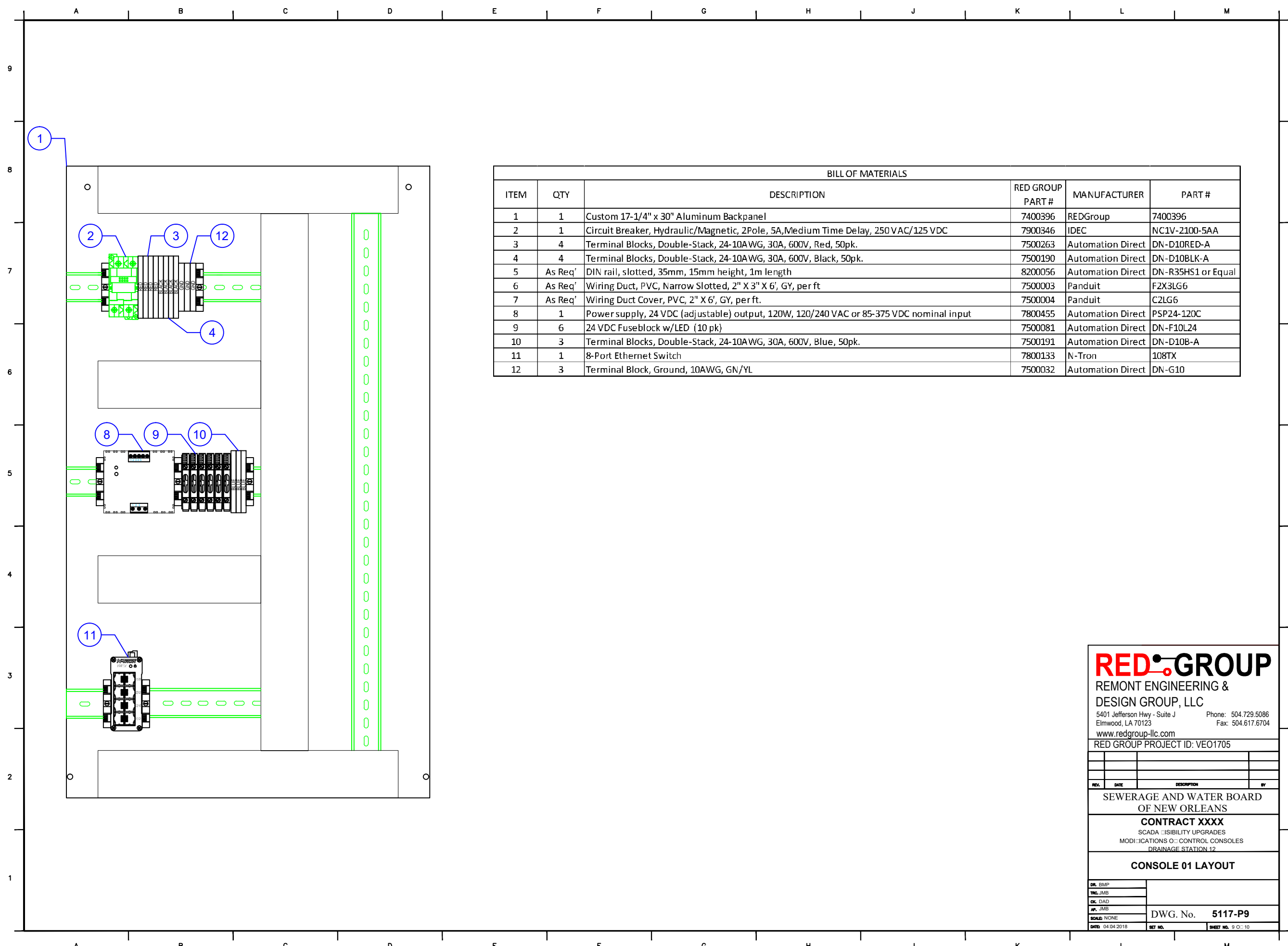
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 12

PLC ANALOG INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5117-P8
DATE: 04/04/2018	SHEET NO. 8 OF 10



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

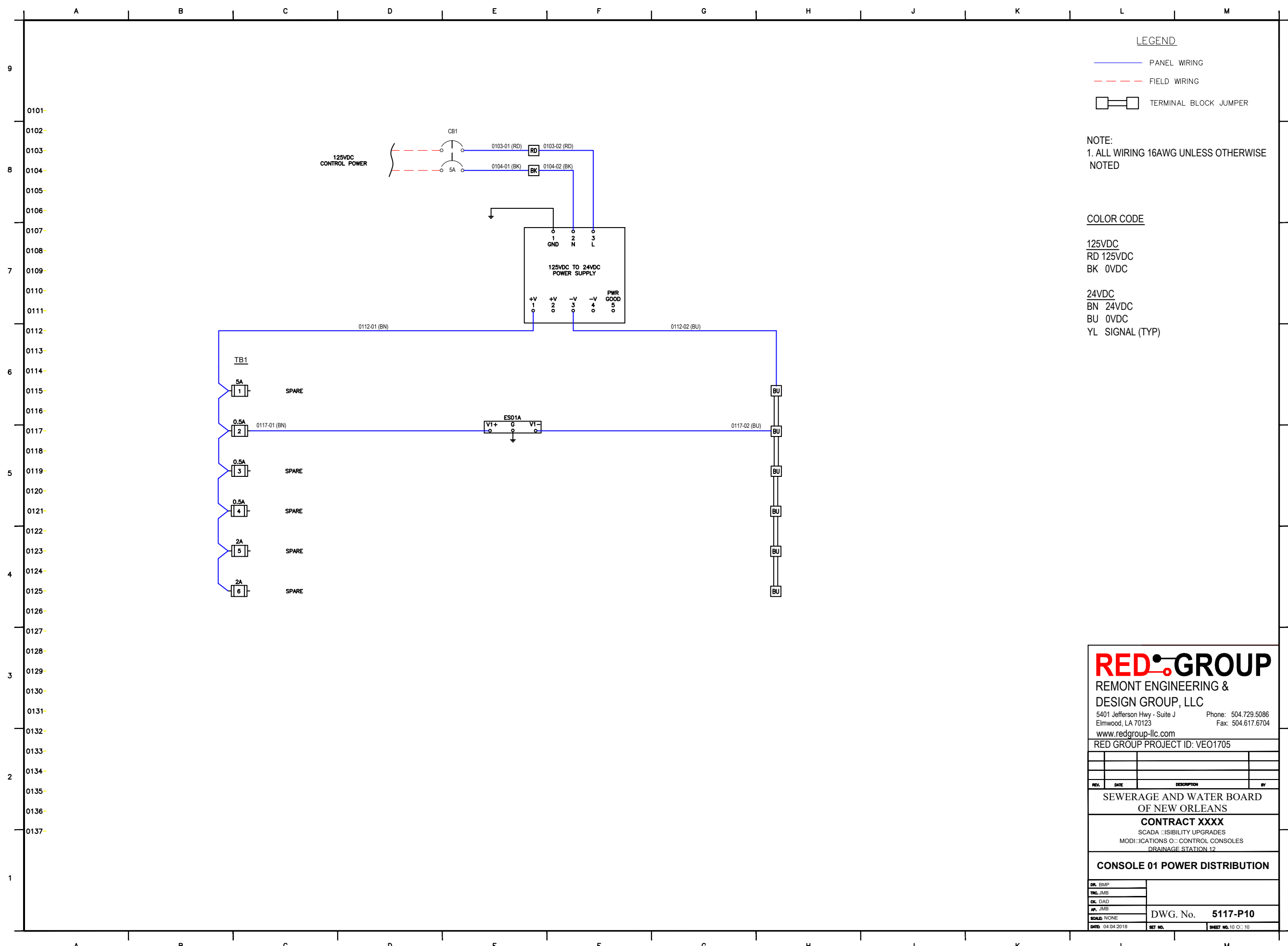
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 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 12

CONSOLE 01 LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5117-P9
DATE: 04/04/2018	SHEET NO. SHEET NO. 9 OF 10



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

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**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

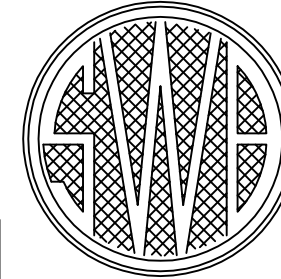
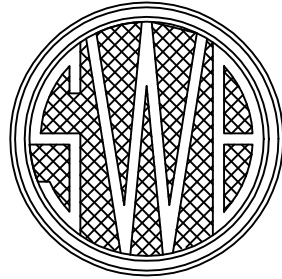
CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 12

CONSOLE 01 POWER DISTRIBUTION

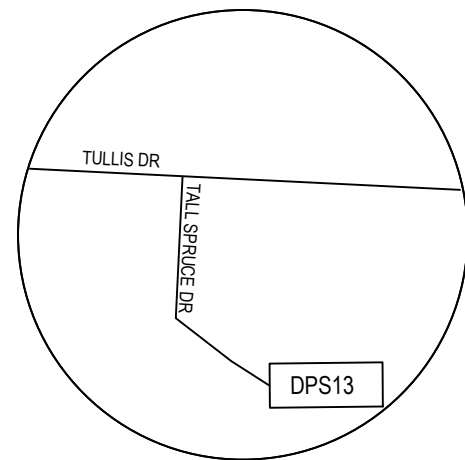
DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5117-P10
DATE: 04/04/2018	SET NO. SHEET NO. 10 OF 10

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 13



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	RTU LAYOUT		
10	RTU BACK PANEL LAYOUT		
11	RTU POWER DISTRIBUTION		
12	RTU ANALOG INPUT		
13	POWER RAIL		

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INTERIM GENERAL SUPERINTENDENT

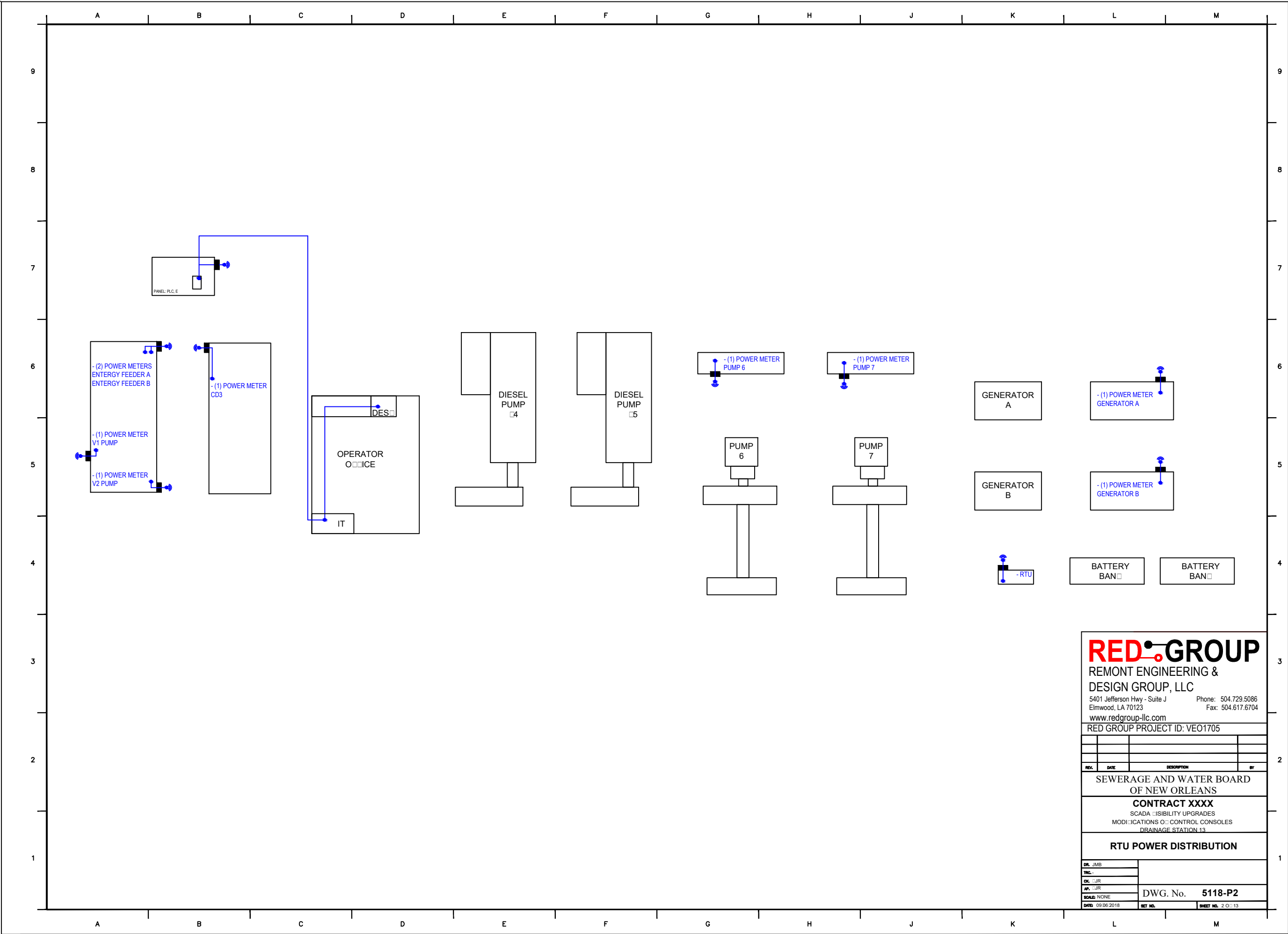
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 13

INDEX OF SHEETS

DR: JMB	
TWC: JMB	
CC: JJR	
AP: JJR	
SCALE: NONE	DWG. No. 5118-P1
DATE: 09/06/18	SET NO. SHEET NO. 1 OF 13



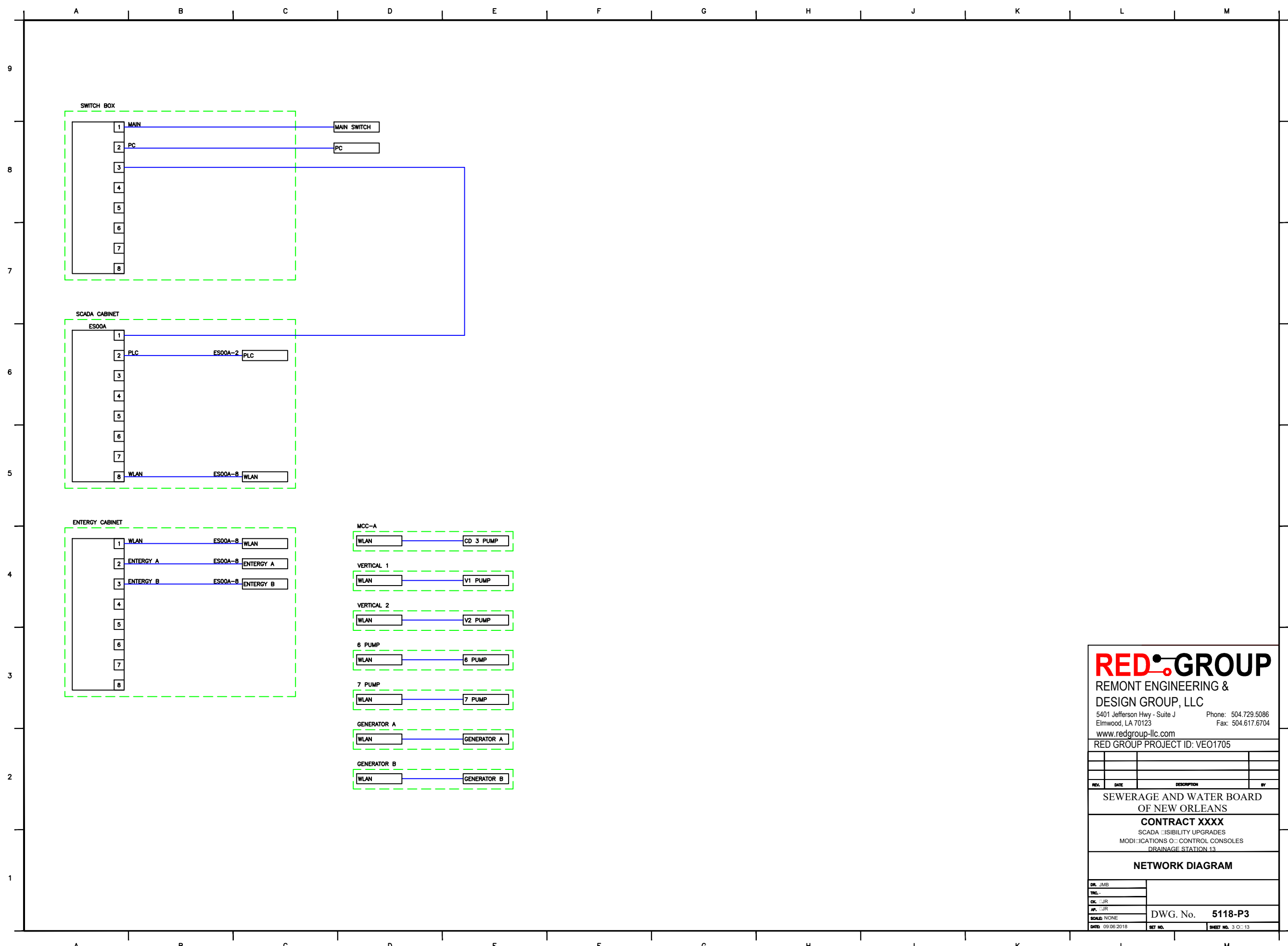
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA □ SIBILITY UPGRADES
 MODIFICATIONS □ CONTROL CONSOLES
 DRAINAGE STATION 13

RTU POWER DISTRIBUTION

DR: JMB	
TWO:	
CC: JJR	
AP: JJR	
SCALE: NONE	DWG. No. 5118-P2
DATE: 09/06/2018	SET NO. SHEET NO. 2 OF 13



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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 13

NETWORK DIAGRAM

DR: JMB	
TIC: -	
CC: CJR	
AP: CJR	
SCALE: NONE	DWG. No. 5118-P3
DATE: 09/06/2018	SET NO. SHEET NO. 3 OF 13

BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
3	2	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	1	Productivity2000 discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 1 isolated	7800451	Automation Direct	P2-16ND3
17	2	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	2	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

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 RED GROUP PROJECT ID: VEO1705

REV. DATE DESCRIPTION BY

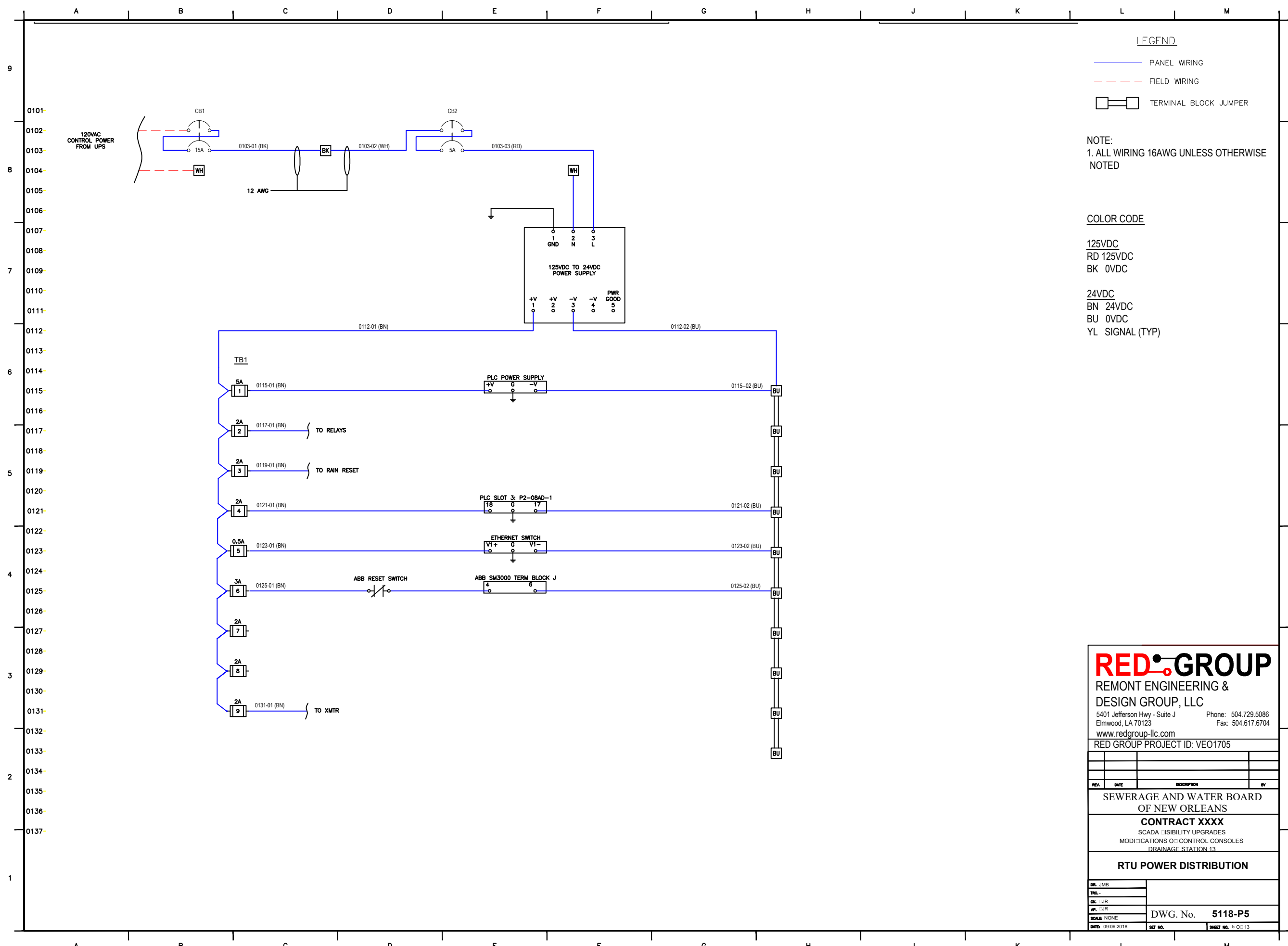
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 13

PLC LAYOUT

DR. JMB
 TNO.
 CK. JJR
 AP. JJR
 SCALE: NONE
 DATE: 09/06/2018

DWG. No. **5118-P4**
 SET NO. SHEET NO. 4 OF 13



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

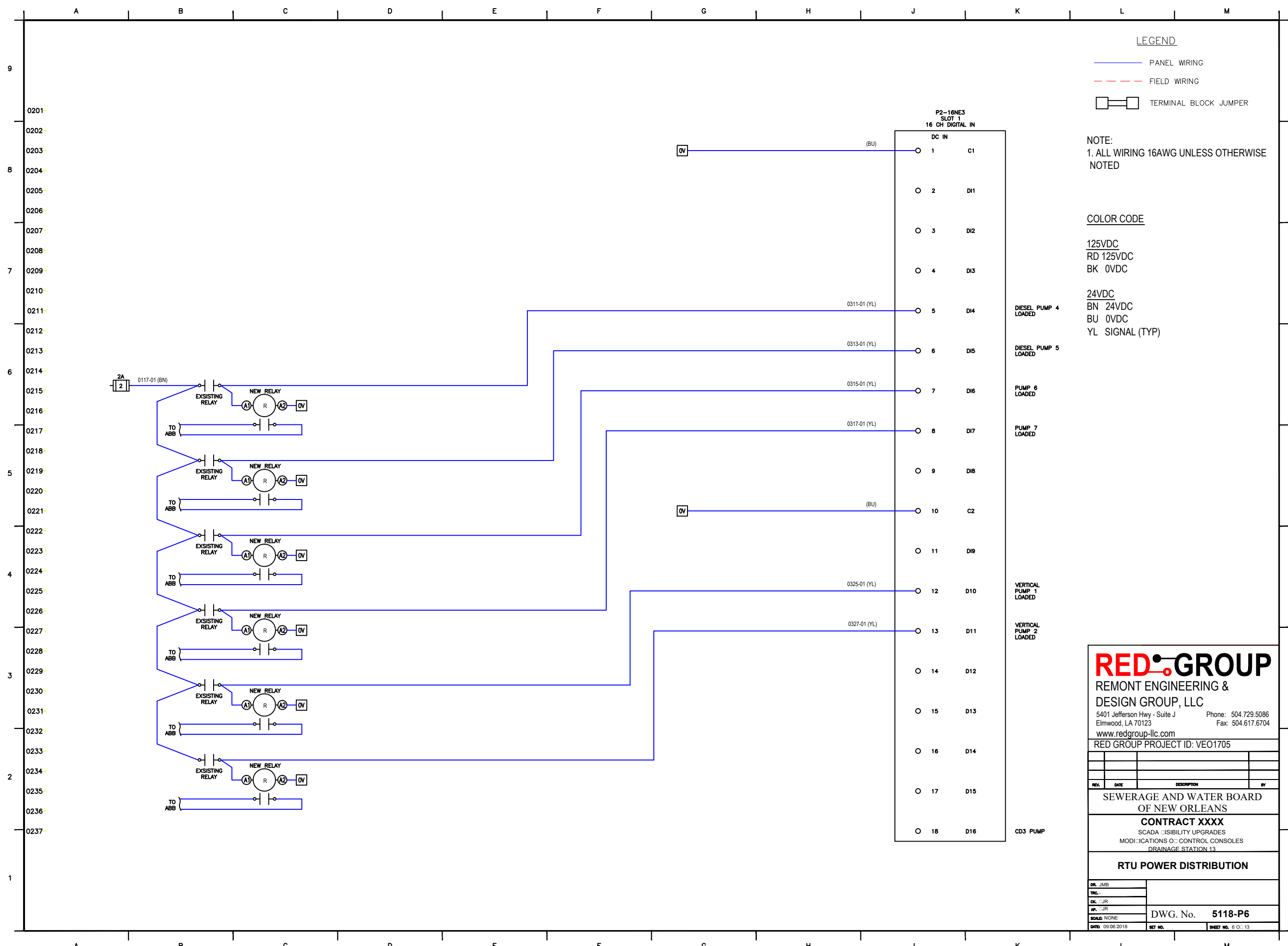
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 13

RTU POWER DISTRIBUTION

DR: JMB			
TNC: -			
CC: CJR			
AP: CJR			
SCALE: NONE	DWG. No.	5118-P5	
DATE: 09/06/2018	SET NO.	SHEET NO. 5 OF 13	



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

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OF NEW ORLEANS**

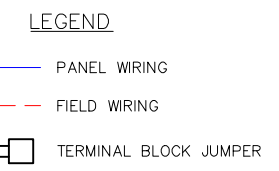
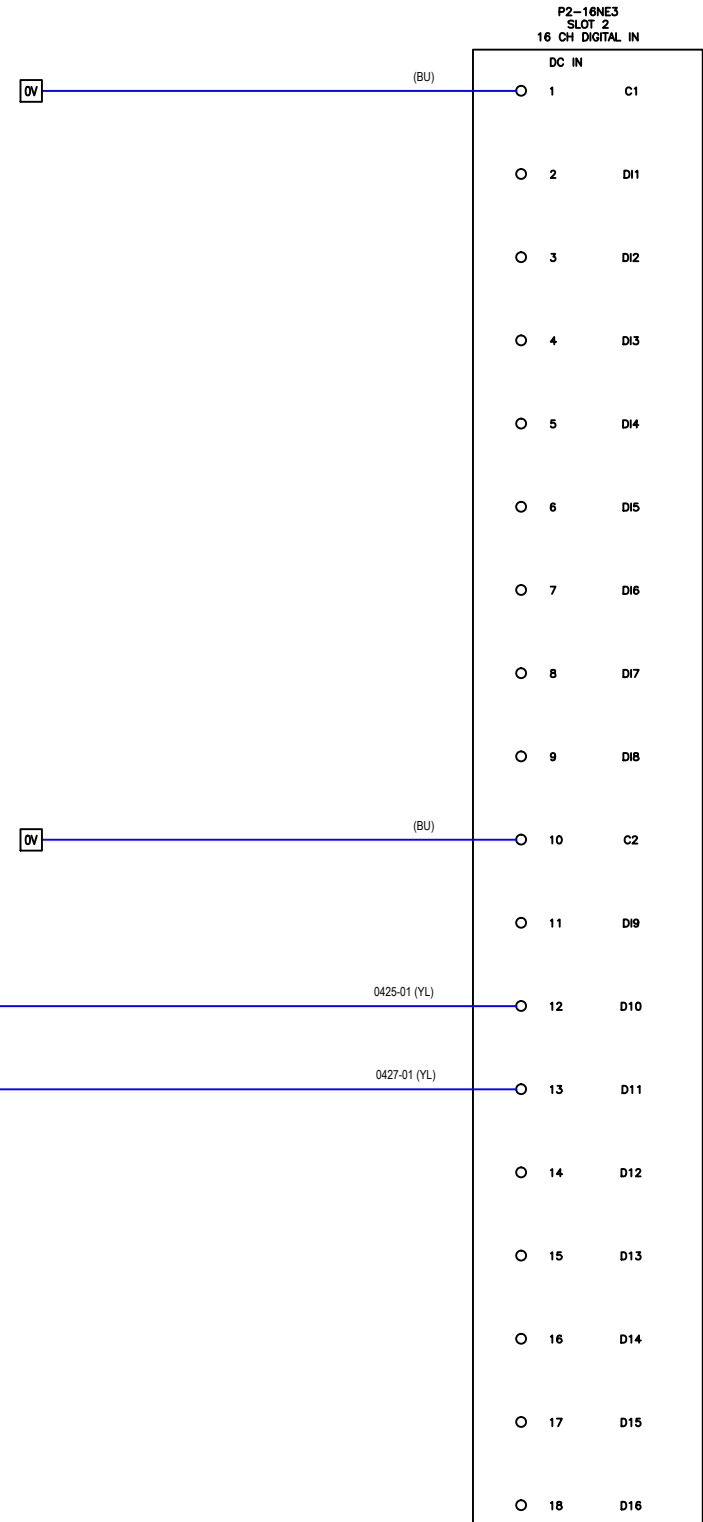
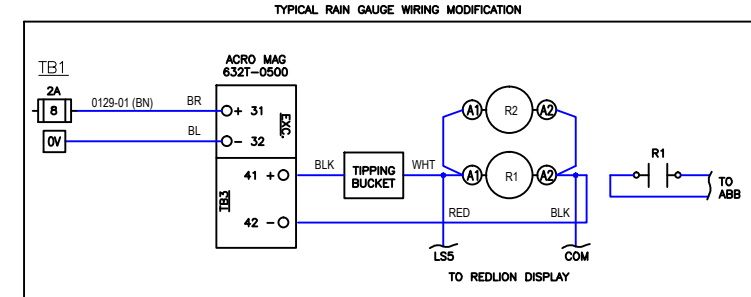
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 13

RTU POWER DISTRIBUTION

DR. JMB			
TNO.			
CC. CJR			
AP. CJR			
SCALE: NONE	DWG. No.	5118-P6	
DATE: 09/06/2018	SET NO.	SHEET NO. 6 OF 13	

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NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

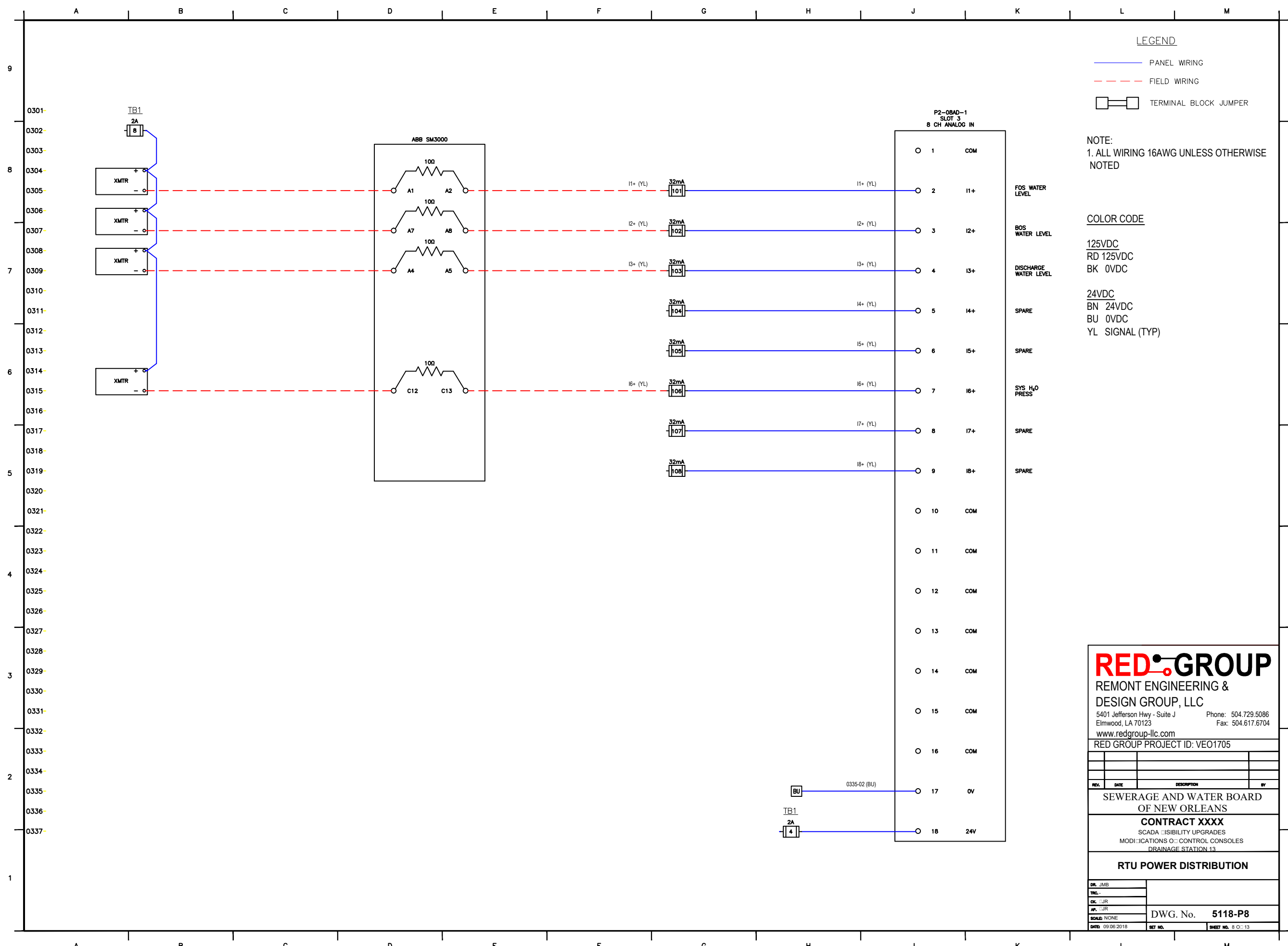
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 13

RTU POWER DISTRIBUTION

DR. JMB	
INC.	
CC. CJR	
AP. CJR	
SCALE: NONE	DWG. No. 5118-P7
DATE: 09/06/2018	SET NO. SHEET NO. 7 OF 13

A B C D E F G H J K L M



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

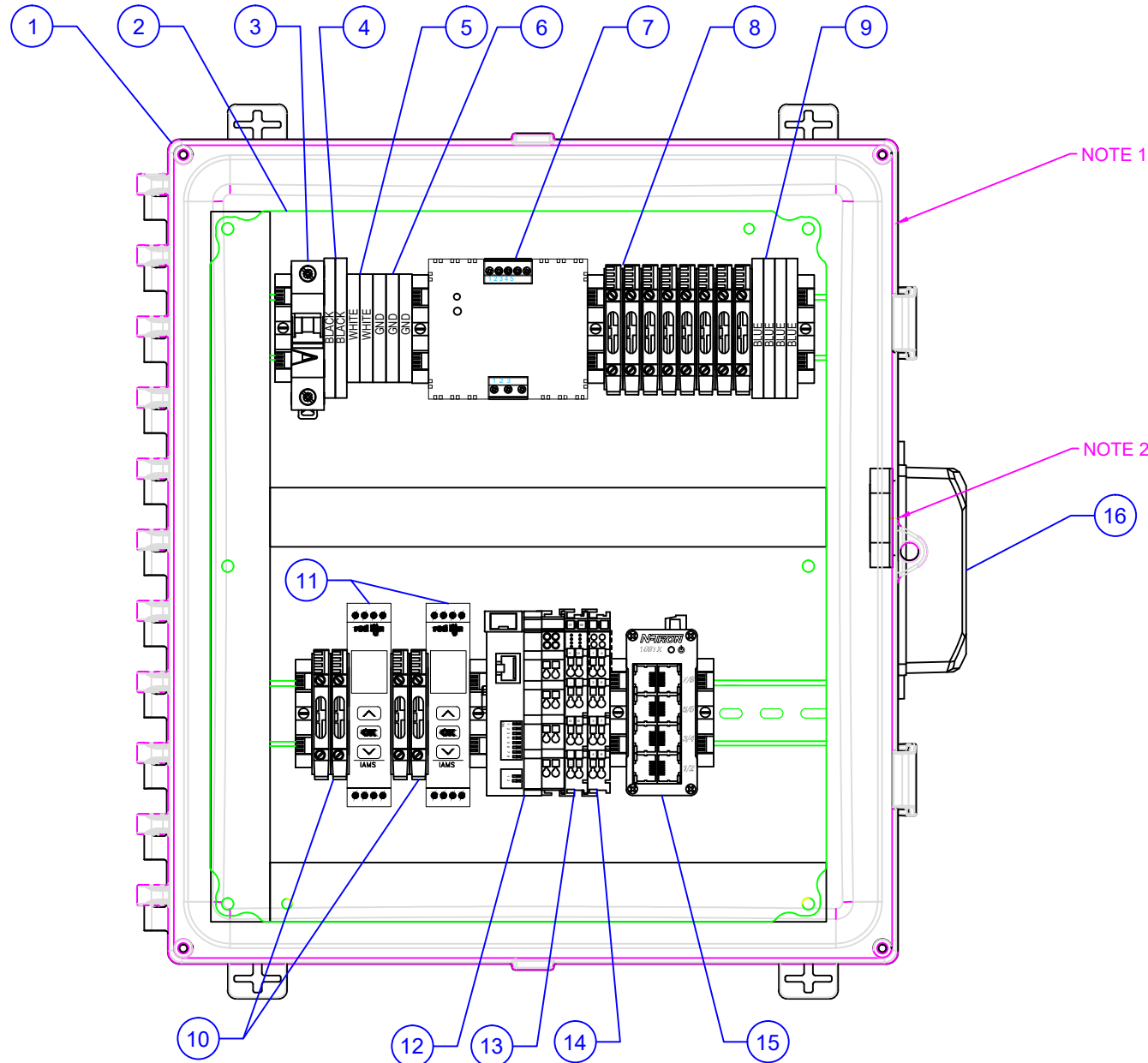
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
 OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 13

RTU POWER DISTRIBUTION

DR: JMB	
TNC: -	
CK: CJR	
AP: CJR	
SCALE: NONE	
DATE: 09/06/2018	DWG. No. 5118-P8
SET NO.	SHEET NO. 8 OF 13



NOTE:
 1. COVER OF ENCLOSURE TO BE WINDOW TYPE TO ALLOW OPERATORS TO SEE REDLION DISPLAYS AND BLOWN FUSE INDICATORS WHILE ENCLOSURE IS CLOSED.
 2. LINE UP MOUNTING HOLE FOR WLAN MODULE WITH WIREWAY.
 3. TO BE PROVIDED BY S&WB

NOTE 1

NOTE 2

NOTE 3

BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Enclosure, 16"x14" Polycarbonate Enclosure with Window	74-	Saginaw	SCE1614PCW
2	1	Subpanel, 16 x 14	7400168	Saginaw	SCE-16P14
3	1	Supplementary Protector, Miniature, 5A, 10kA SCCR, 35mm DIN rail mount, thermal magnetic	7900225	Eaton	FAZ-C5-1-SP
4	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black	7500190	Automation Direct	DN-D10BLK-A
5	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White	7500120	Automation Direct	DN-T10W-A
6	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
7	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
8	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
9	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
10	4	110VAC/VDC Fusel w/LED	7500082	Automation Direct	DN-F10L110
11	2	Universal Signal Conditioner with Analog and Dual Setpoint	78-	REDLion	IAMS0011
12	1	Protos X compact bus coupler, 24 VDC, (1) Ethernet (RJ45) port(s), Modbus TCP	78-	Automation Direct	PX-TCP1
13	1	Protos X analog input terminal, 4-channel, current, 12-bit, input current signal range(s) of 4-20 mA.	78-	Automation Direct	PX-304
14	1	Protos X bus end terminal, for use with Protos X I/O systems.	78-	Automation Direct	PX-901
15	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
16	1	WLAN module with integrated antennas	7800463	Phoenix Contact	2702538
17	As Req'	Type F narrow slot wiring duct, 1" W x 2" H, 6' length, PVC, light gray, per ft. - order in multiples of 6ft.	7500170	Panduit	F1X2LG6
18	As Req'	Wiring Duct Cover, PVC, 1" X 6', GY, per ft. - order in multiples of 6ft.	7500002	Panduit	C1LG6-F
19	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal

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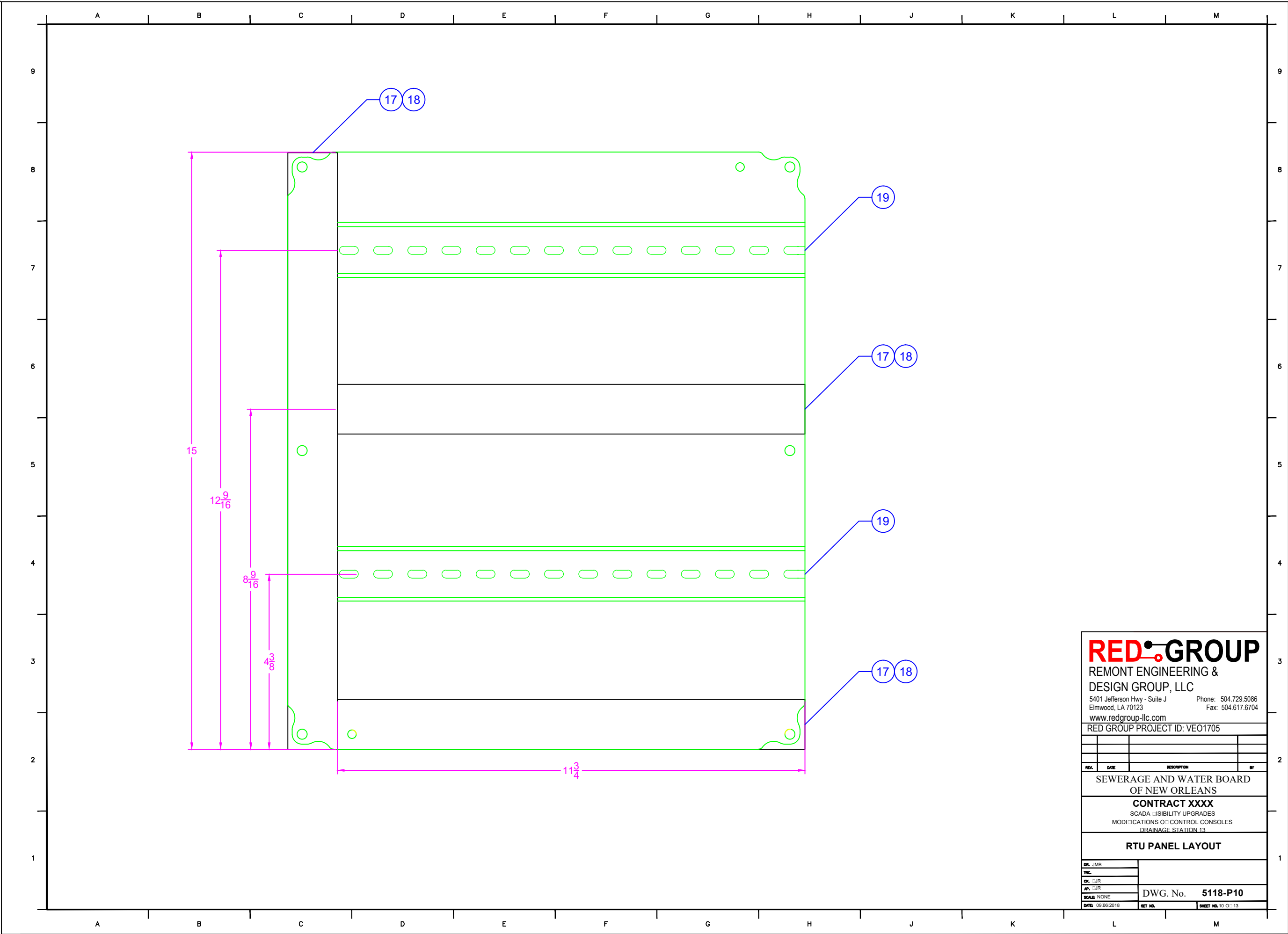
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 13

RTU ENCLOSURE

DR: JMB	
TITLE:	
DC: JJR	
AP: JJR	
SCALE: NONE	DWG. No. 5118-P9
DATE: 09/06/2018	SET NO. SHEET NO. 9 OF 13



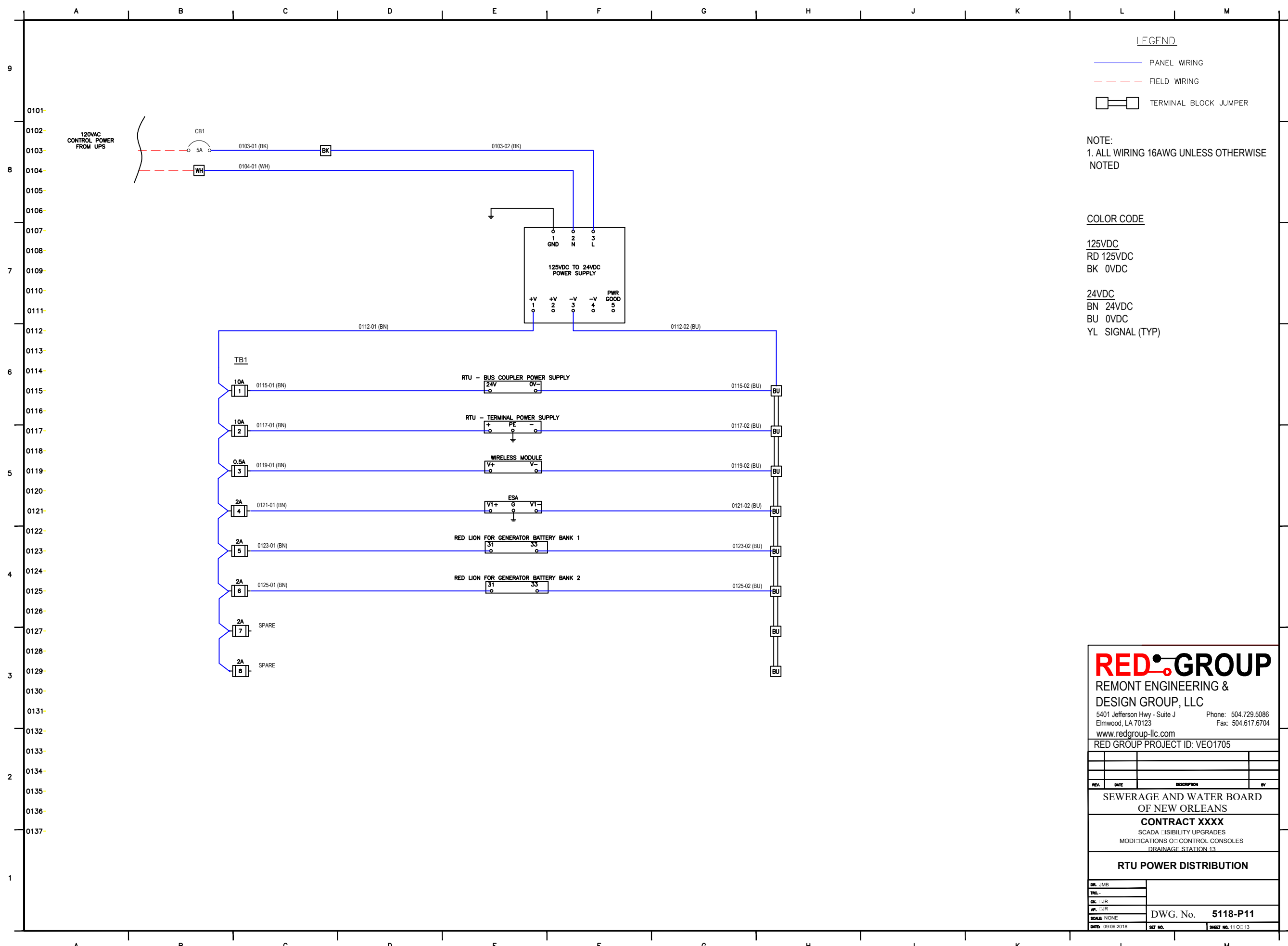
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 13

RTU PANEL LAYOUT

DR: JMB	
TITLE:	
DC: DJR	
AP: DJR	
SCALE: NONE	DWG. No. 5118-P10
DATE: 09/06/2018	SET NO. SHEET NO. 10 OF 13



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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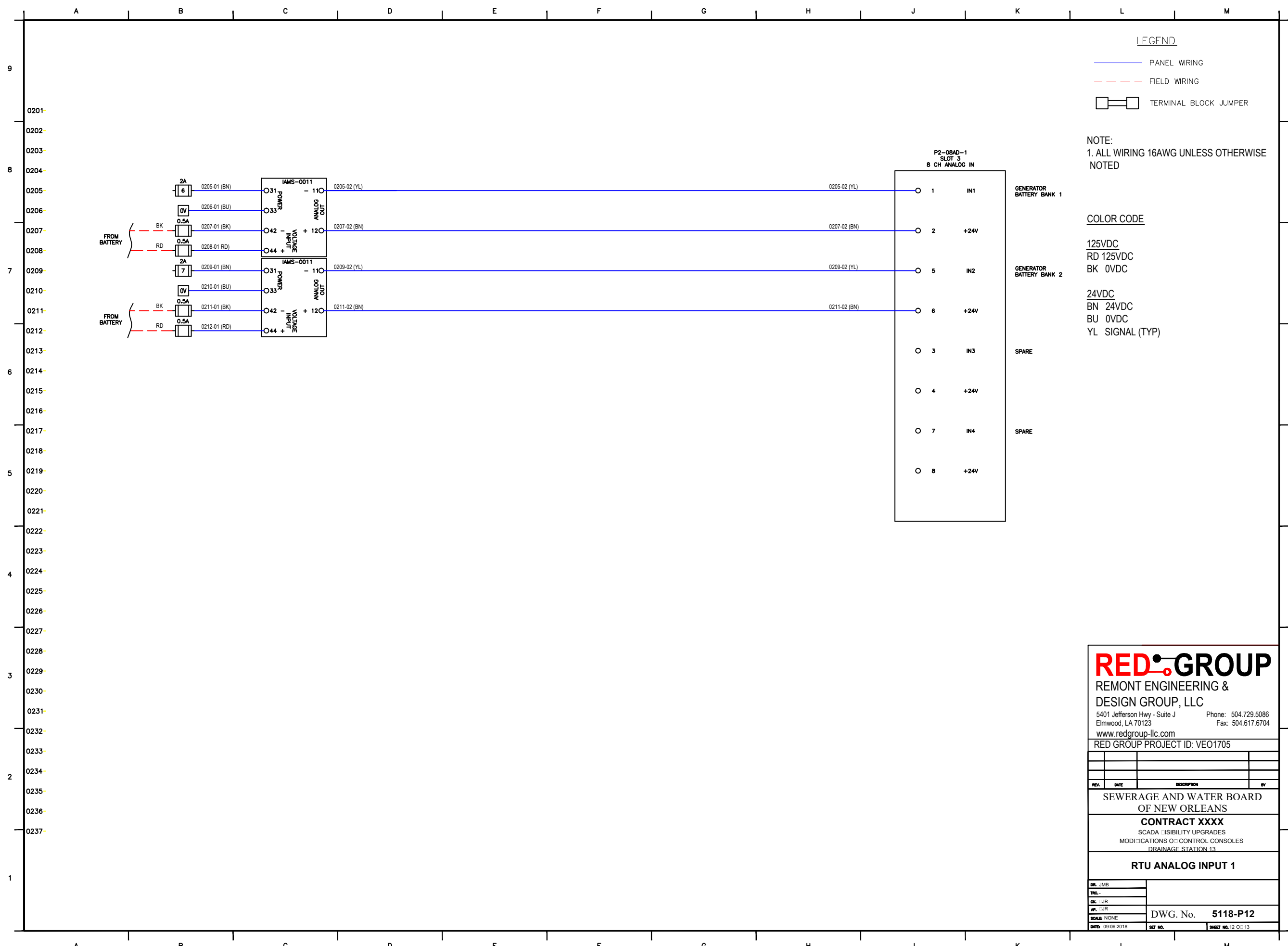
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 13

RTU POWER DISTRIBUTION

DR. JMB	
TRC. -	
CC. -JR	
AP. -JR	
SCALE: NONE	DWG. No. 5118-P11
DATE: 09/06/2018	SET NO. SHEET NO. 11 OF 13



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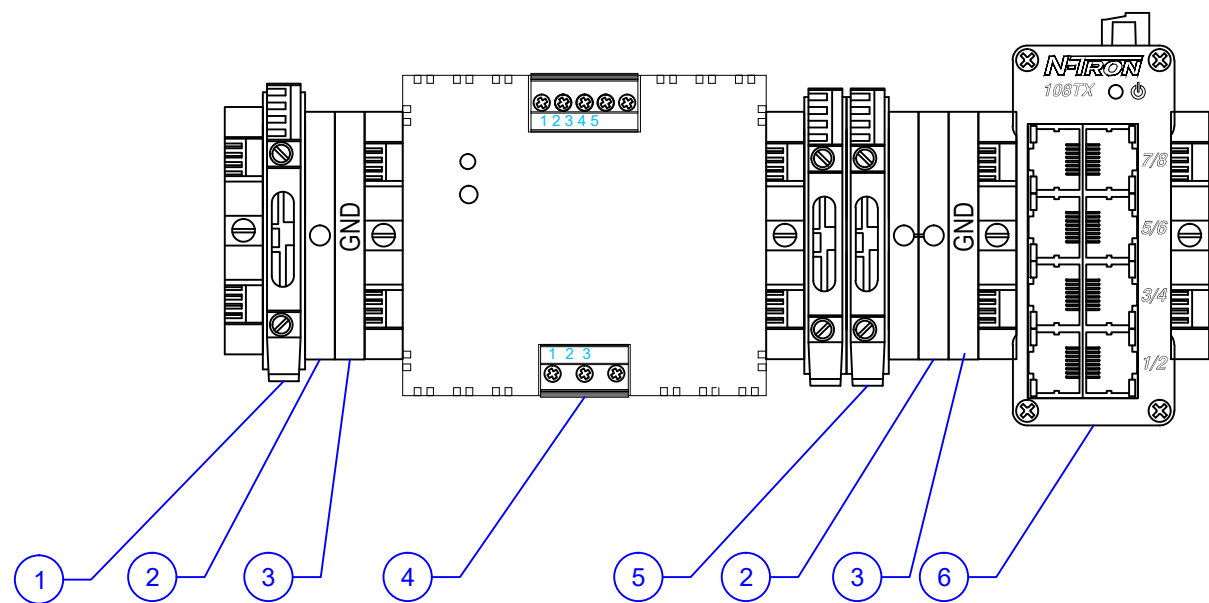
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

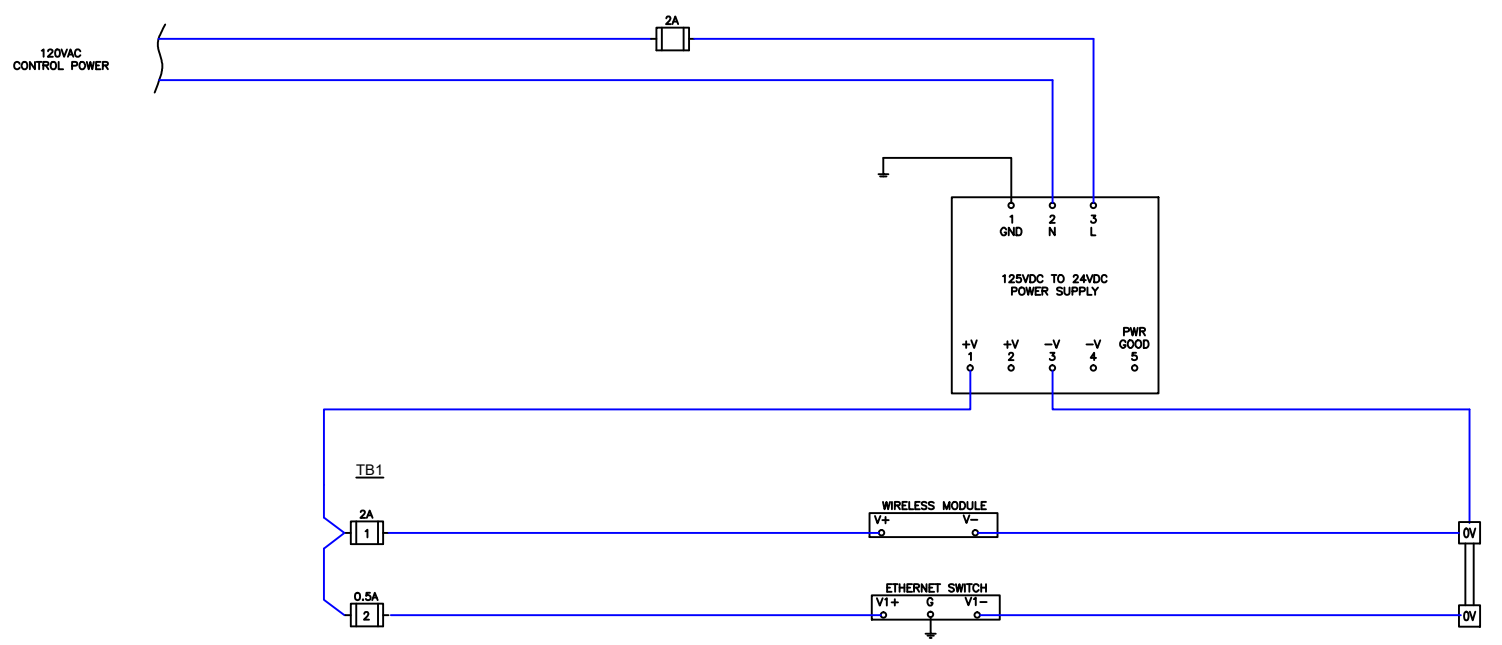
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 13

RTU ANALOG INPUT 1

DR. JMB	
TRC. -	
CK. - JJR	
AP. - JJR	
SCALE: NONE	DWG. No. 5118-P12
DWG: 09/06/2018	SET NO. SHEET NO. 12 OF 13



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10
2	3	Terminal Block, 100EA / Box	7500029	Automation Direct	DN-T10-A
3	1	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
4	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
5	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
6	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
7	1	WLAN module with integrated antennas	7800463	Phoenix Contact	2702538



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 RED GROUP PROJECT ID: VEO1705

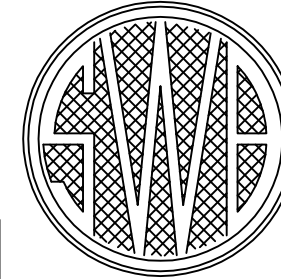
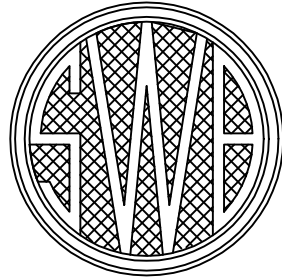
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 13

POWER RAIL

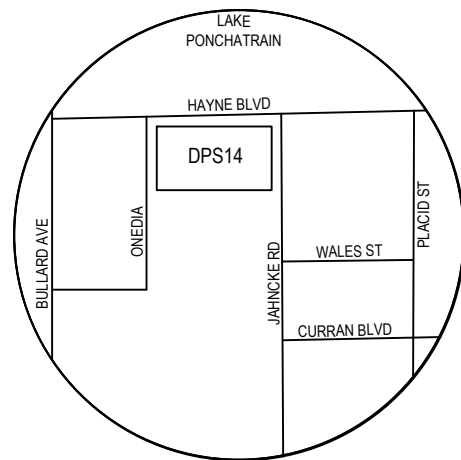
DR. JMB	
TWO. -	
CK. -JR	
AP. -JR	
SCALE: NONE	DWG. No. 5118-P13
DATE: 09/06/2018	SET NO. SHEET NO. 13 OF 13

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 14



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 04 LAYOUT		
10	CONSOLE 04 POWER DISTRIBUTION		

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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 14

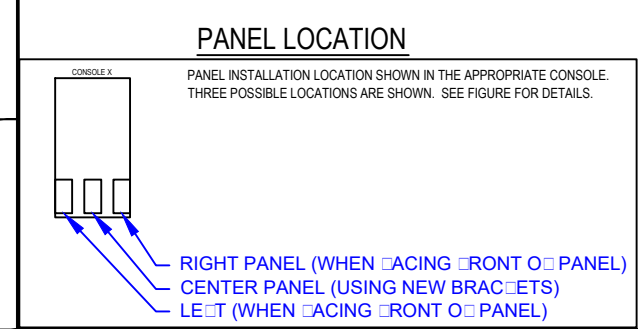
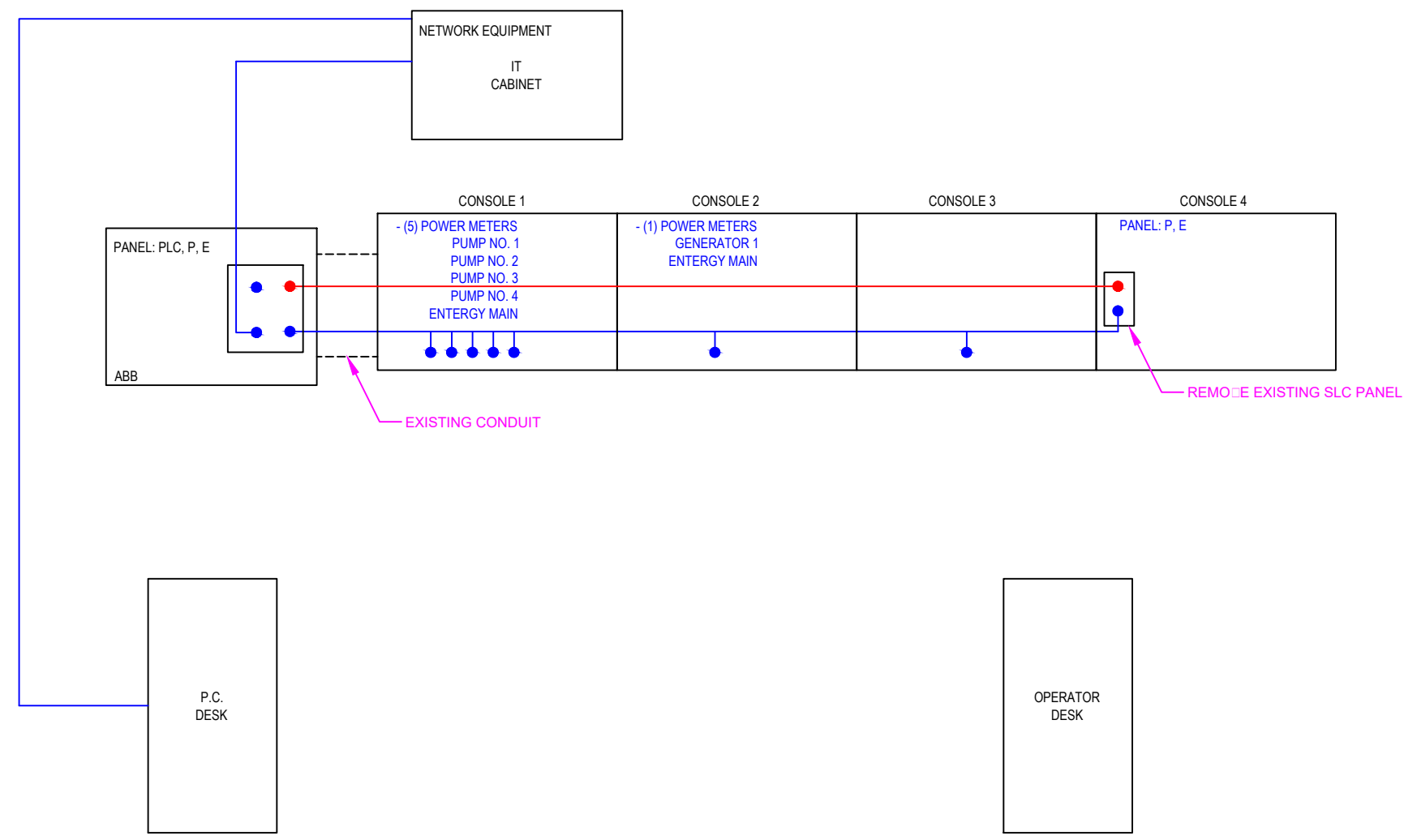
INDEX OF SHEETS

DR. BMP	
TNC. JMB	
CC. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5119-P1
DATE: 03/28/2018	SET NO. SHEET NO. 1 OF 10

LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU



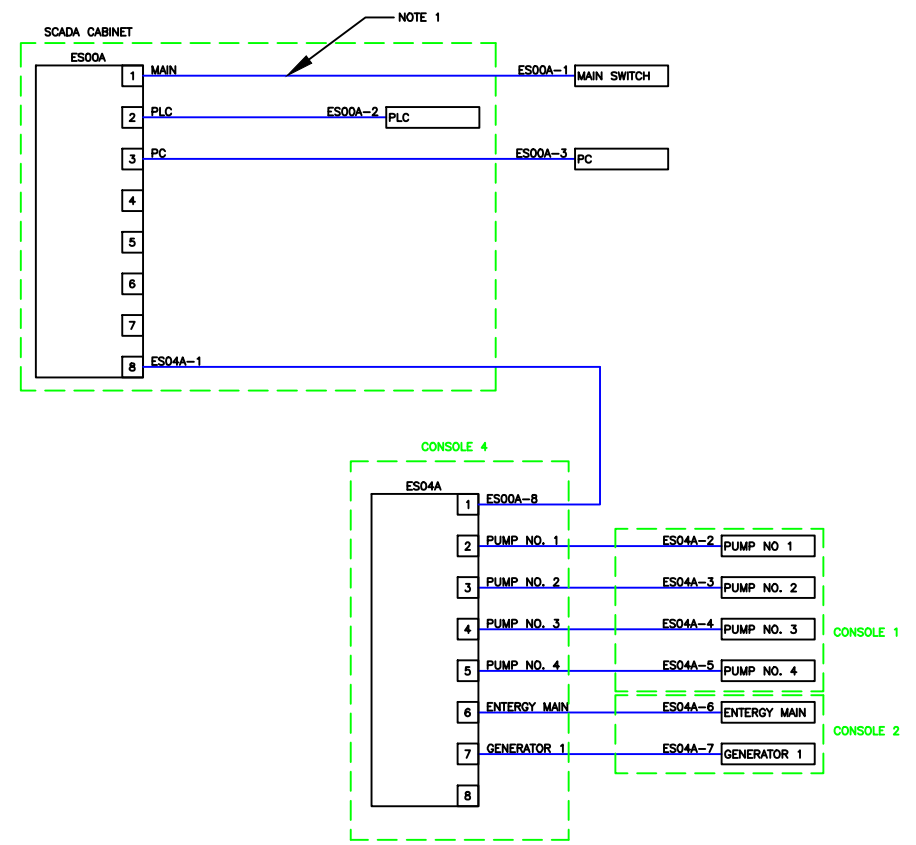
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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 14

PLAN VIEW

DR. BMP	
TNG. JMB	
CK. DAD	
JP. JMB	
SCALE: NONE	DWG. No. 5119-P2
DATE: 03/28/2018	SET NO. SHEET NO. 2 OF 10



NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

CABINET 1

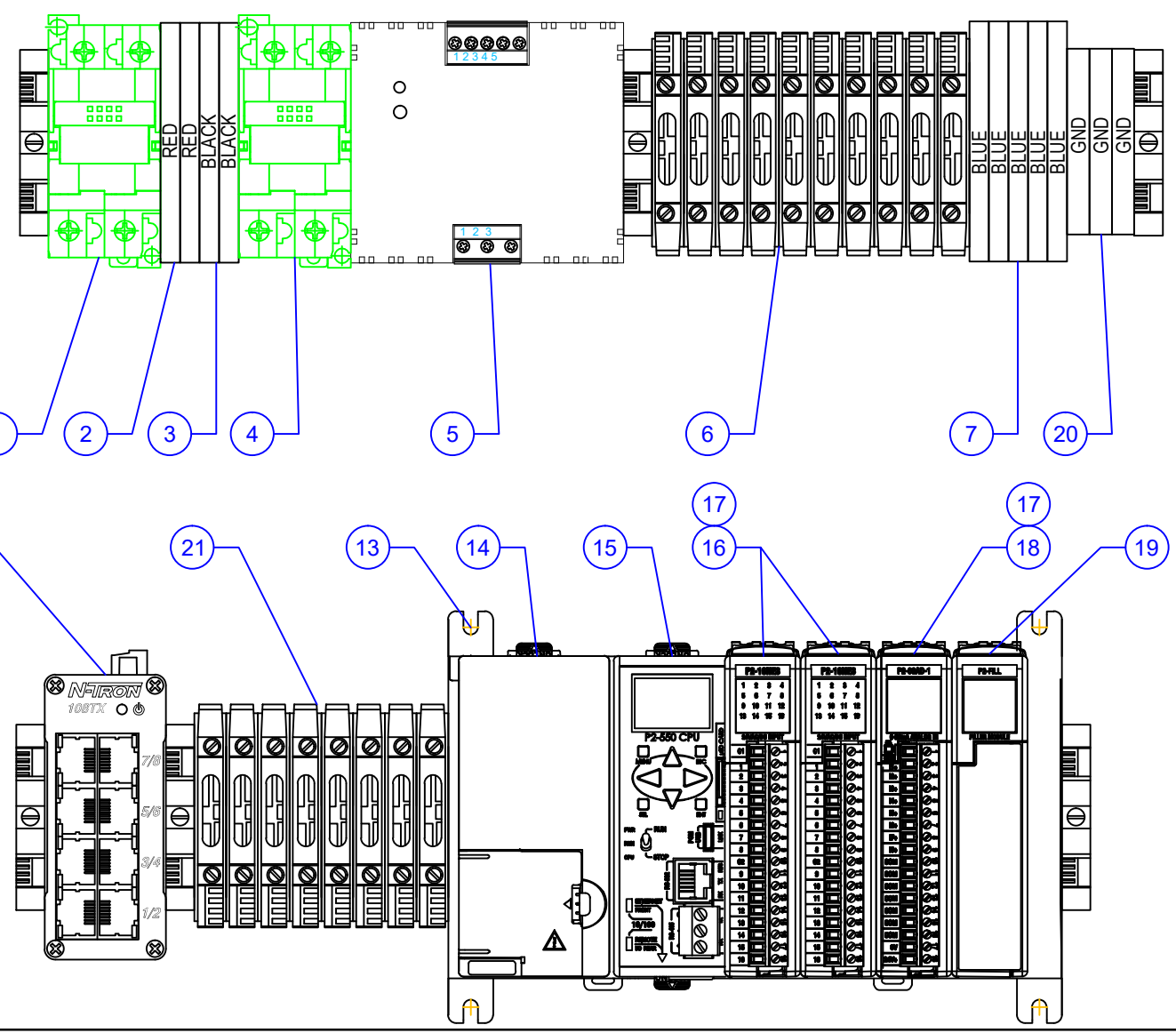
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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 14

NETWORK DIAGRAM

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5119-P3
DATE: 03/28/2018	SET NO. SHEET NO. 3 OF 10



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input.	7800455	Automation Direct	PSP24-120C
6	10	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

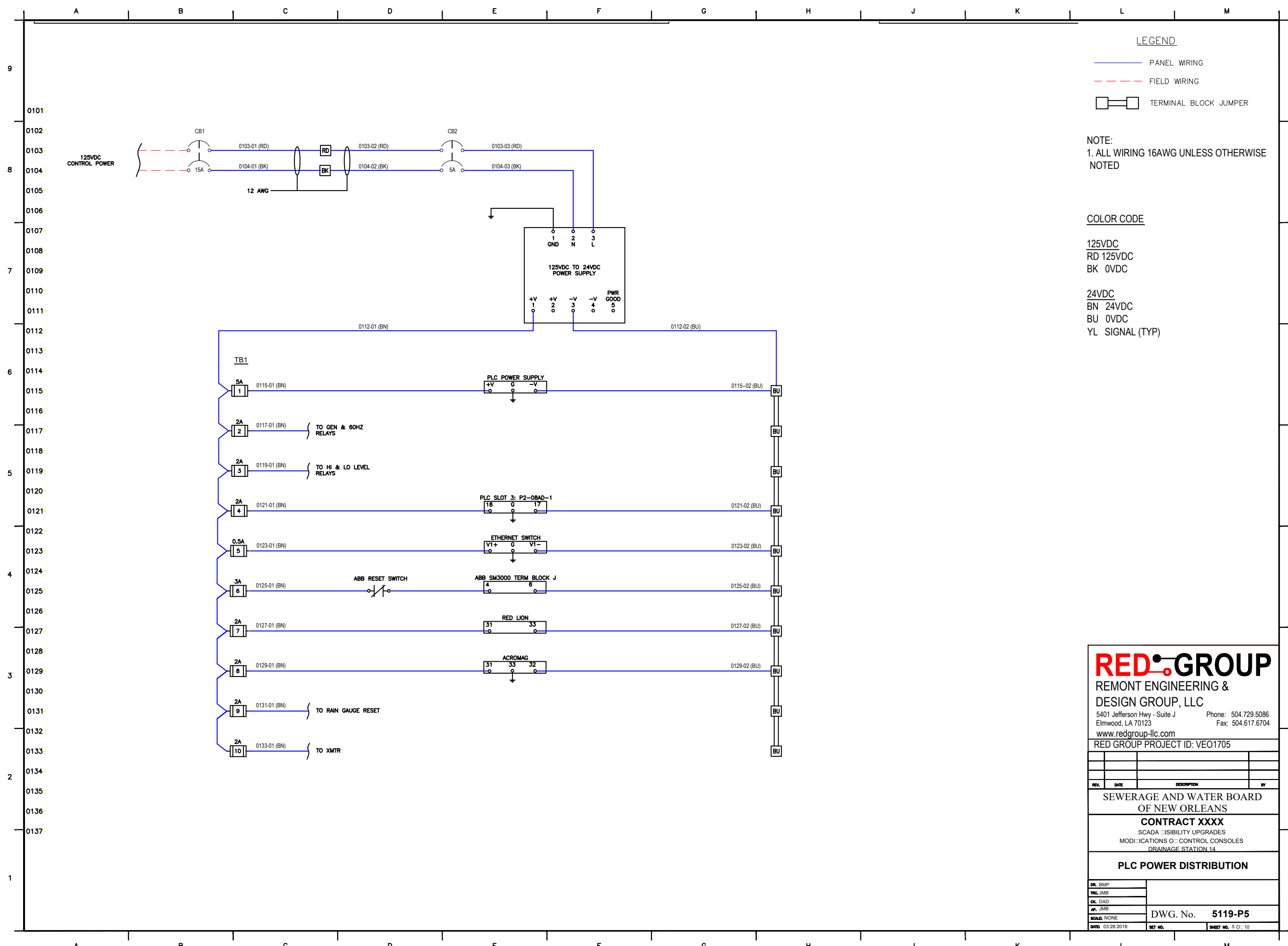
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 14

PLC LAYOUT

DL BMP	
TNC JMB	
CK DAD	
AP JMB	
SCALE: NONE	DWG. No. 5119-P4
DATE: 03/28/2018	SET NO. SHEET NO. 4 OF 10



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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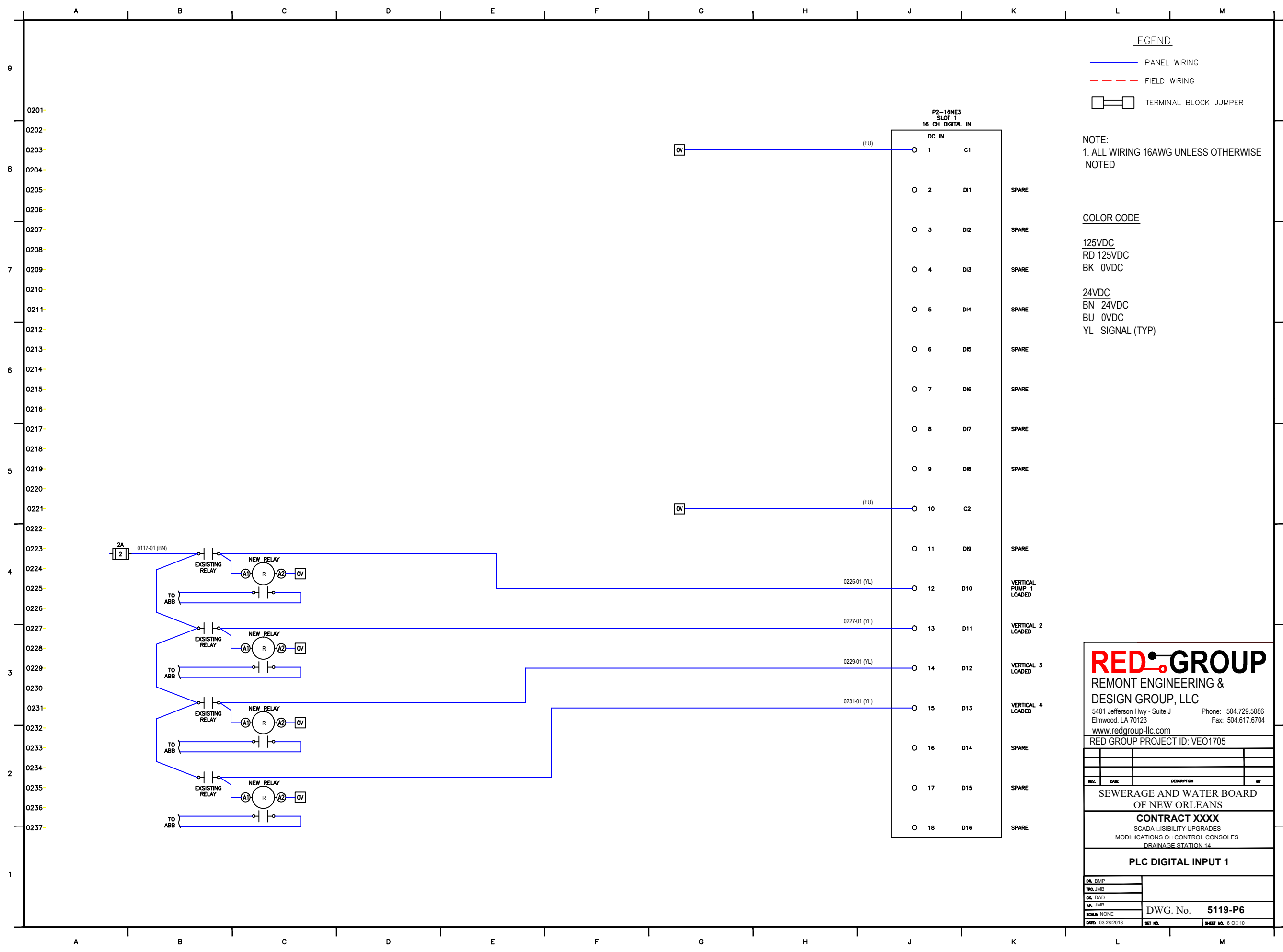
SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX

SCADA SIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 14

PLC POWER DISTRIBUTION

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5119-P5
DATE: 03/28/2018	SET NO. SHEET NO. 5 OF 10



LEGEND

- PANEL WIRING
- - - - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

P2-16NE3 SLOT 1 16 CH DIGITAL IN		
DC IN		
1	C1	
2	D1	SPARE
3	D2	SPARE
4	D3	SPARE
5	D4	SPARE
6	D5	SPARE
7	D6	SPARE
8	D7	SPARE
9	D8	SPARE
10	C2	
11	D9	SPARE
12	D10	VERTICAL PUMP 1 LOADED
13	D11	VERTICAL 2 LOADED
14	D12	VERTICAL 3 LOADED
15	D13	VERTICAL 4 LOADED
16	D14	SPARE
17	D15	SPARE
18	D16	SPARE

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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 14

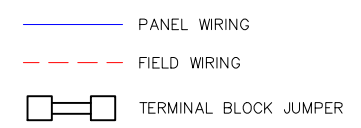
PLC DIGITAL INPUT 1

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5119-P6
DATE: 03/28/2018	SHEET NO. 6 OF 10

A B C D E F G H J K L M

9
8
7
6
5
4
3
2
1

LEGEND

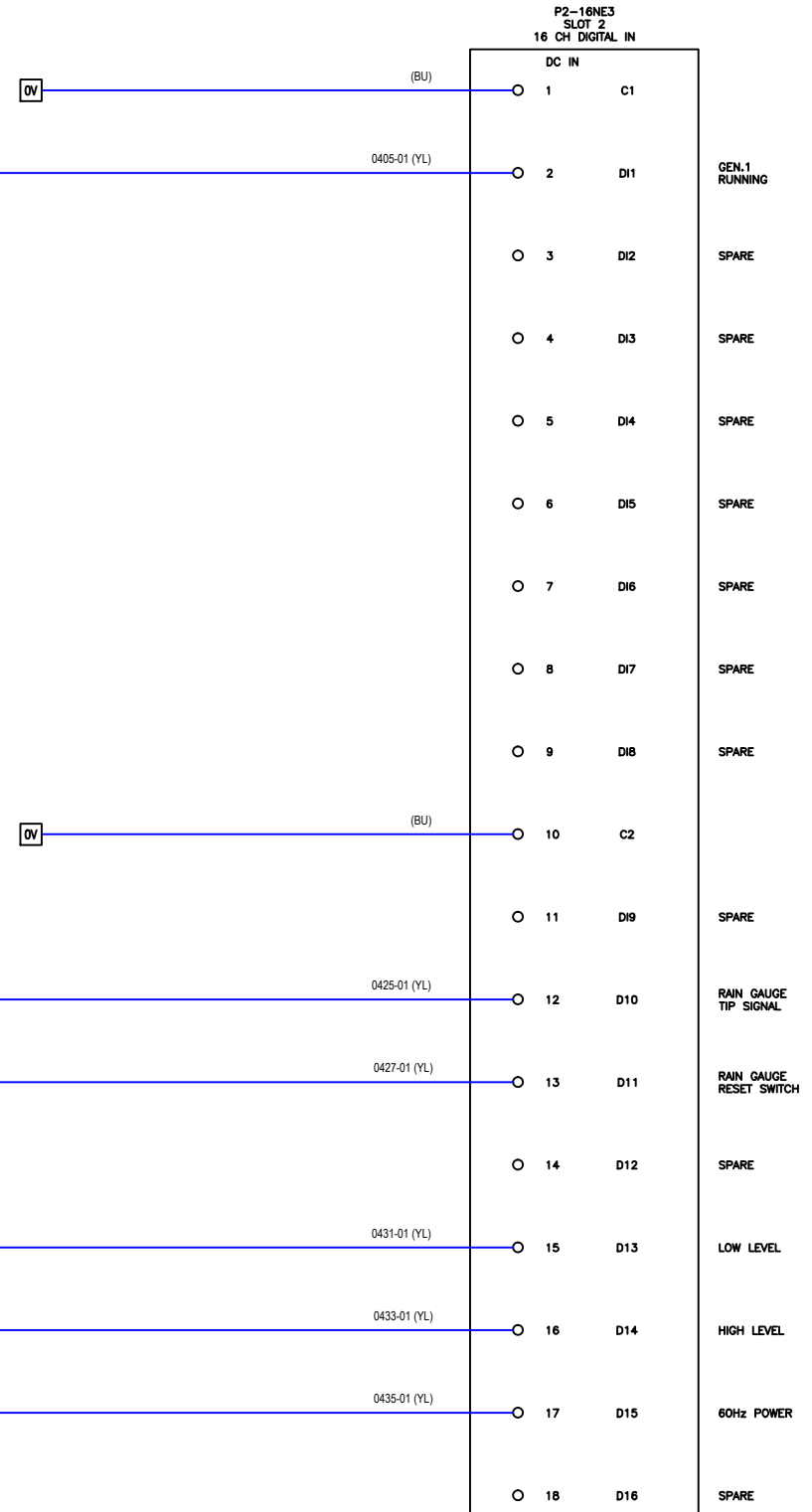
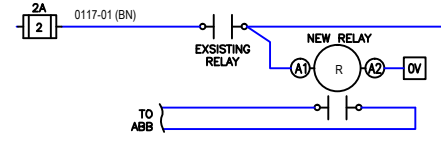
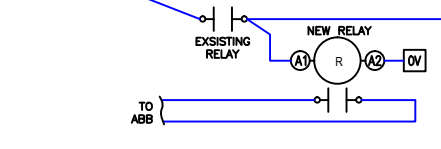
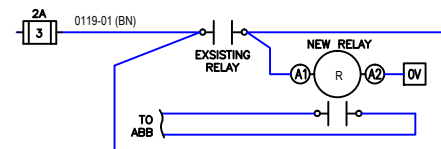
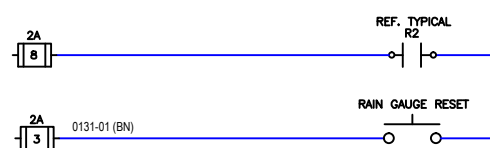
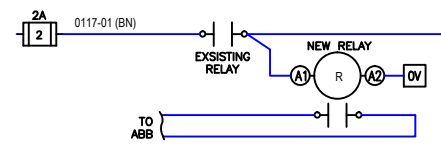
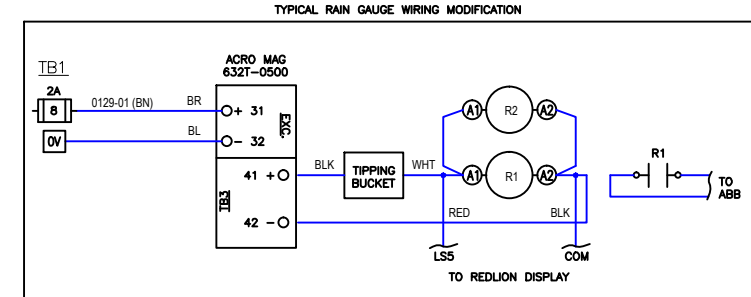


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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 RED GROUP PROJECT ID: VEO1705

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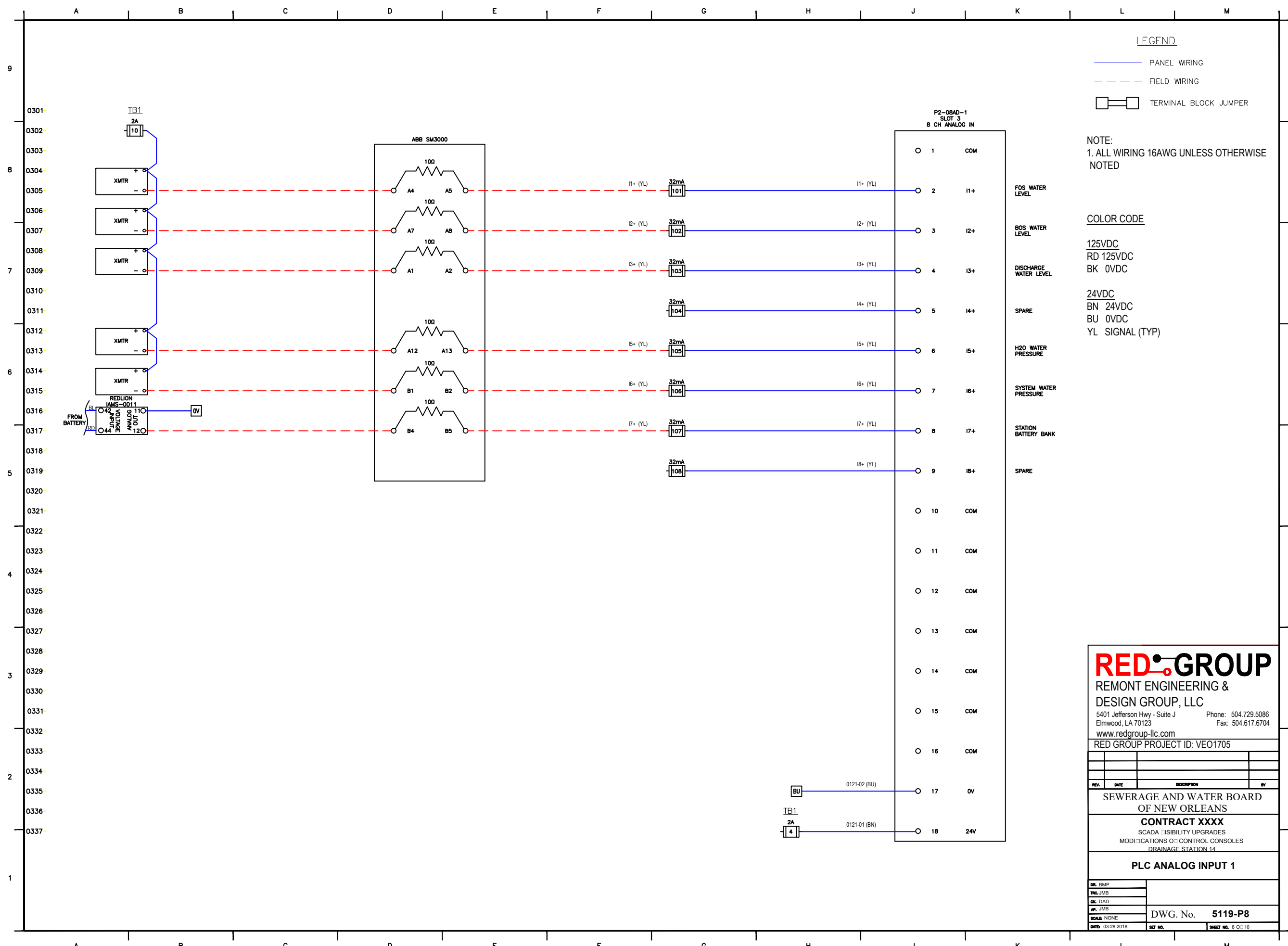
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA SIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 14

PLC DIGITAL INPUT 2

DR. BMP	
TNG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5119-P7
DATE: 03/28/2018	SHEET NO. 7 OF 10

A B C D E F G H J K L M



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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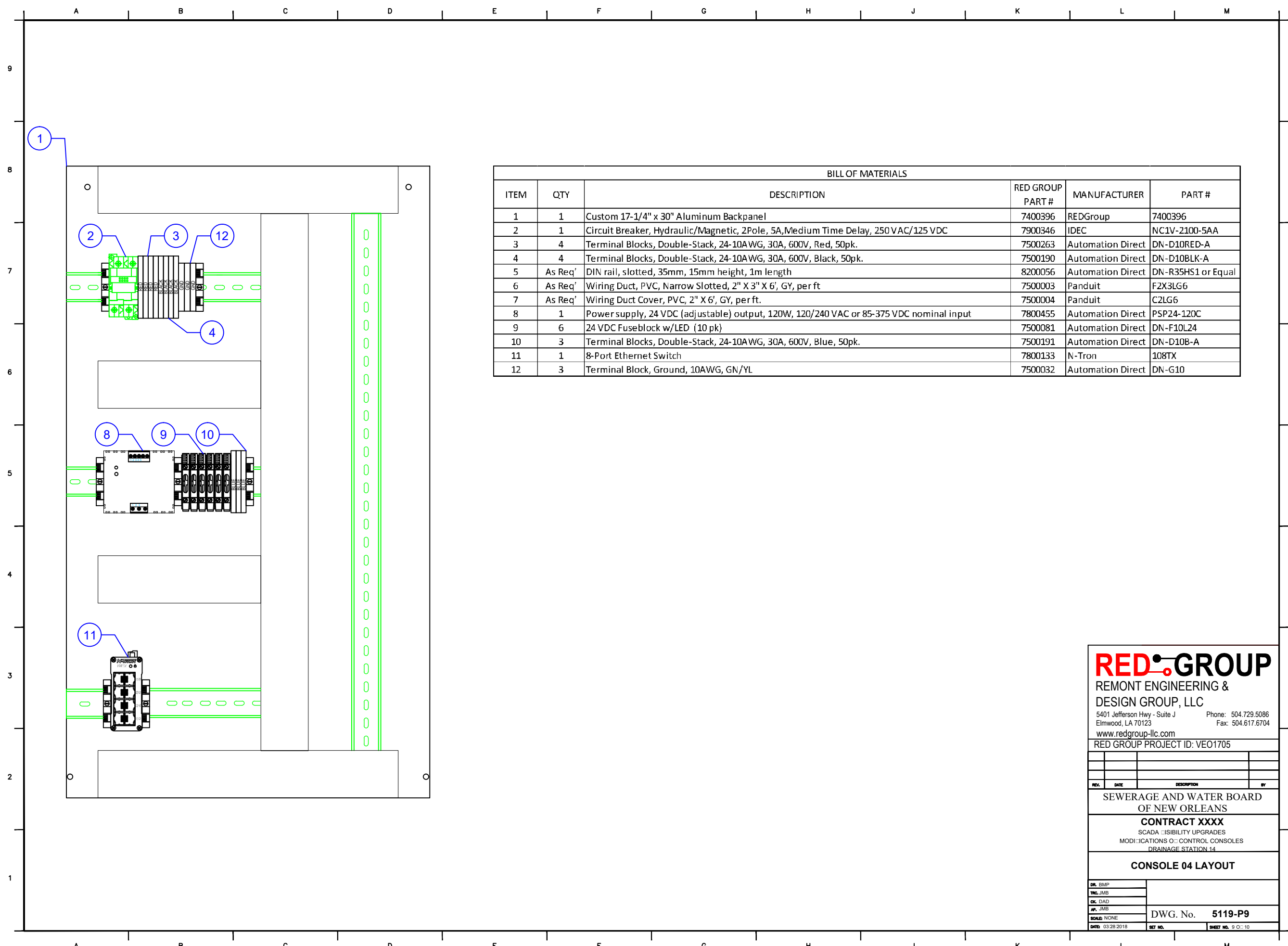
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 14

PLC ANALOG INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5119-P8
DATE: 03/28/2018	SHEET NO. 8 OF 10



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

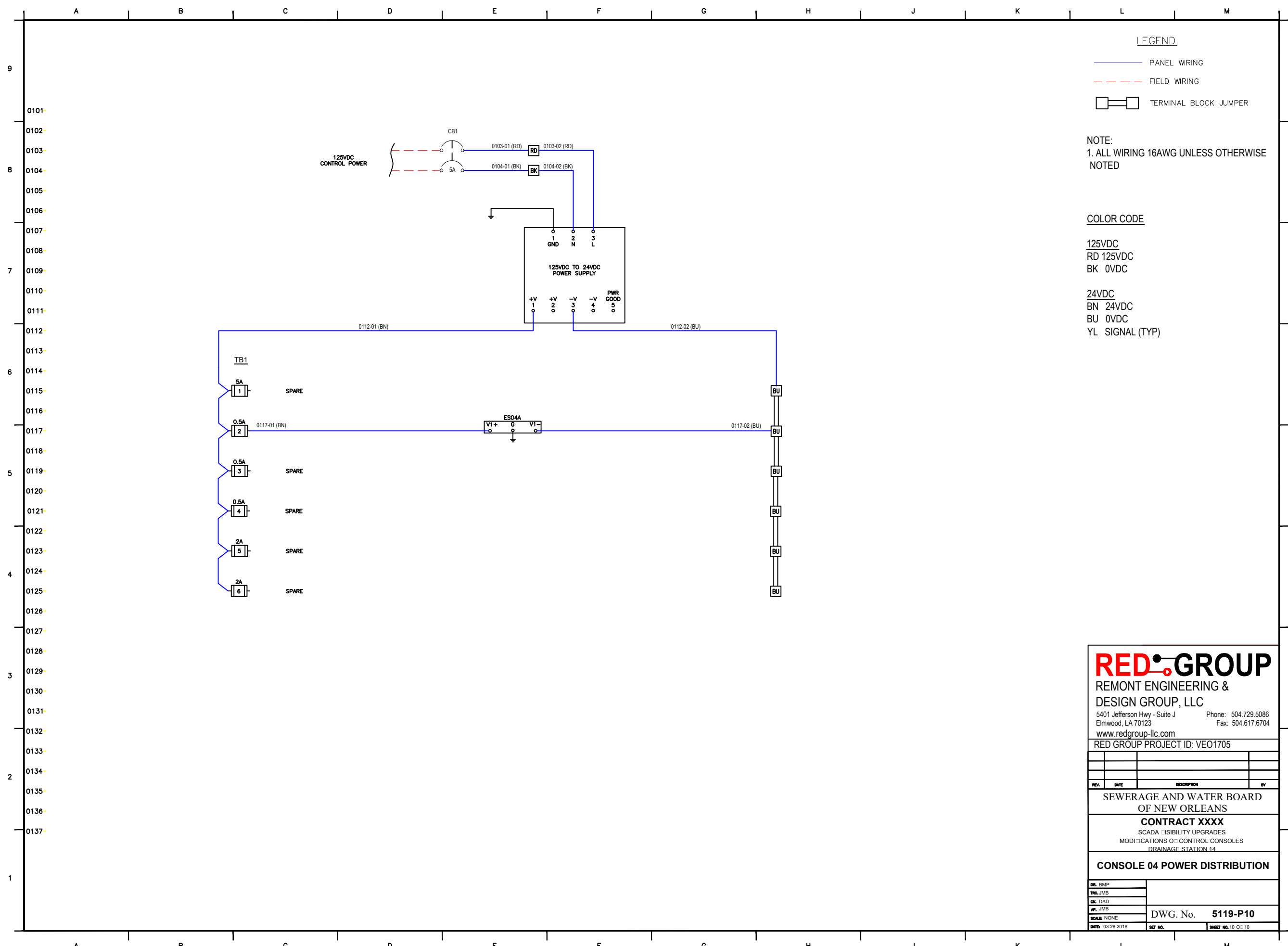
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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 14

CONSOLE 04 LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5119-P9
DATE: 03/28/2018	SHEET NO. SHEET NO. 9 OF 10



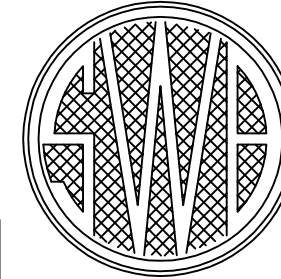
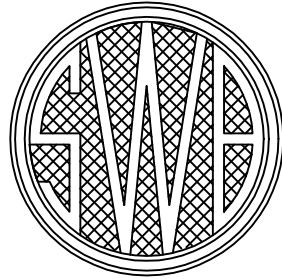
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SEWERAGE AND WATER BOARD
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CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 14
CONSOLE 04 POWER DISTRIBUTION

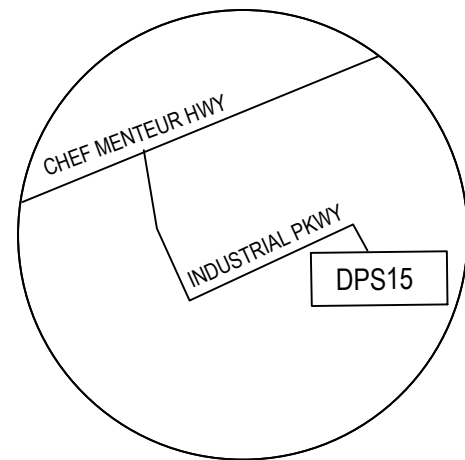
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TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5119-P10
DATE: 03/28/2018	SET NO. SHEET NO. 10 OF 10

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 15



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS	14	RTU DI2
2	PLAN VIEW	15	RTU AI1
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC LAYOUT BOM		
6	PLC POWER DISTRIBUTION		
7	PLC DIGITAL INPUT 1		
8	PLC DIGITAL INPUT 2		
9	PLC ANALOG INPUT 1		
10	PLC ANALOG INPUT 2		
11	RTU LAYOUT		
12	RTU POWER DISTRIBUTION		
13	RTU DI1		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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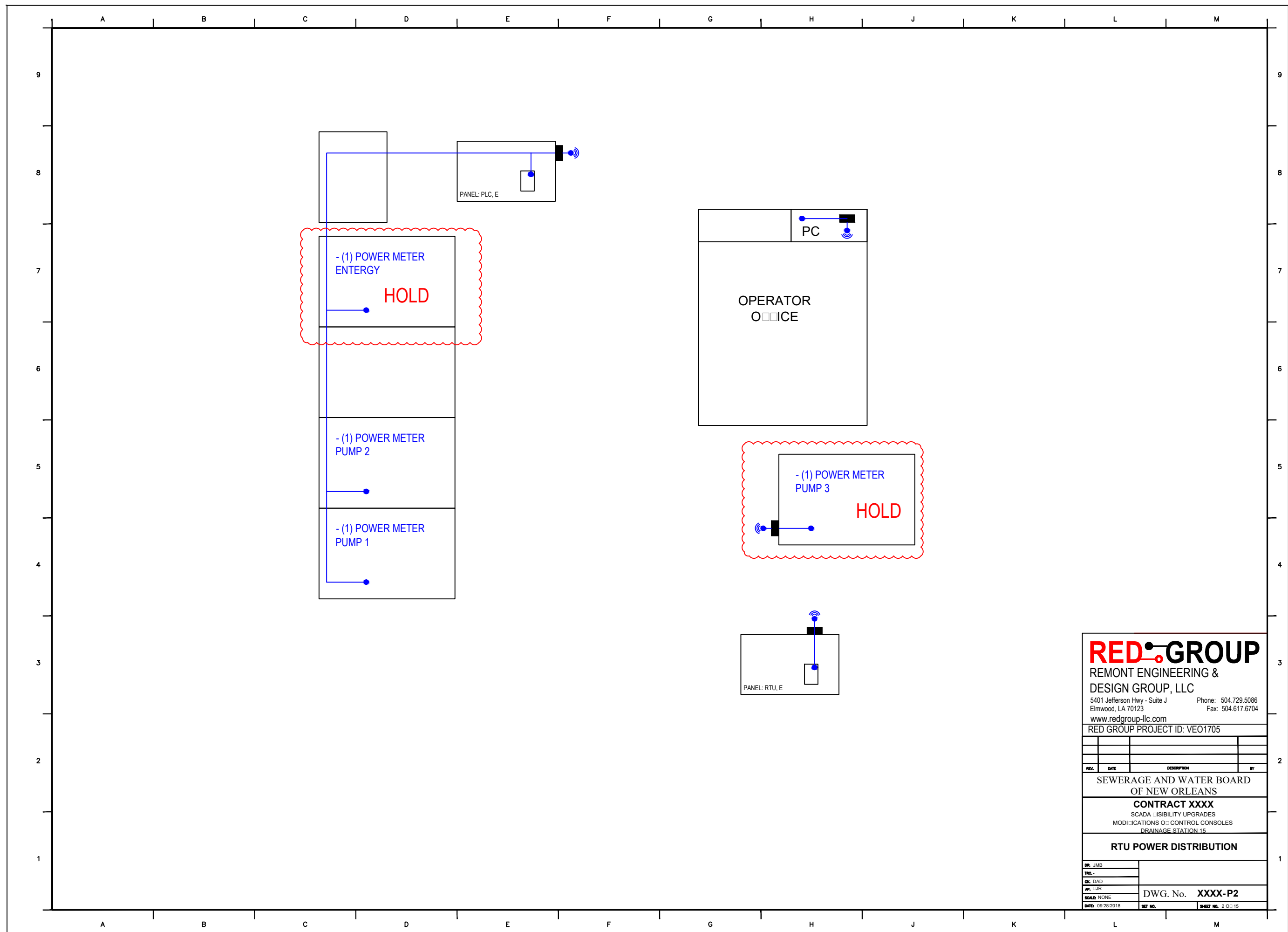
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 15

INDEX OF SHEETS

DR. JMB	
TNC.	
CC. DAD	
AP. JR	DWG. No. XXXX-P1
SCALE: NONE	
DATE: 09/28/18	SET NO. SHEET NO. 1 OF 13



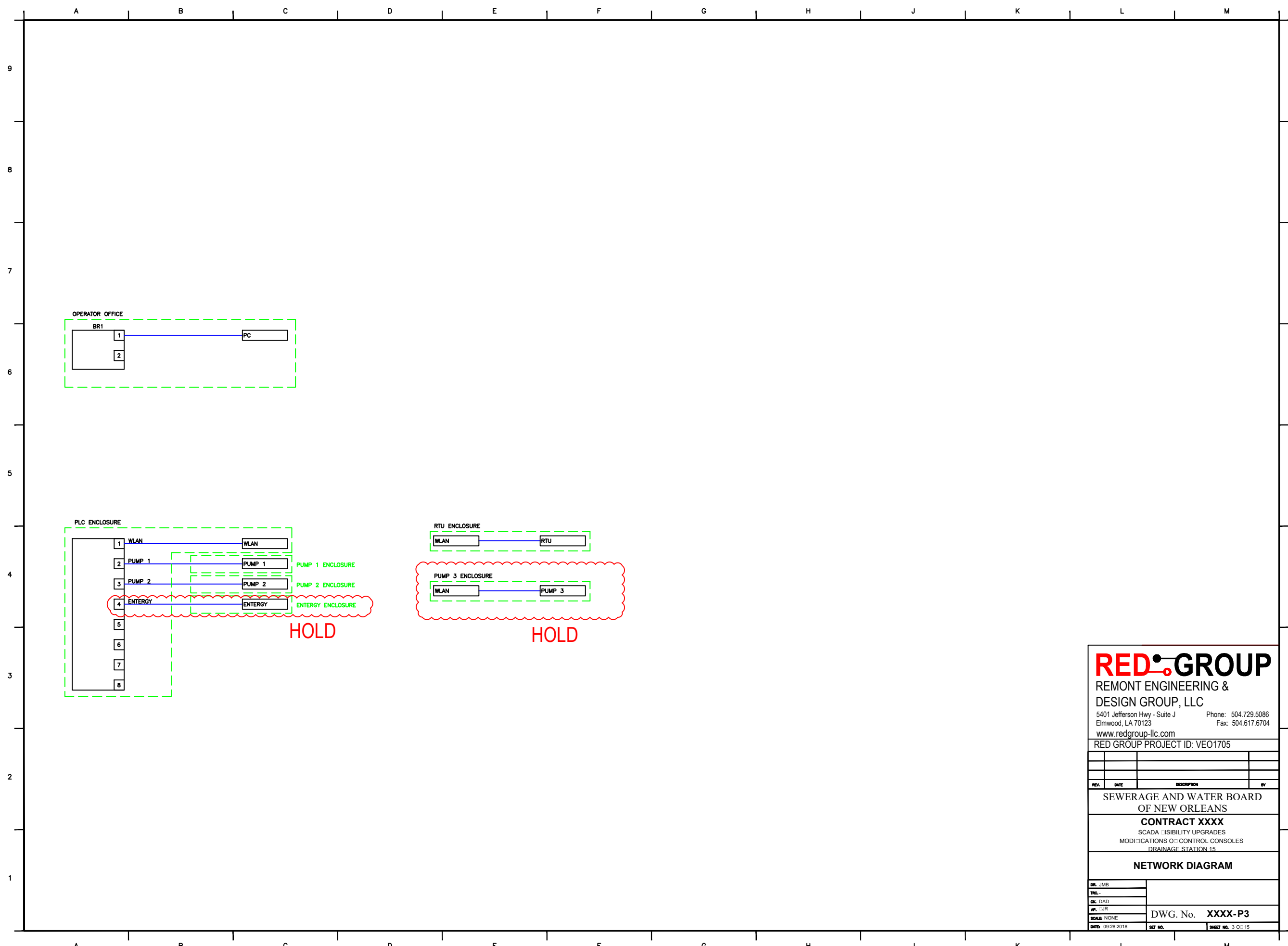
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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 15

RTU POWER DISTRIBUTION

DR. JMB	
TRC.	
CK. DAD	
AP. IJR	
SCALE: NONE	DWG. No. XXXX-P2
DATE: 09/28/2018	SHEET NO. 2 OF 15



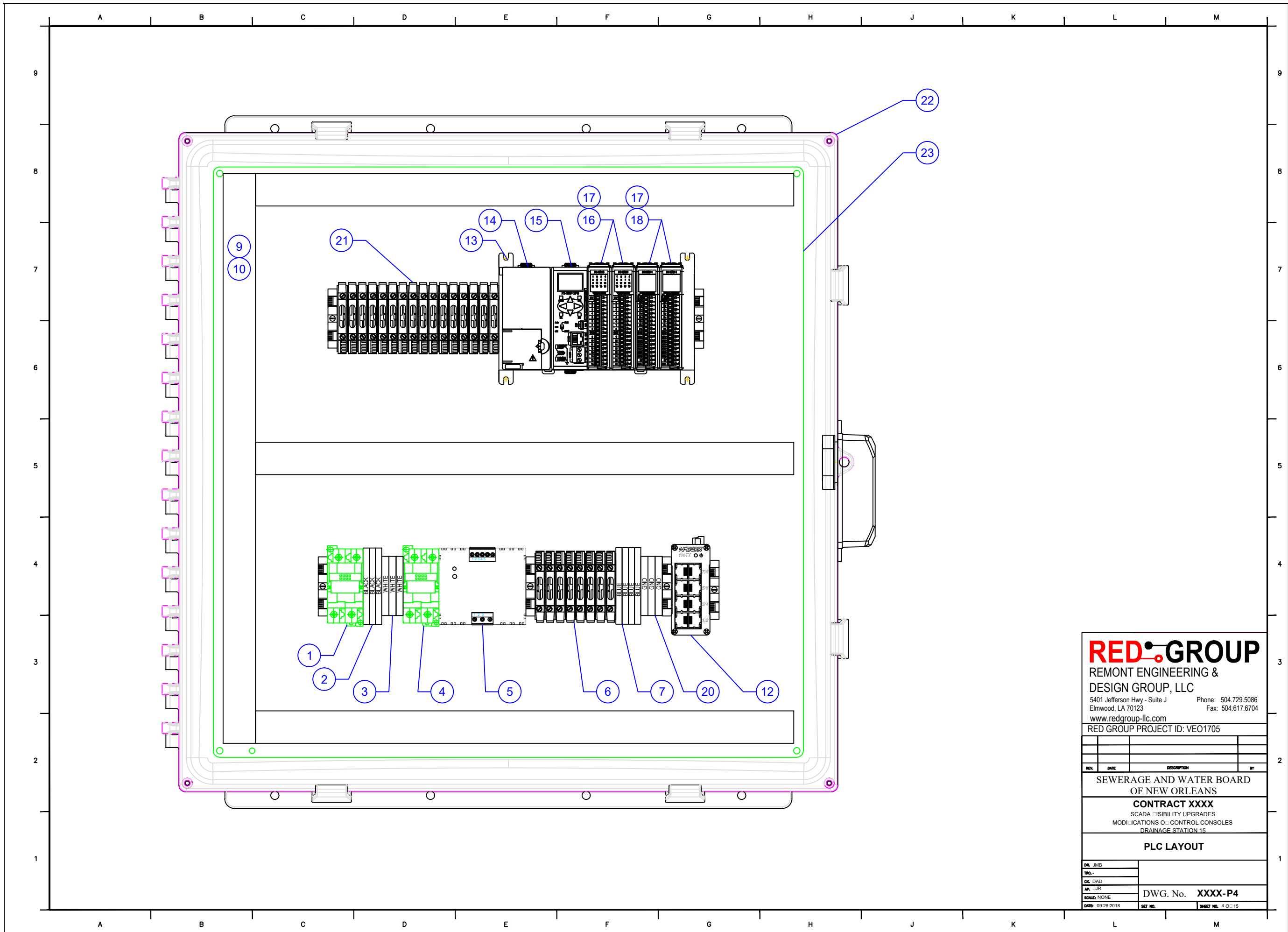
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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS OF CONTROL CONSOLES
 DRAINAGE STATION 15

NETWORK DIAGRAM

DR: JMB	
TIC: -	
CK: DAD	
AP: -JR	
SCALE: NONE	DWG. No. XXXX-P3
DATE: 09/28/2018	SET NO. SHEET NO. 3 OF 15



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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 15
PLC LAYOUT

DR. JMB	
TNC.	
CK. DAD	
AP. IJR	
SCALE: NONE	DWG. No. XXXX-P4
DATE: 09/28/2018	SET NO. SHEET NO. 4 OF 15

BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
3	2	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 1" X 3" X 6', gray, price per ft. - order in multiples of 6ft.	7500001	Panduit	F1X3LG6
10	As Req'	Wiring Duct Cover, PVC, 1" X 6', GY, per ft.	7500002	Panduit	C1LG6-F
11	0	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 1 isolated	7800451	Automation Direct	P2-16ND3
17	4	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	2	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	0	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	16	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10
22	1	Enclosure, 24"x24" Polycarbonate	7400400	Saginaw	SCE-2424PC
23	1	Subpanel for 24" x 24" enclosure. Aluminum	7400401	Saginaw	SCE-24P24PCAL

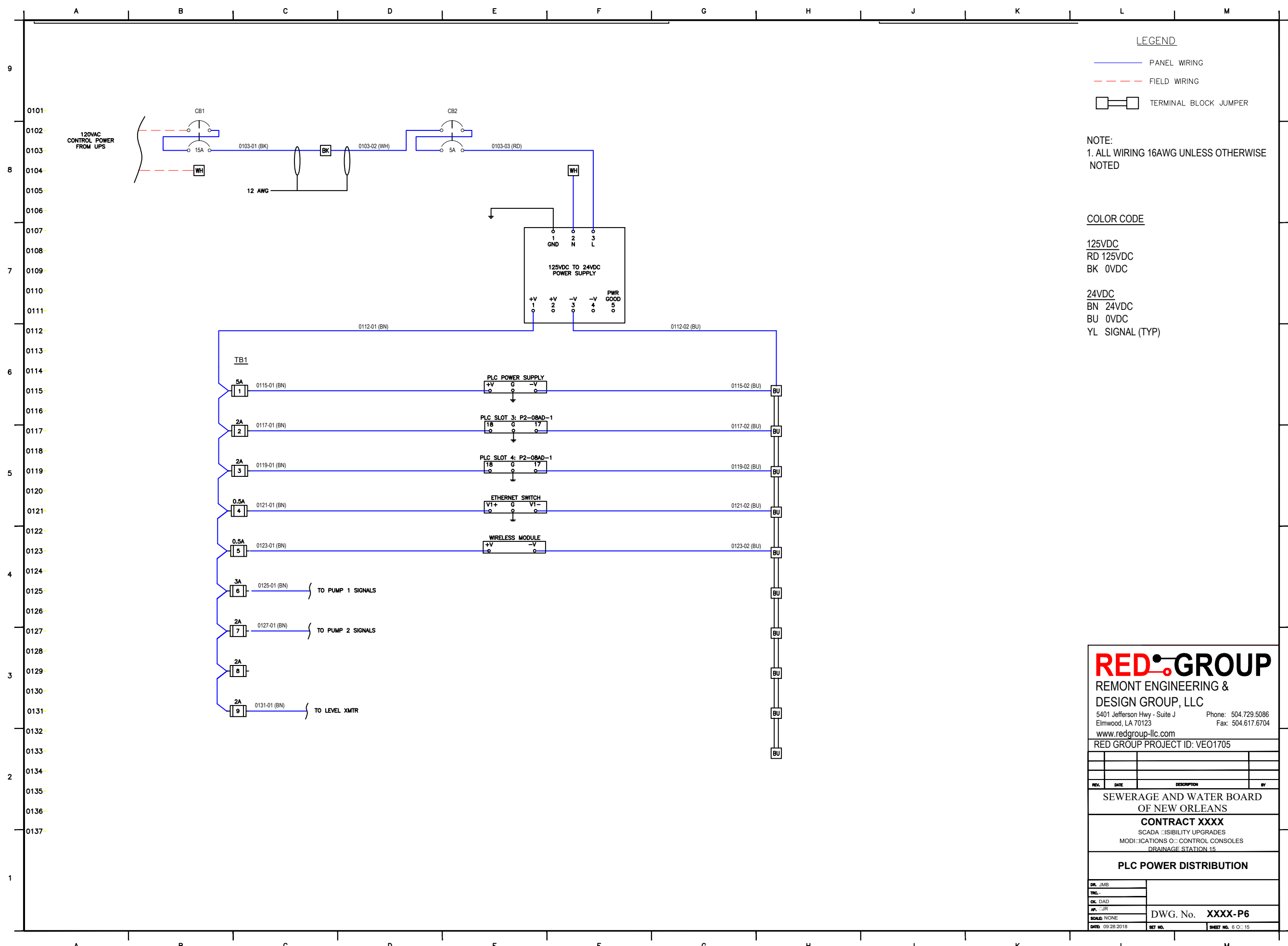
RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS OF CONTROL CONSOLES
 DRAINAGE STATION 15

PLC LAYOUT

DR. JMB	
TNC.	
CK. DAD	
AP. JR	
SCALE: NONE	DWG. No. XXXX-P5
DATE: 09/28/2018	SET NO. SHEET NO. 5 OF 15



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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 RED GROUP PROJECT ID: VEO1705

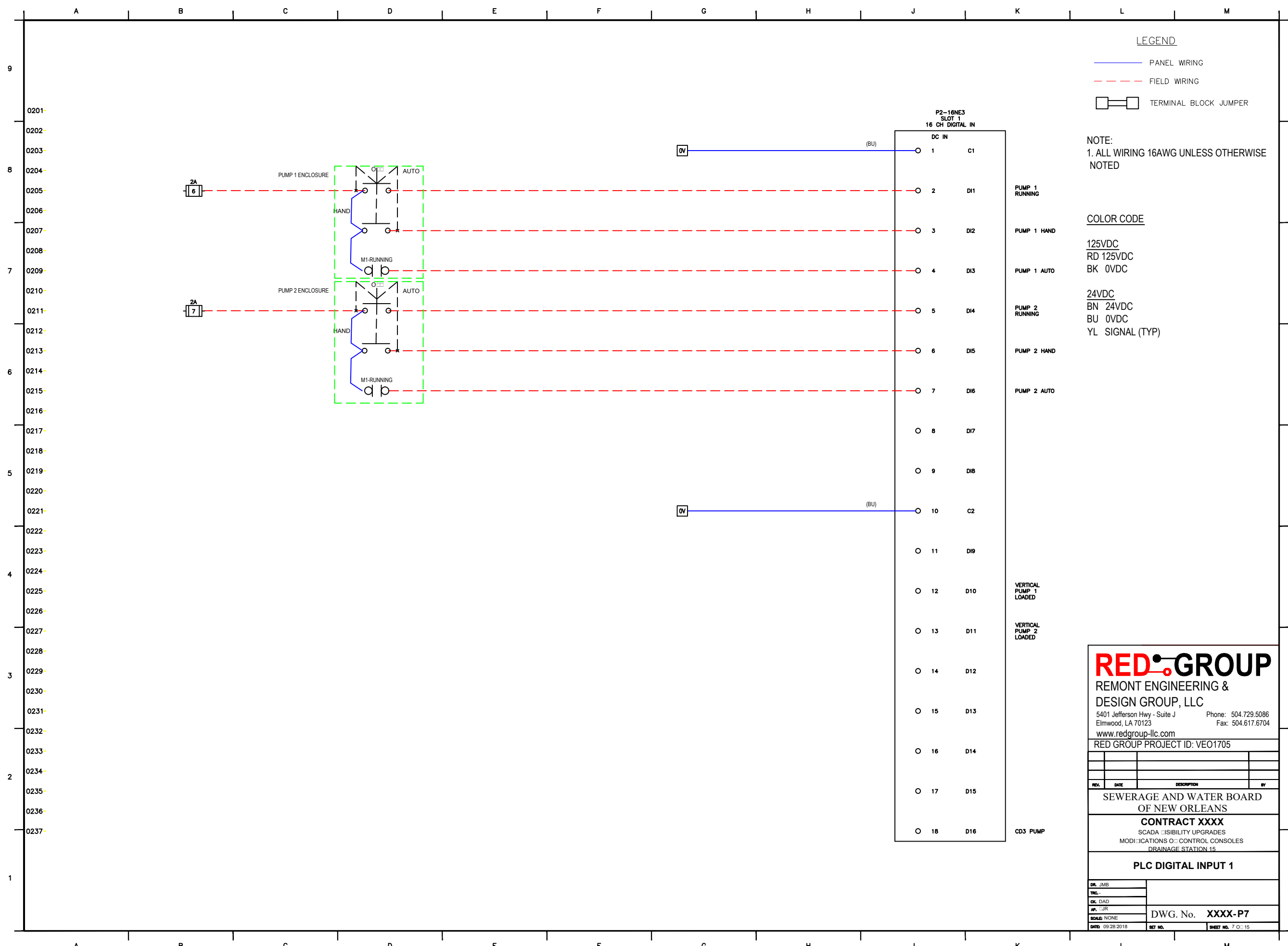
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
 OF NEW ORLEANS**

CONTRACT XXXX
 SCADA SIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 15

PLC POWER DISTRIBUTION

DR: JMB	
TNC:	
CK: DAD	
AP: JJR	
SCALE: NONE	DWG. No. XXXX-P6
DATE: 09/28/2018	SHEET NO. 6 OF 15



RED GROUP
REMONT ENGINEERING & DESIGN GROUP, LLC
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REV.	DATE	DESCRIPTION	BY

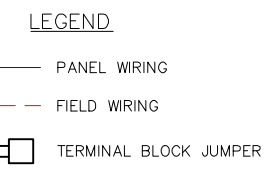
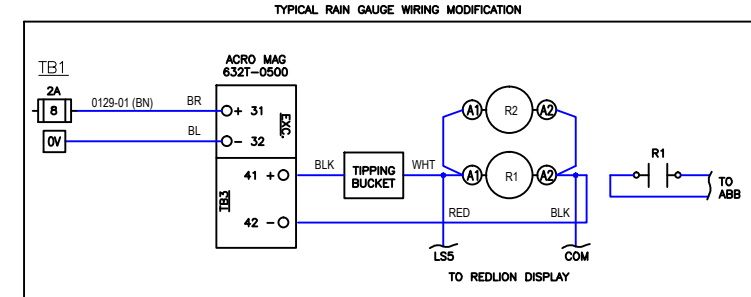
SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA SIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 15

PLC DIGITAL INPUT 1

DR. JMB	
TRC.	
CK. DAD	
AP. JR	
SCALE: NONE	DWG. No. XXXX-P7
DATE: 09/28/2018	SET NO. SHEET NO. 7 OF 15

A B C D E F G H J K L M

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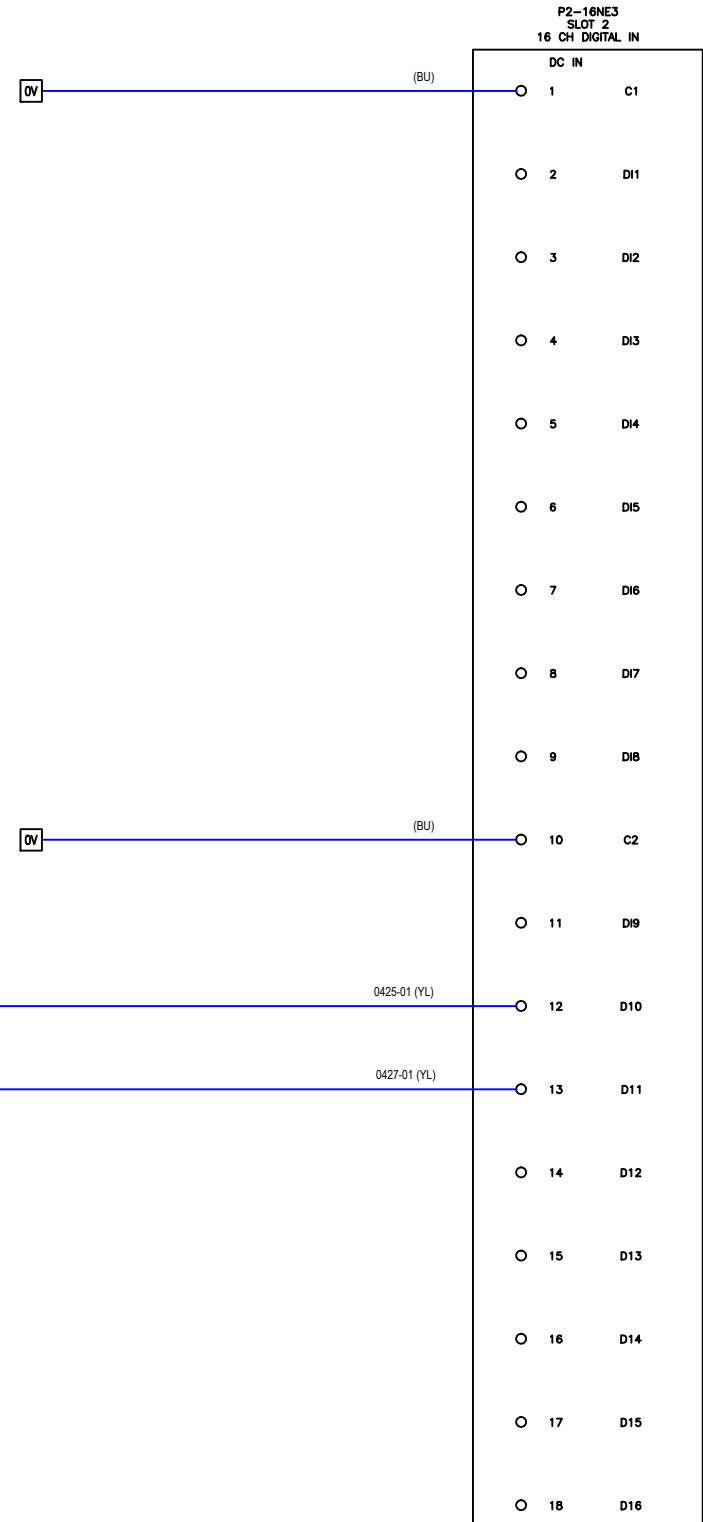


NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



RAIN GAUGE TIP SIGNAL

RAIN GAUGE RESET SWITCH

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

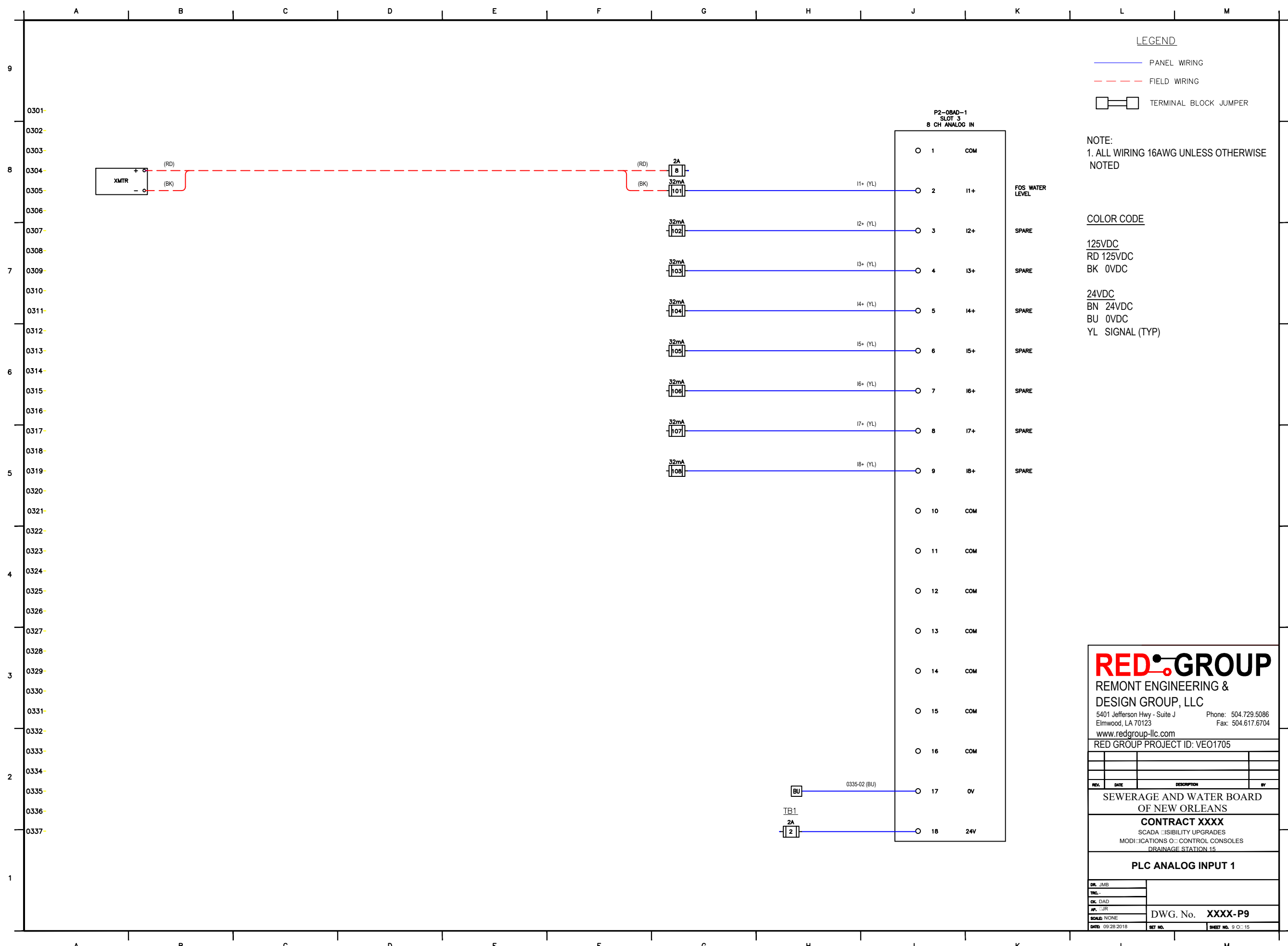
SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
SCADA SIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 15

PLC DIGITAL INPUT 2

DR. JMB	
TRC.	
CC. DAD	
AP. IJR	
SCALE: NONE	DWG. No. XXXX-P8
DATE: 09/28/2018	SHEET NO. 8 OF 15

A B C D E F G H J K L M



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

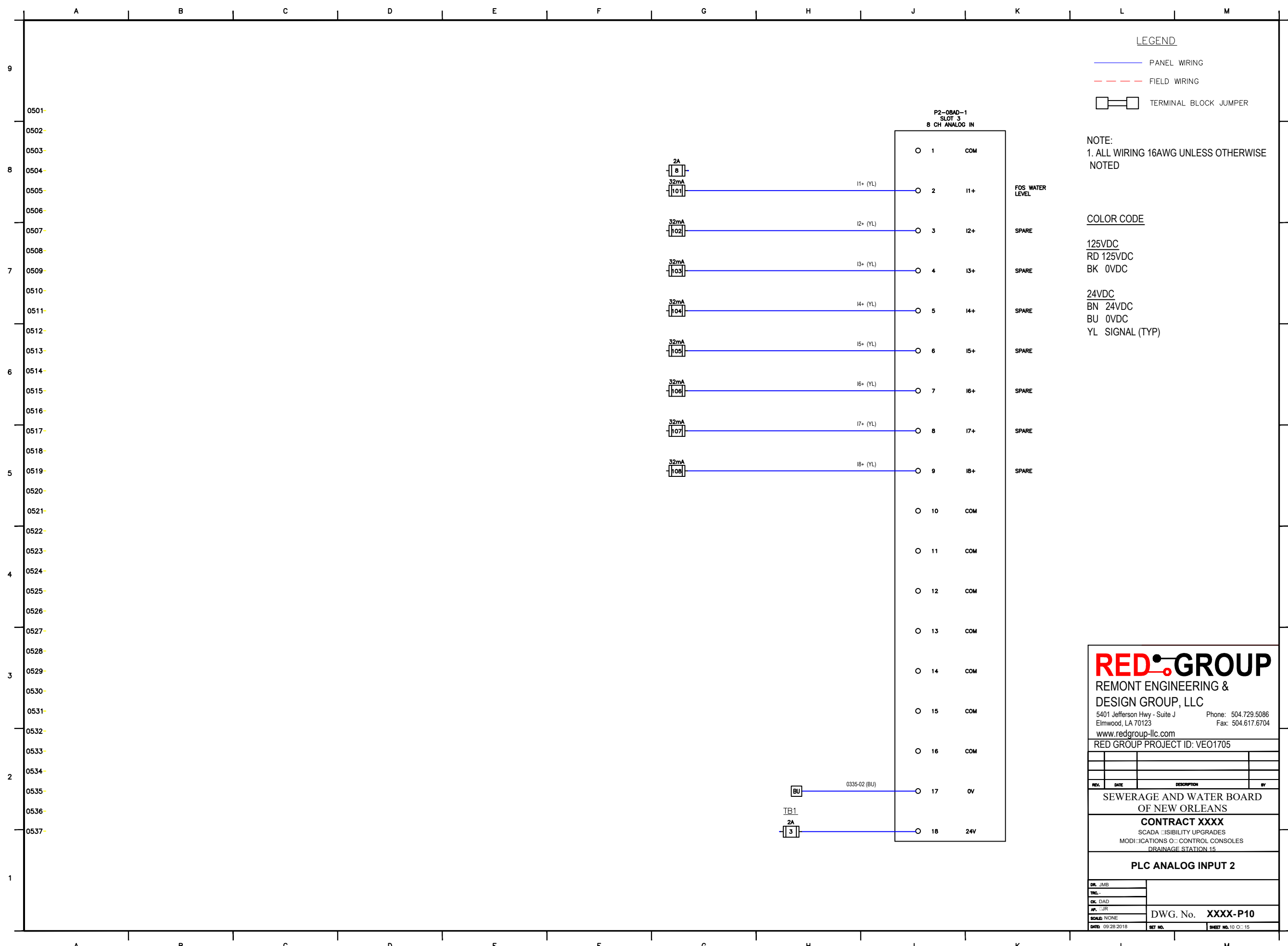
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 15

PLC ANALOG INPUT 1

DR. JMB	
TNC.	
CK. DAD	
AP. IJR	
SCALE: NONE	
DATE: 09/28/2018	DWG. No. XXXX-P9
SET NO.	SHEET NO. 9 OF 15



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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

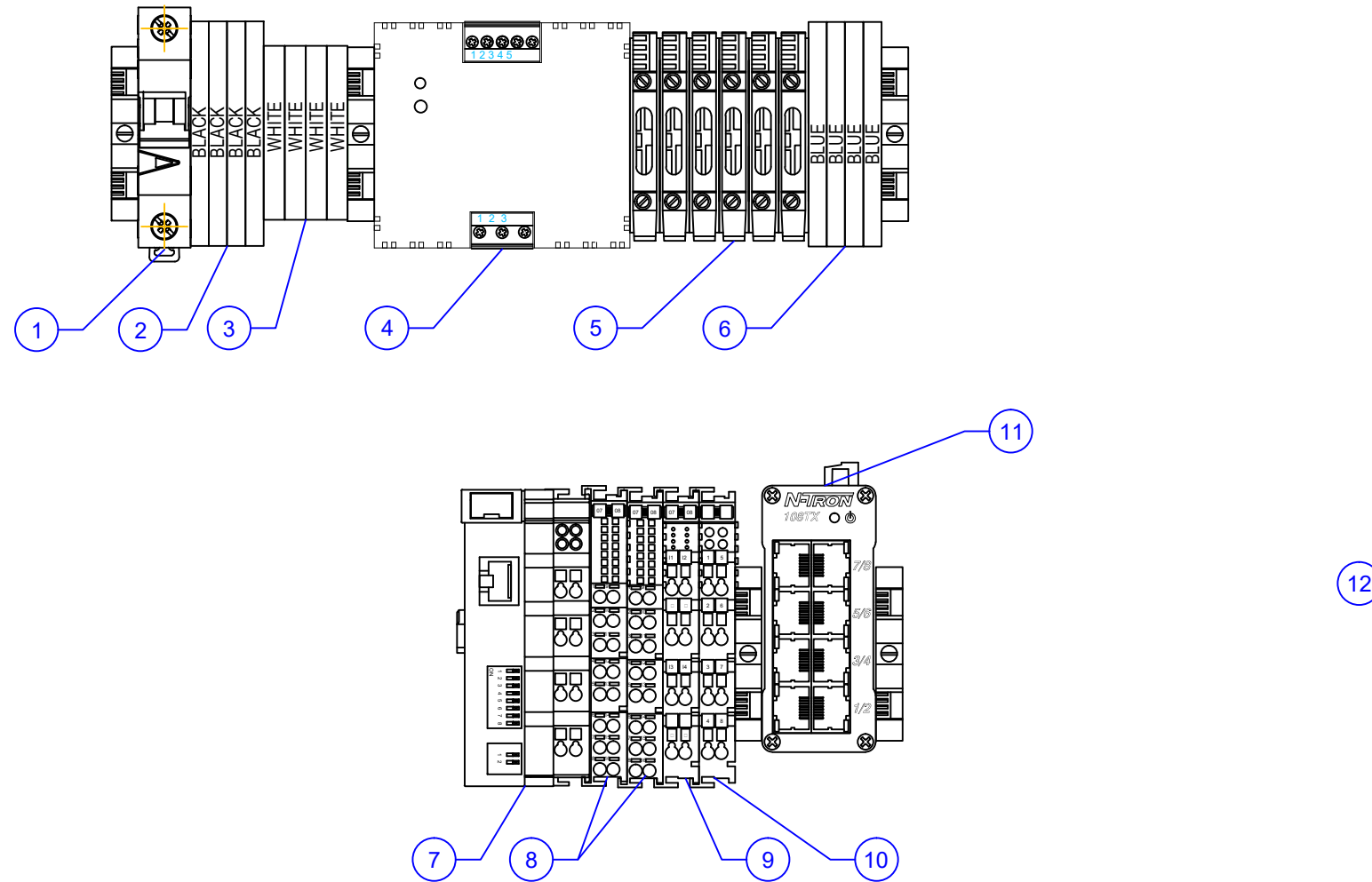
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 15

PLC ANALOG INPUT 2

DR. JMB	
TNC.	
CK. DAD	
AP. JJR	
SCALE: NONE	DWG. No. XXXX-P10
DATE: 09/28/2018	SHEET NO. 10 OF 15

NOTE:



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Supplementary Protector, Miniature, 5A, 10kA SCCR, 35mm DIN rail mount, thermal magnetic	7900225	Eaton	FAZ-C5-1-SP
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black	7500190	Automation Direct	DN-D10BLK-A
3	4	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White	7500120	Automation Direct	DN-T10W-A
4	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
5	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
6	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
7	1	Protos X compact bus coupler, 24 VDC, (1) Ethernet (RJ45) port(s), Modbus TCP	7800526	Automation Direct	PX-TCP1
8	2	Protos X discrete input module, 16-point, 24 VDC, sinking	7800563	Automation Direct	PX-149
9	1	Protos X analog input terminal, 4-channel, current, 12-bit, input current signal range(s) of 4-20 mA.	7800527	Automation Direct	PX-304
10	1	Protos X bus end terminal, for use with Protos X I/O systems.	7800527	Automation Direct	PX-901
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	1	WLAN module with integrated antennas	7800463	Phoenix Contact	2702538

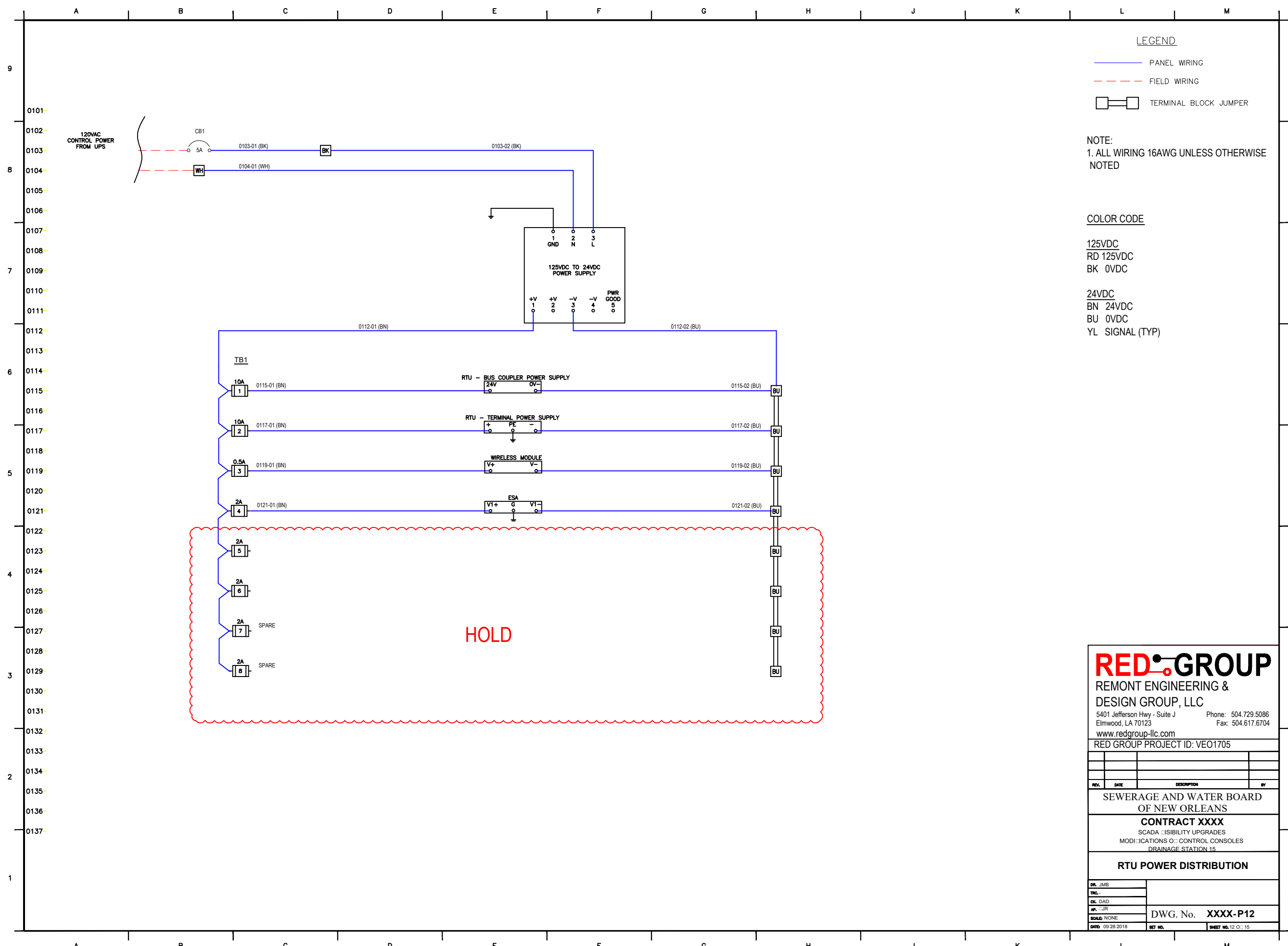
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 REMONT ENGINEERING & DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 15

RTU LAYOUT

DR. JMB	
TNC.	
CK. DAD	
AP. JR	
SCALE: NONE	DWG. No. XXXX-P11
DATE: 09/28/2018	SET NO. SHEET NO. 11 OF 15



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 15

RTU POWER DISTRIBUTION

DR. JMB	
TNC.	
CK. DAD	
AP. JR	
SCALE: NONE	DWG. No. XXXX-P12
DATE: 09/28/2018	SHEET NO. 12 OF 15




A B C D E F G H J K L M

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HOLD

LEGEND

-  PANEL WIRING
-  FIELD WIRING
-  TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

PX149 SLOT 1 16 CH DISCRETE IN		
○ 1	IN1	POWER FAILURE
○ 2	IN2	RAIN GAUGE TIP
○ 3	IN3	PUMP 2 DIESEL RUNNING
○ 4	IN4	PUMP 2 DIESEL FAILURE
○ 5	IN5	PUMP 3 DIESEL RUNNING
○ 6	IN6	PUMP 3 DIESEL FAILURE
○ 7	IN7	
○ 8	IN8	
○ 9	IN9	
○ 10	IN10	
○ 11	IN11	
○ 12	IN12	
○ 13	IN13	
○ 14	IN14	
○ 15	IN15	
○ 16	IN16	

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REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 15

RTU DIGITAL INPUT 1

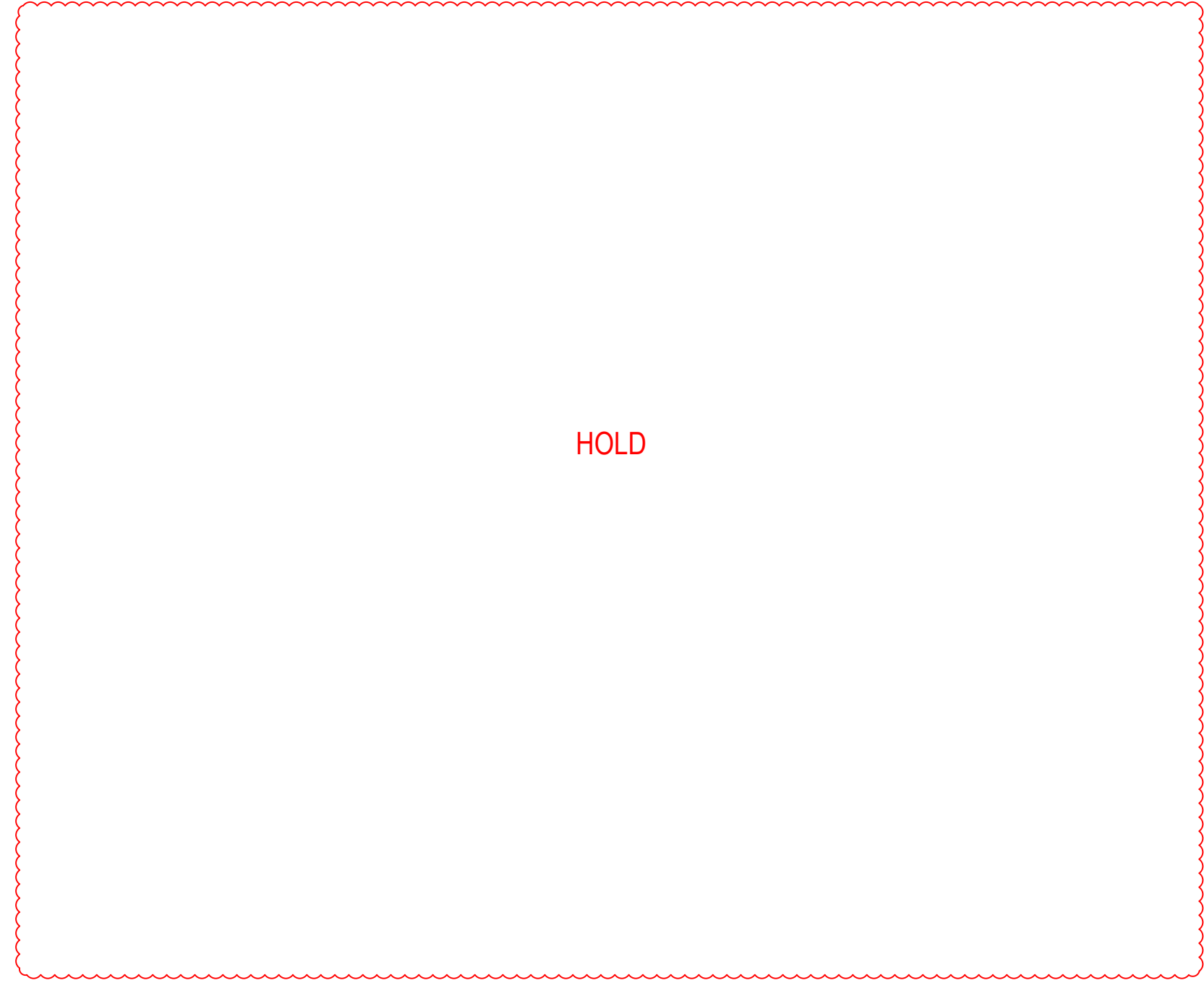
DR. JMB	
TNC.	
CK. DAD	
AP. JJR	
SCALE: NONE	DWG. No. XXXX-P13
DWG: 09/28/2018	SET NO. SHEET NO. 13 OF 15

A B C D E F G H J K L M

A B C D E F G H J K L M

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HOLD

PX149
SLOT 1
16 CH DISCRETE IN

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O 2	IN2
O 3	IN3
O 4	IN4
O 5	IN5
O 6	IN6
O 7	IN7
O 8	IN8
O 9	IN9
O 10	IN10
O 11	IN11
O 12	IN12
O 13	IN13
O 14	IN14
O 15	IN15
O 16	IN16

LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

RED GROUP

REMONT ENGINEERING &
DESIGN GROUP, LLC

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 15

RTU DIGITAL INPUT 2

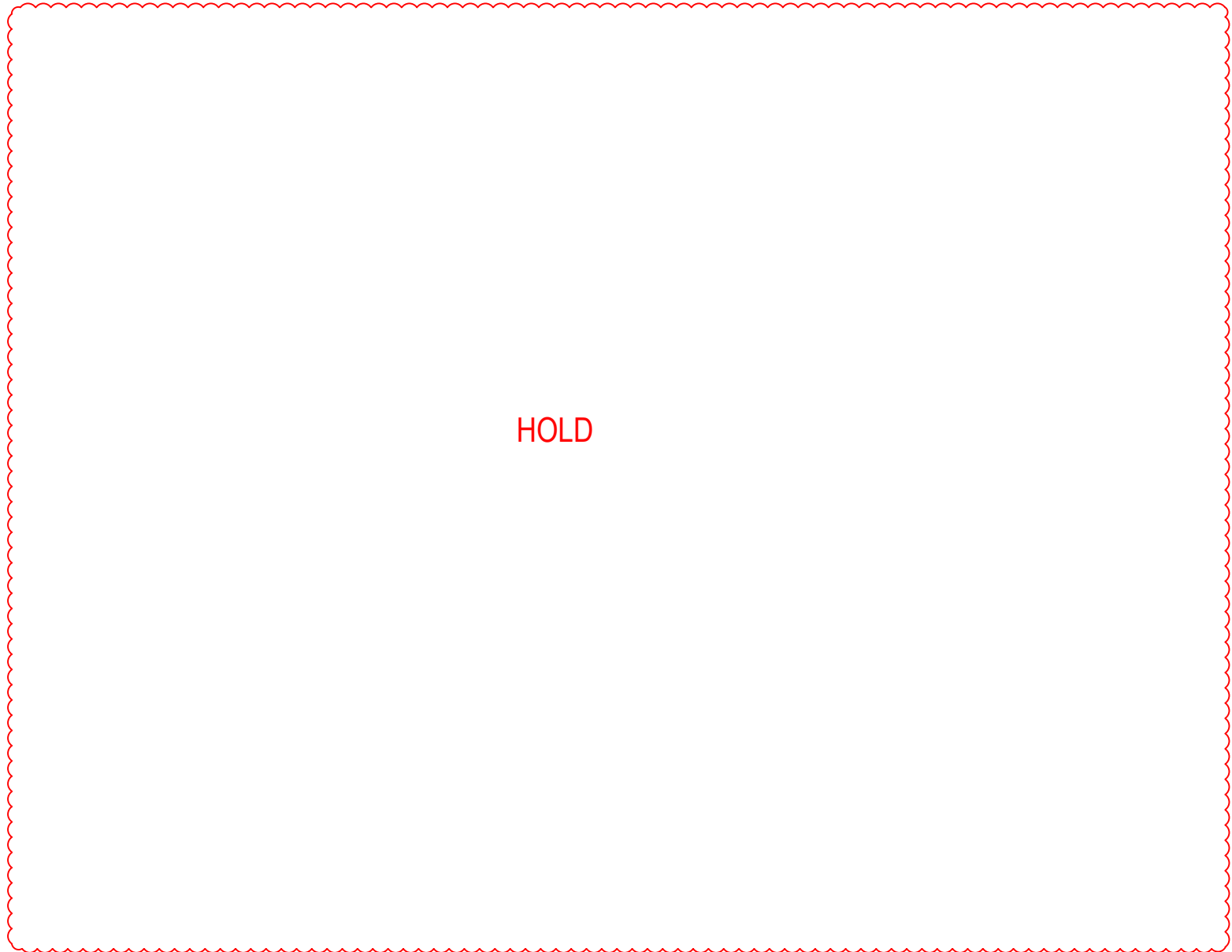
DR. JMB	
TNC.	
CK. DAD	
AP. JJR	
SCALE: NONE	DWG. No. XXXX-P14
DATE: 09/28/2018	SET NO. SHEET NO. 14 OF 15

A B C D E F G H J K L M

A B C D E F G H J K L M

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0201
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LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

P2-08AD-1
SLOT 3
8 CH ANALOG IN

O 1	IN1
O 2	+24V
O 5	IN2
O 6	+24V
O 3	IN3
O 4	+24V
O 7	IN4
O 8	+24V

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SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

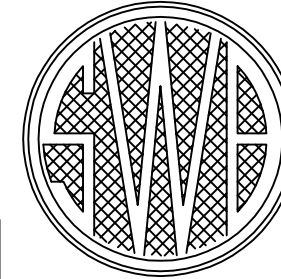
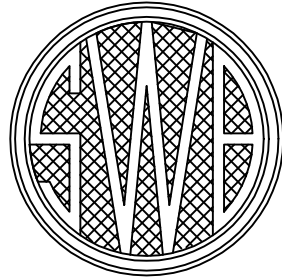
SCADA VISIBILITY UPGRADES
MODIFICATIONS OF CONTROL CONSOLES
DRAINAGE STATION 15

RTU ANALOG INPUT 1

DR. JMB	
TNC.	
CK. DAD	
AP. JJR	
SCALE: NONE	DWG. No. XXXX-P15
DATE: 09/28/2018	SET NO. SHEET NO. 15 OF 15

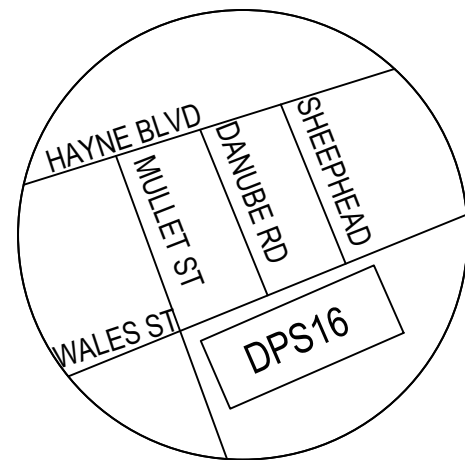
A B C D E F G H J K L M

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 16



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	PLC DIGITAL OUTPUT 1		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

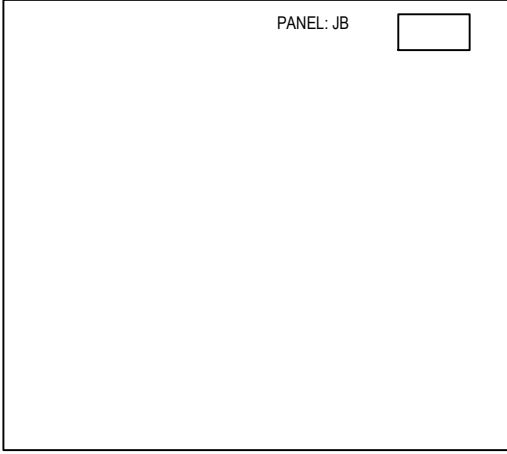
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 16

INDEX OF SHEETS

DR. JMB	
TNC. JMB	
CC. DAD	
AP. JR	
SCALE: NONE	DWG. No. 5120-P1
DATE: 09/27/18	SET NO. SHEET NO. 1 OF 9

A B C D E F G H J K L M

FLOAT HOUSE

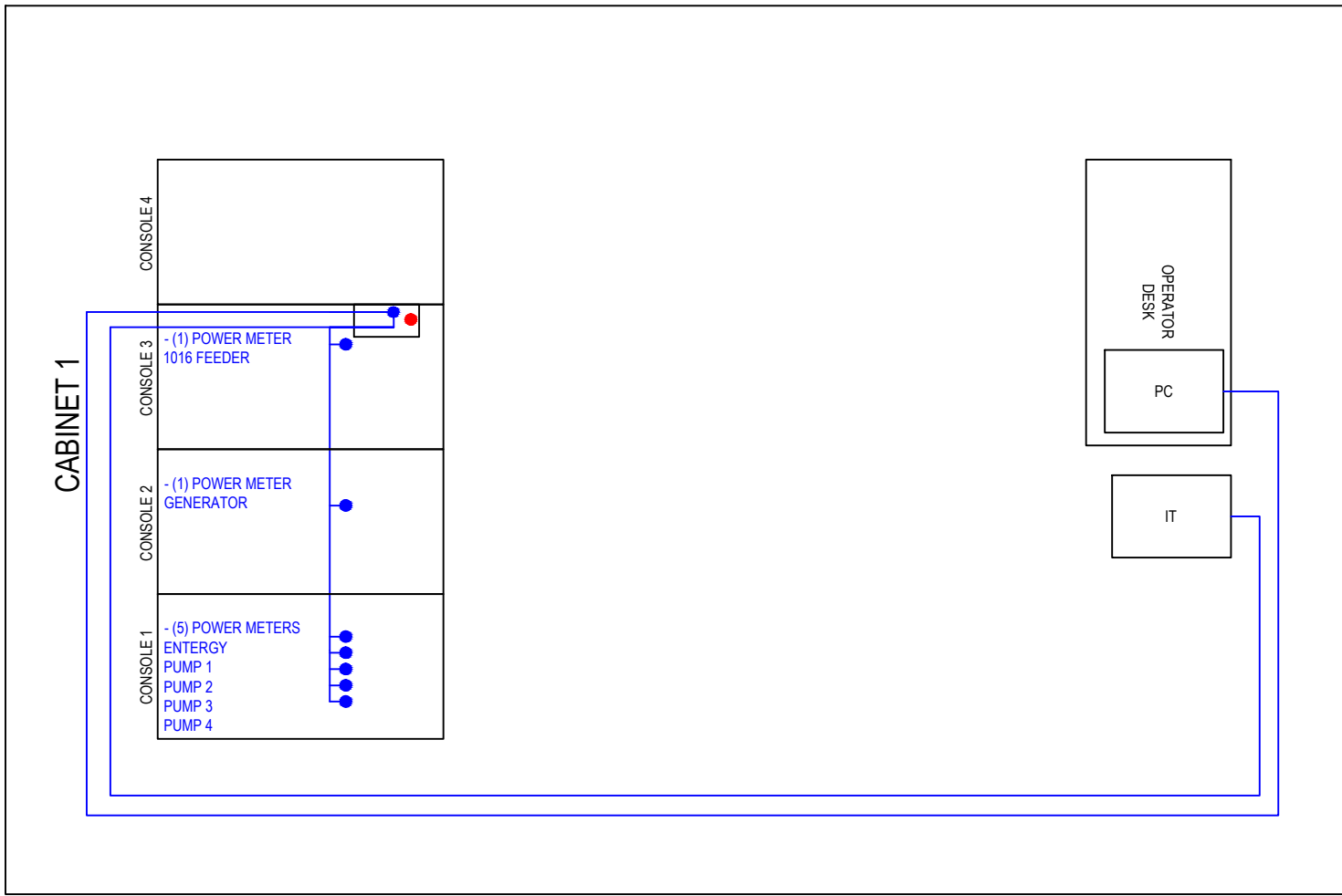


LEGEND

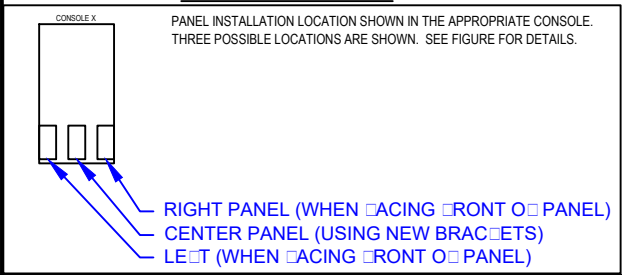
- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU

OPERATOR ROOM



PANEL LOCATION



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 www.redgroup-llc.com
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REV.	DATE	DESCRIPTION	BY

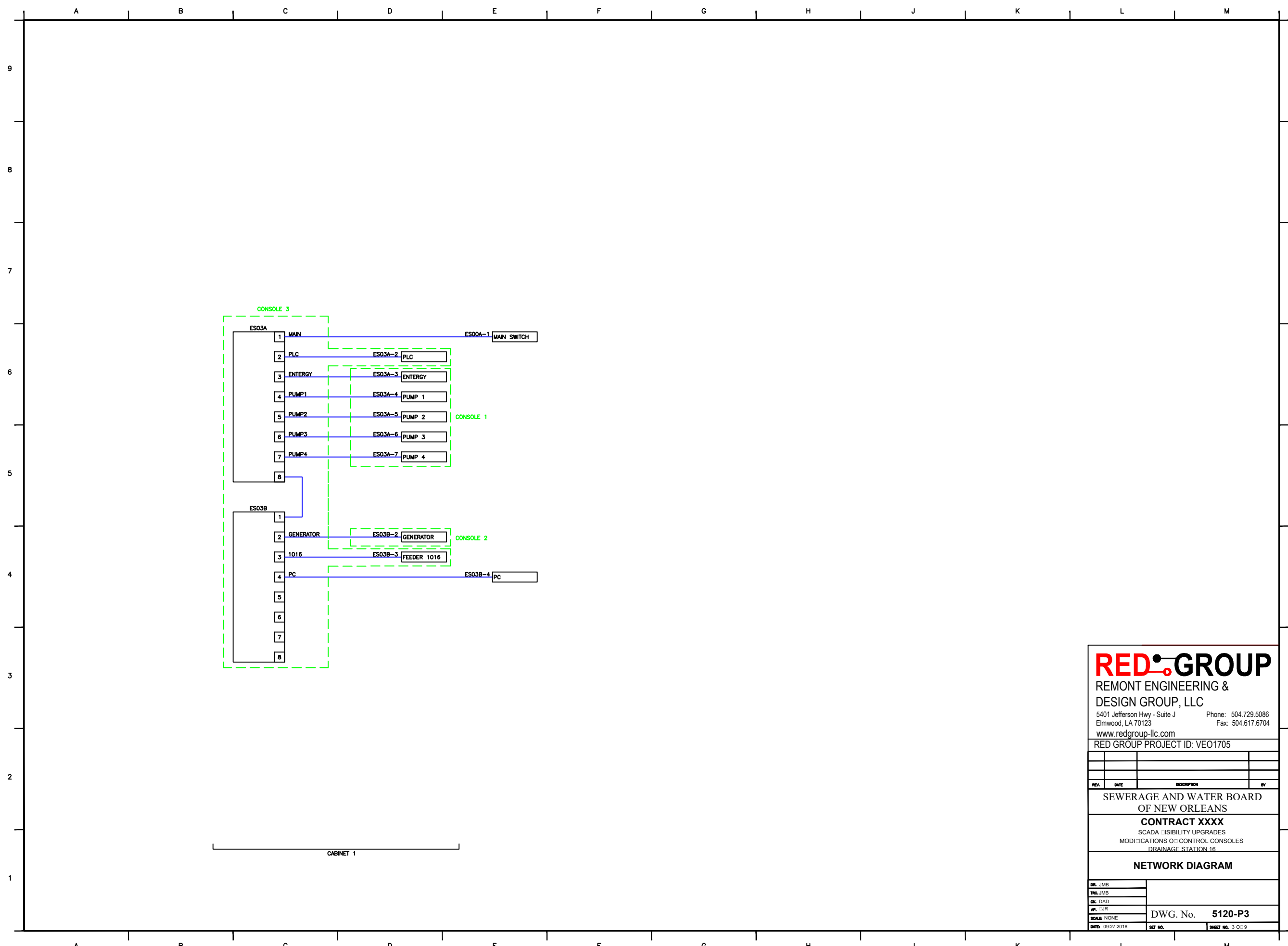
SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 16

PLAN VIEW

DR: JMB	DWG. No. 5120-P2-A
TNG: JMB	
CK: DAD	
AP: JJR	
SCALE: NONE	
DATE: 09/27/2018	SET NO. SHEET NO. 2 OF 9

A B C D E F G H J K L M



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 RED GROUP PROJECT ID: VEO1705

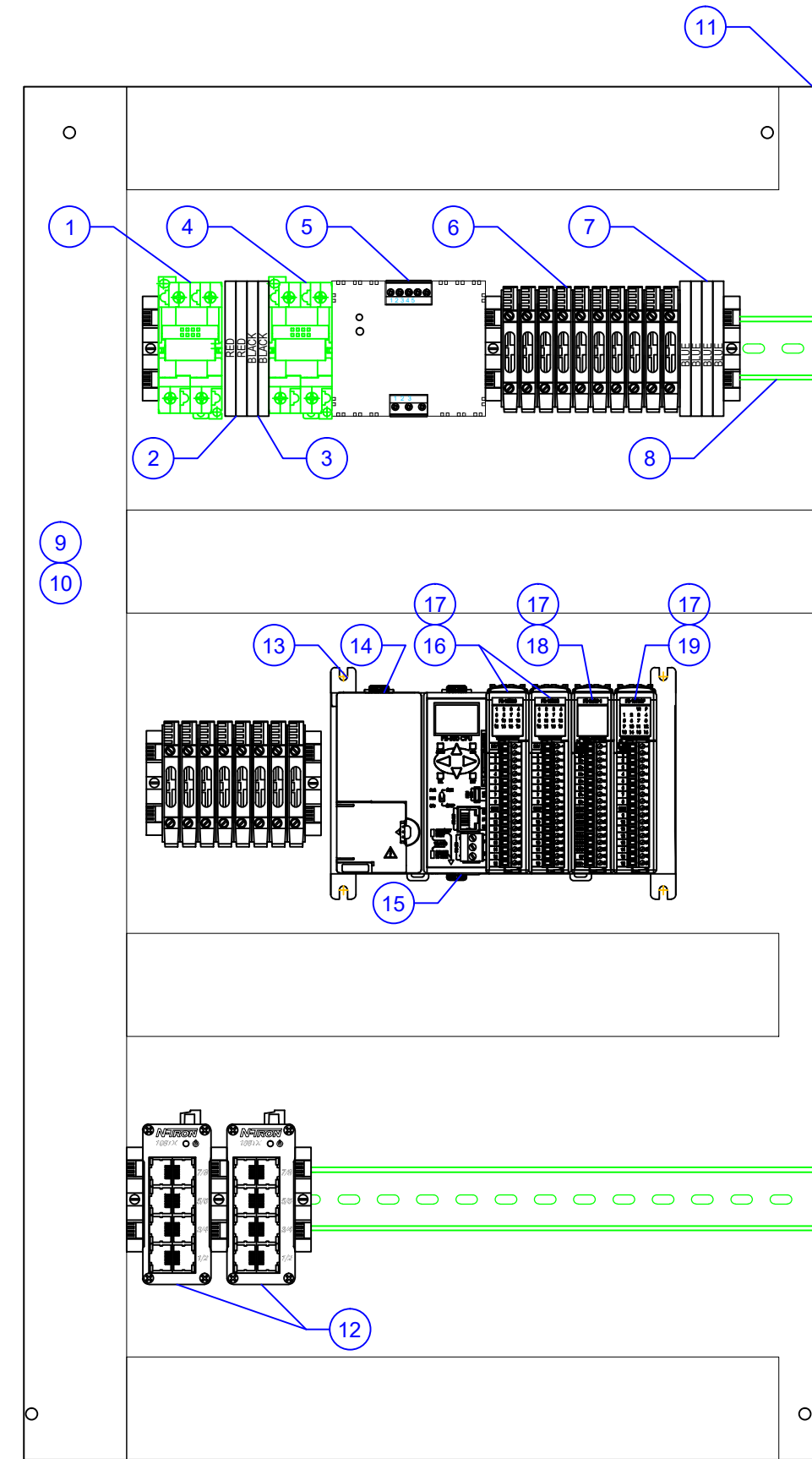
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 16

NETWORK DIAGRAM

DR: JMB	
TNG: JMB	
CK: DAD	
AP: JJR	
SCALE: NONE	DWG. No. 5120-P3
DATE: 09/27/2018	SHEET NO. 3 OF 9

BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
3	2	Terminal Blocks, Single-Level, 24-10AWG, 30A, 600V, White, 100pk	7500120	Automation Direct	DN-T10W-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 Discrete Output - 24VDC Sourcing, 16 Channel	7800546	Automation Direct	P2-16TD2P
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10
22	6	Float Switch,NO, Narrow-Angled, Mechanically activated, for low current..	7800557	SJE	1018850
23	1	Level Transmitter, 33ft H2O, 316SS, 4-20mA, with 50ft Cable	7700051	E&H	FMX21-FE111HGE25A



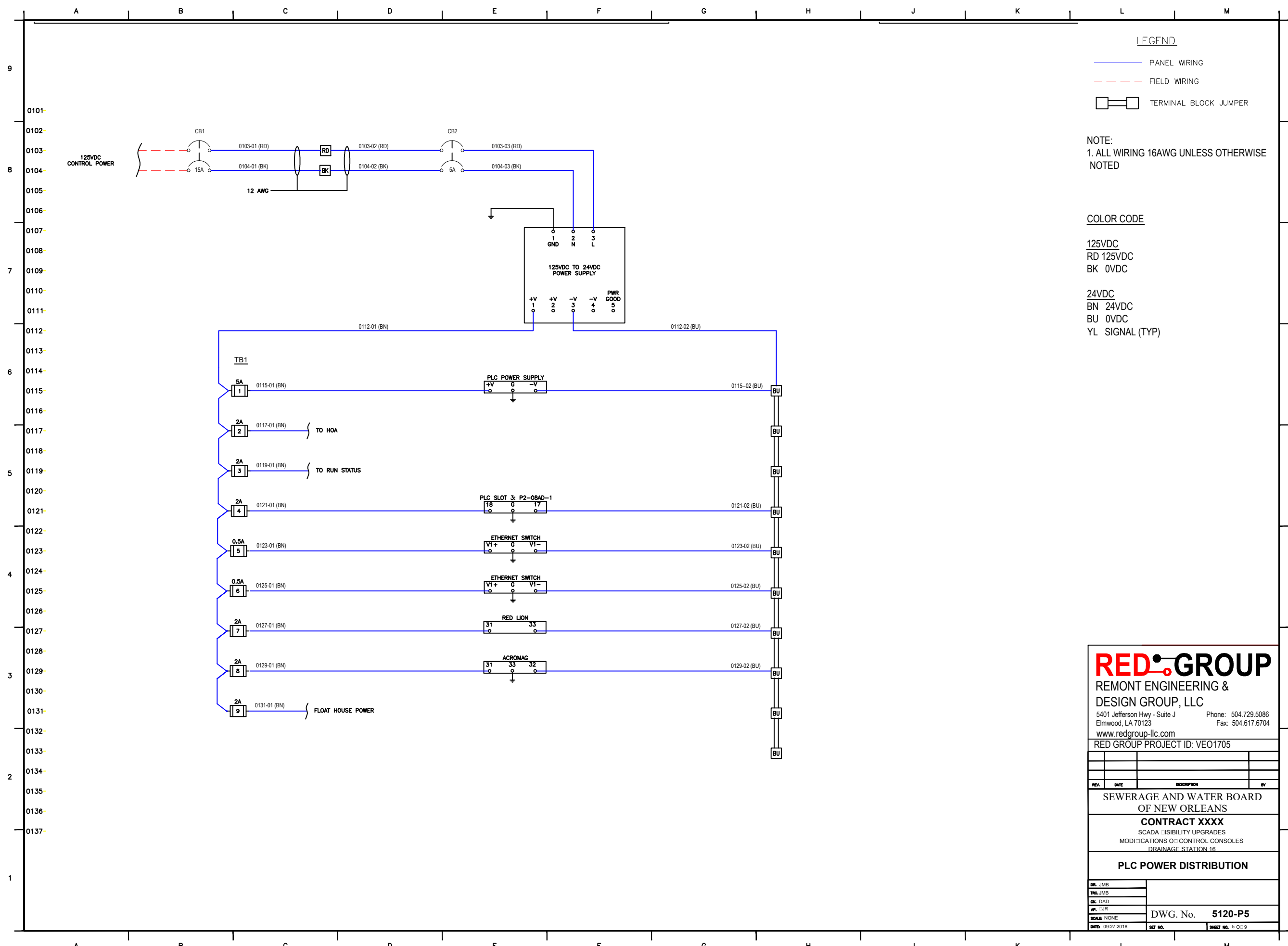
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 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 16

PLC LAYOUT

DR. JMB	
TNG. JMB	
CK. DAD	
AP. IJR	
SCALE: NONE	DWG. No. 5120-P4
DATE: 09/27/2018	SET NO. SHEET NO. 4 OF 9



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

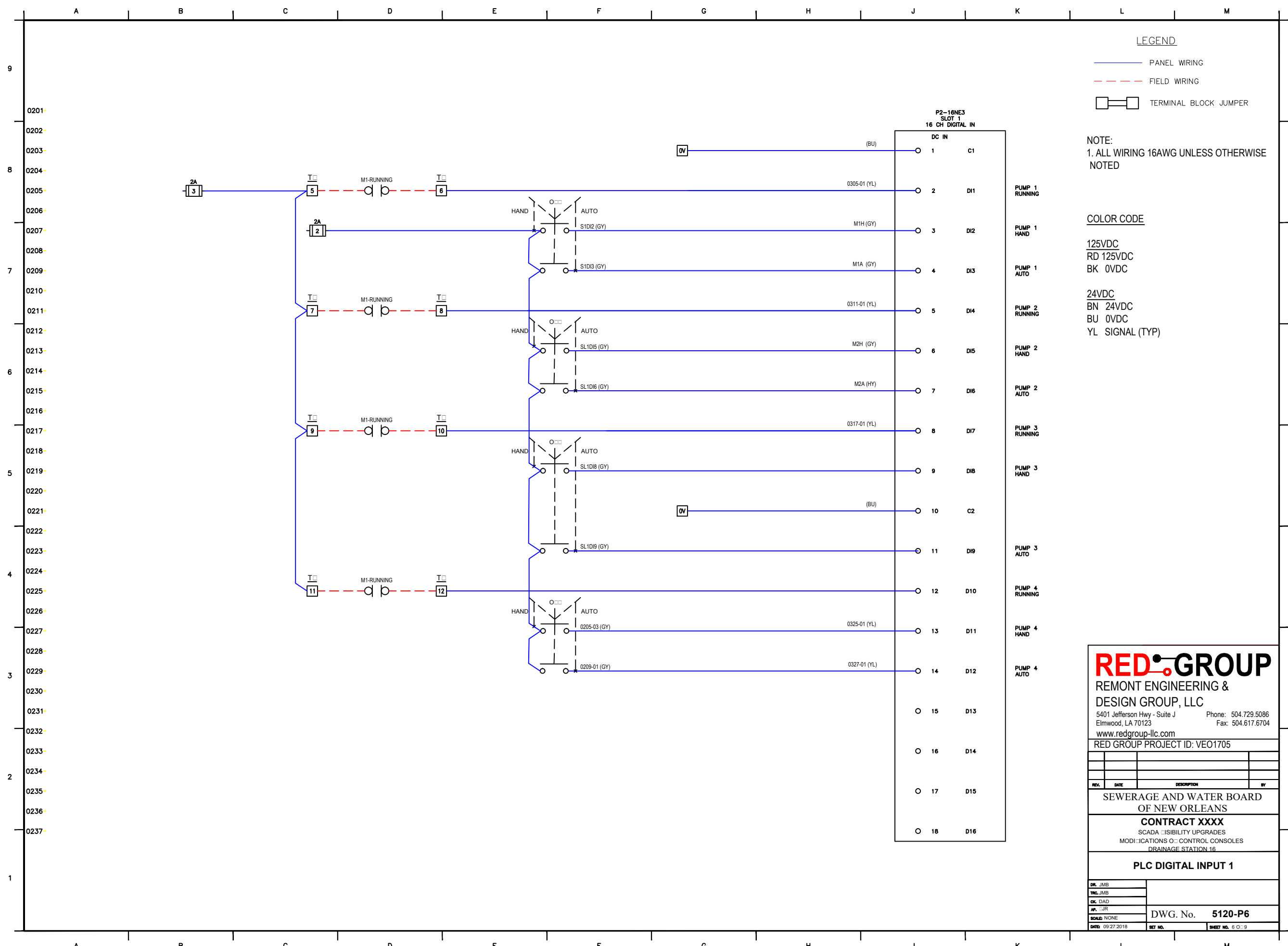
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
 OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 16

PLC POWER DISTRIBUTION

DR. JMB TRG. JMB CK. DAD AP. JR SCALE: NONE DATE: 09/27/2018	DWG. No. 5120-P5 SET NO. SHEET NO. 5 OF 9
---	---



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

P2-16NE3 SLOT 1 16 CH DIGITAL IN		
DC IN		
1	C1	
2	D1	PUMP 1 RUNNING
3	D2	PUMP 1 HAND
4	D3	PUMP 1 AUTO
5	D4	PUMP 2 RUNNING
6	D5	PUMP 2 HAND
7	D6	PUMP 2 AUTO
8	D7	PUMP 3 RUNNING
9	D8	PUMP 3 HAND
10	C2	
11	D9	PUMP 3 AUTO
12	D10	PUMP 4 RUNNING
13	D11	PUMP 4 HAND
14	D12	PUMP 4 AUTO
15	D13	
16	D14	
17	D15	
18	D16	

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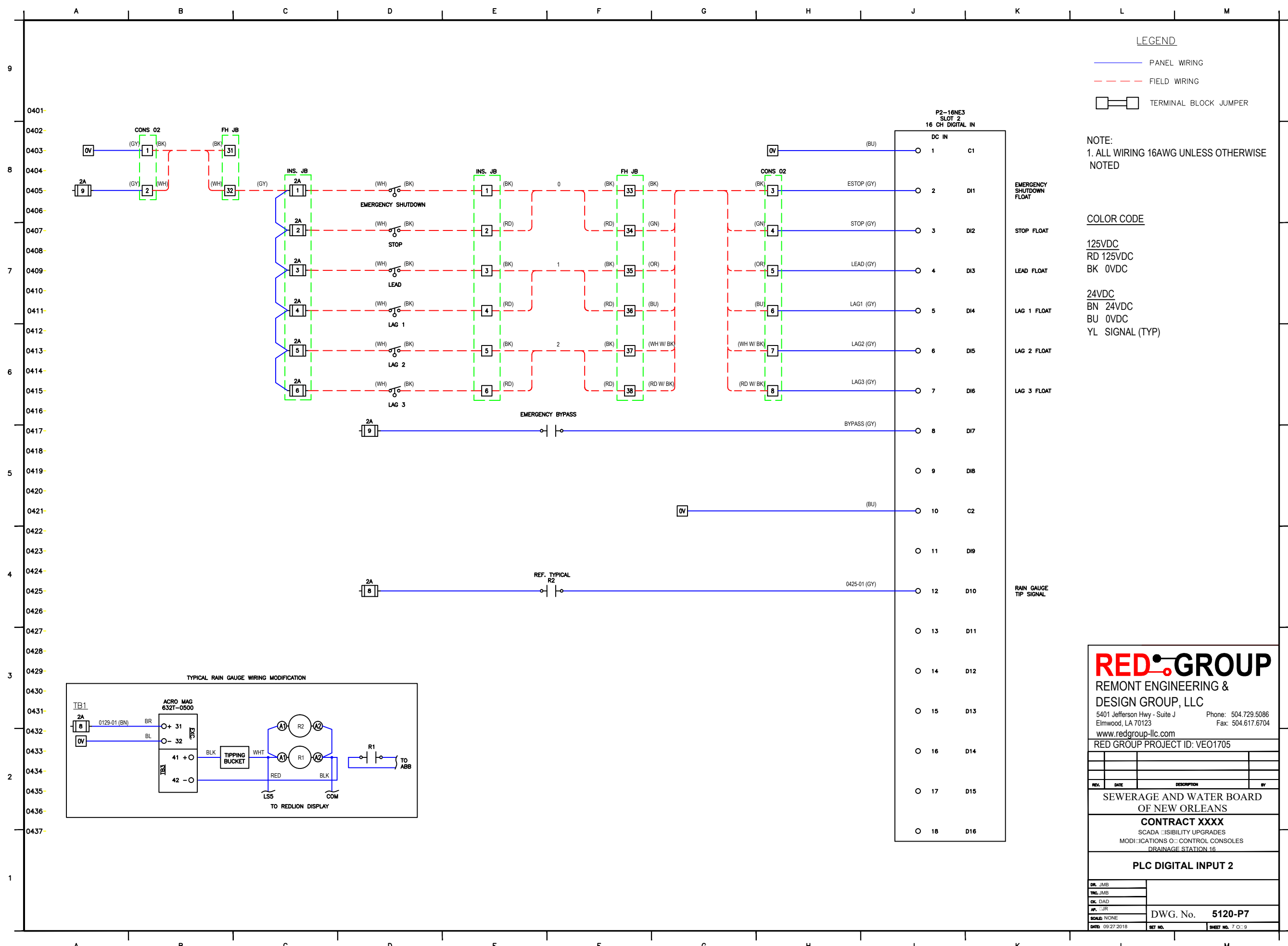
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SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
SCADA SIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION 16

PLC DIGITAL INPUT 1

DR. JMB	
TRG. JMB	
CK. DAD	
AP. JR	
SCALE: NONE	DWG. No. 5120-P6
DATE: 09/27/2018	SHEET NO. 6 OF 9



LEGEND

— PANEL WIRING

- - - FIELD WIRING

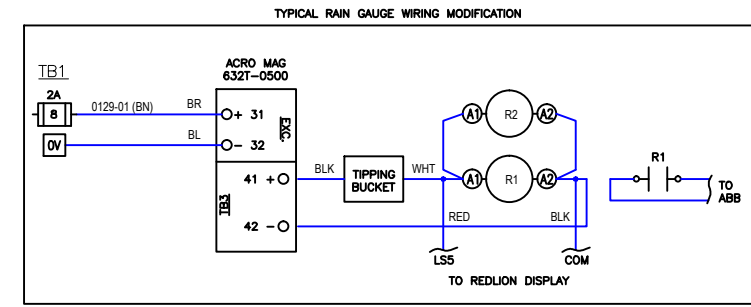
□ □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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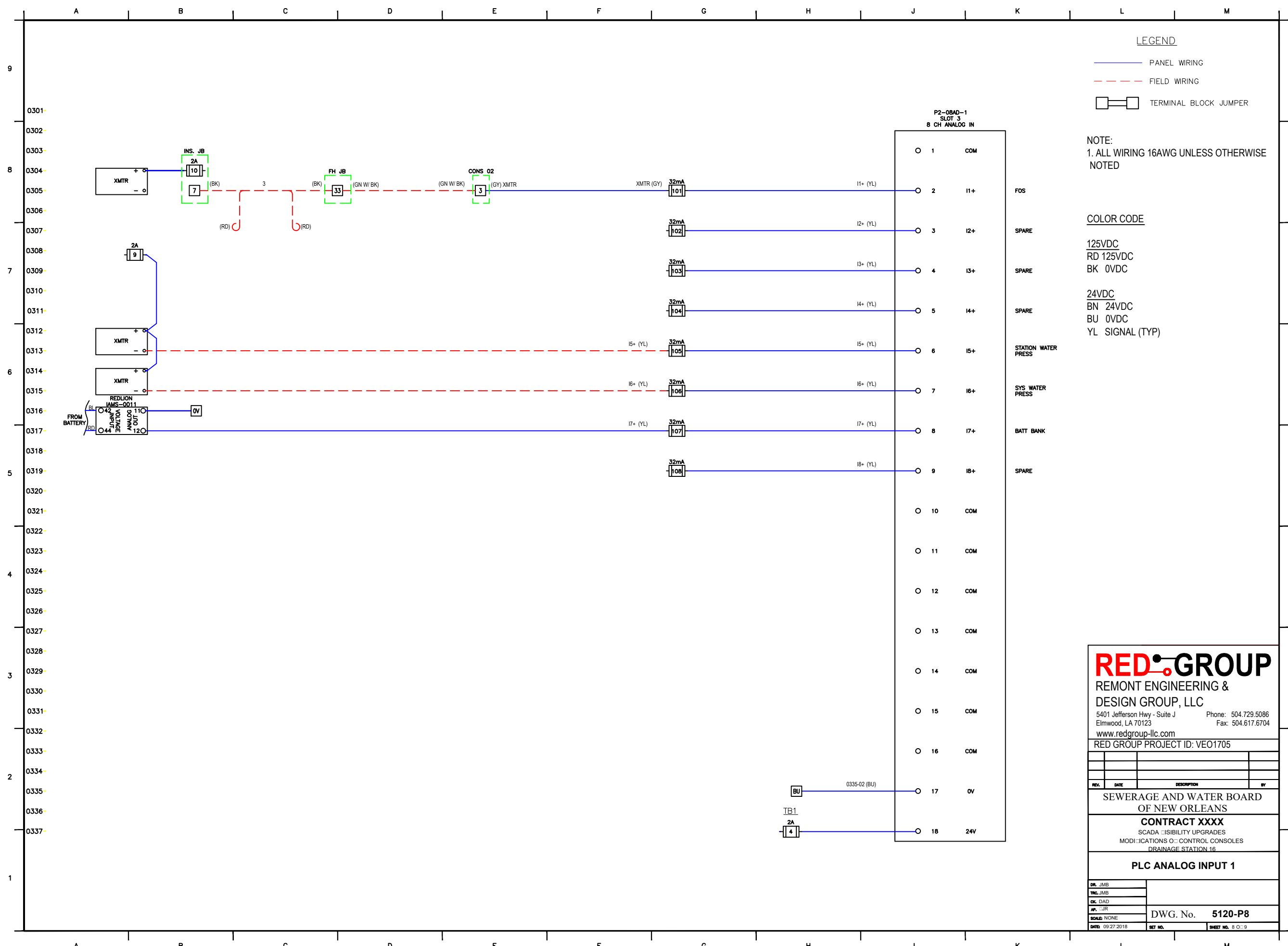
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 16

PLC DIGITAL INPUT 2

DR. JMB	
TRG. JMB	
CK. DAD	
AP. IJR	
SCALE: NONE	DWG. No. 5120-P7
DATE: 09/27/2018	SHEET NO. 7 OF 9



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

P2-08AD-1
SLOT 3
8 CH ANALOG IN

1	COM
2	11+
3	12+
4	13+
5	14+
6	15+
7	16+
8	17+
9	18+
10	COM
11	COM
12	COM
13	COM
14	COM
15	COM
16	COM
17	0V
18	24V

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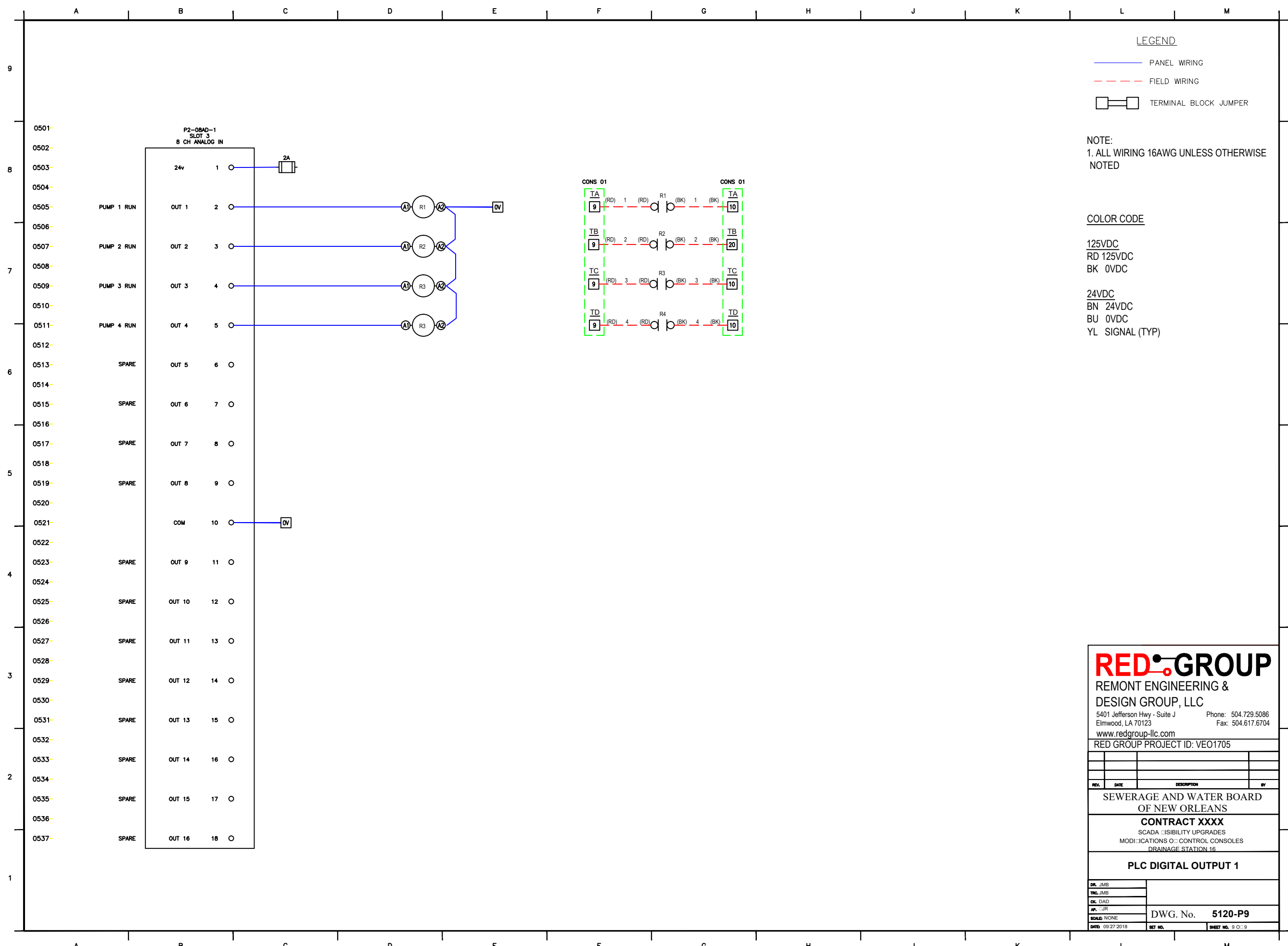
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 16

PLC ANALOG INPUT 1

DR: JMB	
TNG: JMB	
CK: DAD	
AP: JJR	
SCALE: NONE	DWG. No. 5120-P8
DATE: 09/27/2018	SHEET NO. 8 OF 9



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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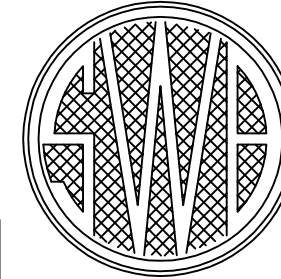
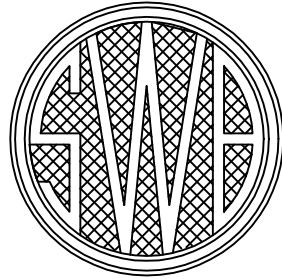
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OF NEW ORLEANS**

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 16

PLC DIGITAL OUTPUT 1

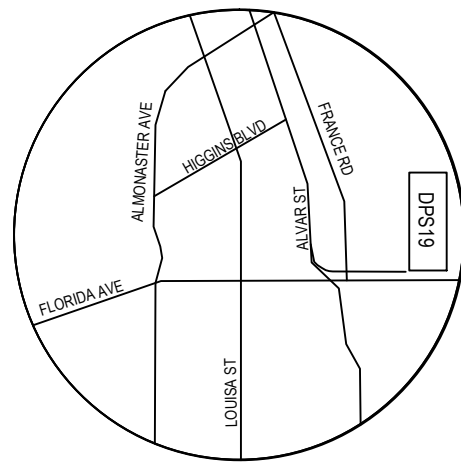
DR: JMB TRG: JMB CK: DAD AP: JJR SCALE: NONE DATE: 09/27/2018	DWG. No. 5120-P9 SET NO. SHEET NO. 9 OF 9
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SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 19



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS	14	CONSOLE 08 POWER DISTRIBUTION
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 01 LAYOUT		
10	CONSOLE 01 POWER DISTRIBUTION		
11	CONSOLE 04 LAYOUT		
12	CONSOLE 04 POWER DISTRIBUTION		
13	CONSOLE 08 LAYOUT		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 19

INDEX OF SHEETS

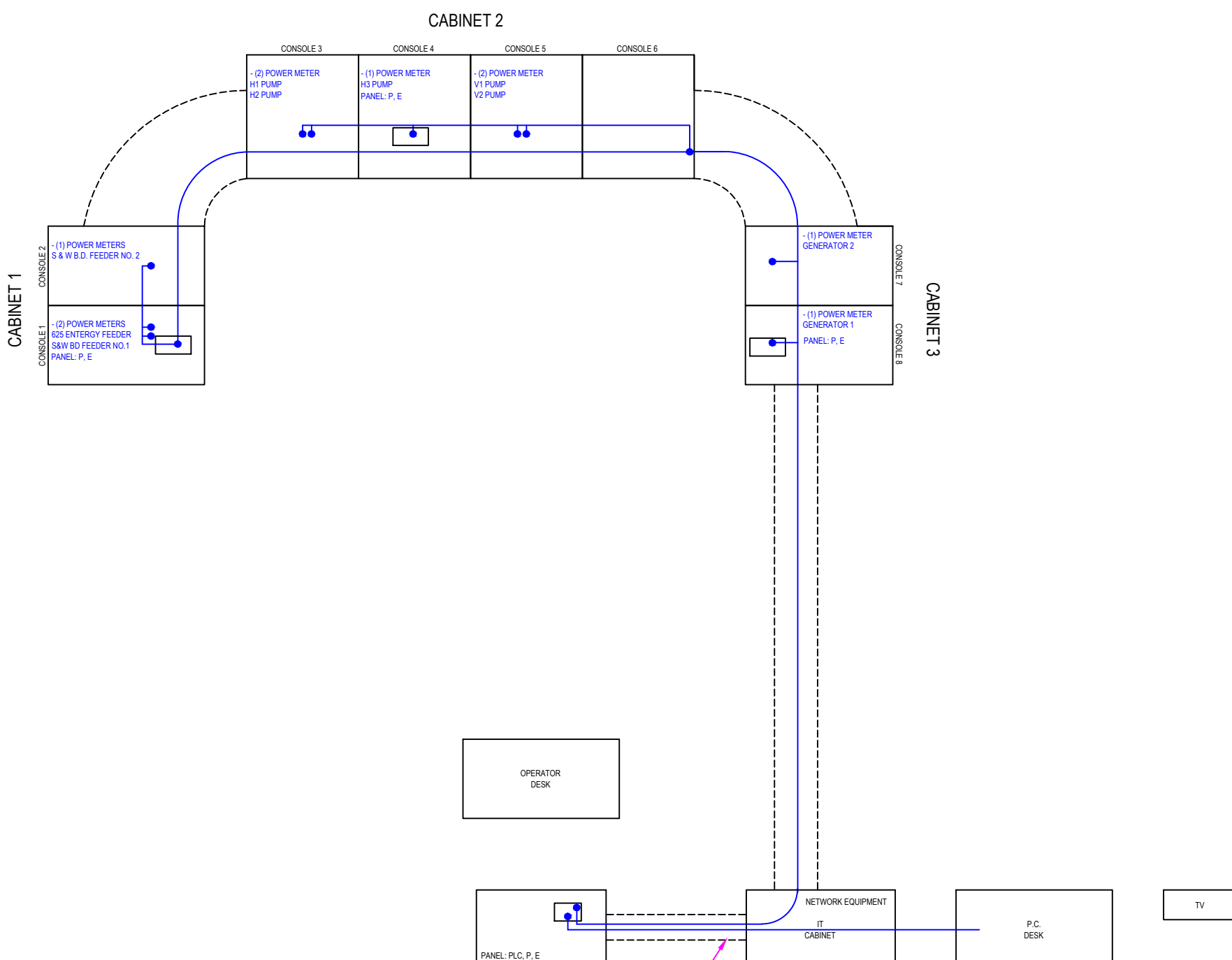
DR. BMP	
TNC. JMB	
CC. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5122-P1
DATE: 03/29/2018	SET NO. SHEET NO. 1 OF 14

A B C D E F G H J K L M

LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU



PANEL LOCATION

PANEL INSTALLATION LOCATION SHOWN IN THE APPROPRIATE CONSOLE. THREE POSSIBLE LOCATIONS ARE SHOWN. SEE FIGURE FOR DETAILS.

- RIGHT PANEL (WHEN FACING FRONT OF PANEL)
- CENTER PANEL (USING NEW BRACKETS)
- LEFT (WHEN FACING FRONT OF PANEL)

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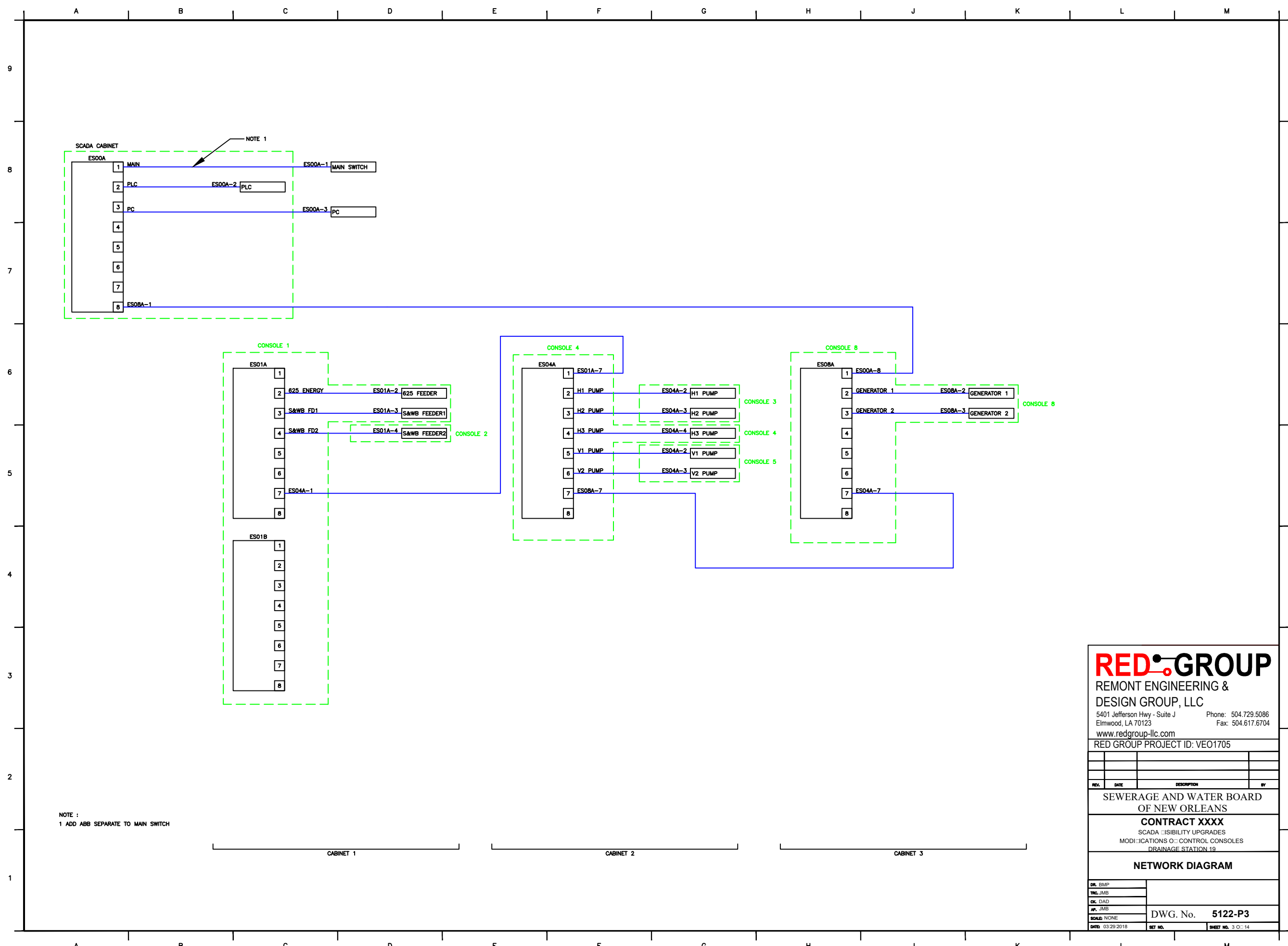
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CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS OF CONTROL CONSOLES
 DRAINAGE STATION 19

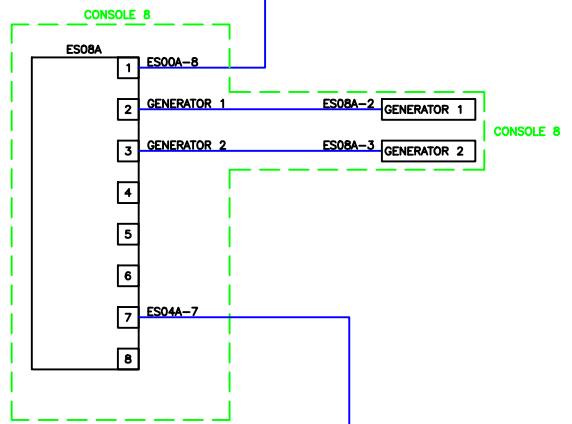
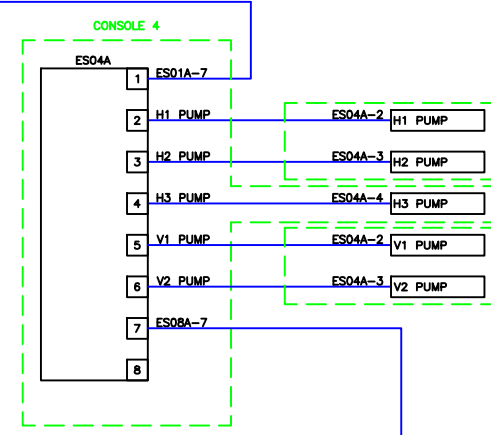
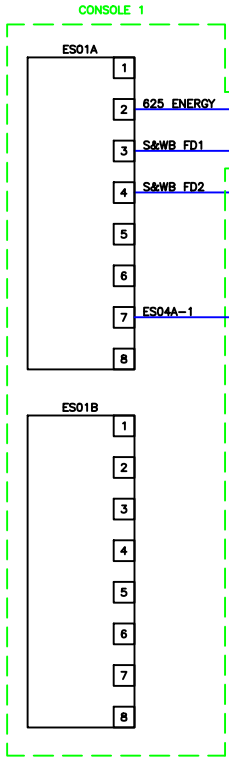
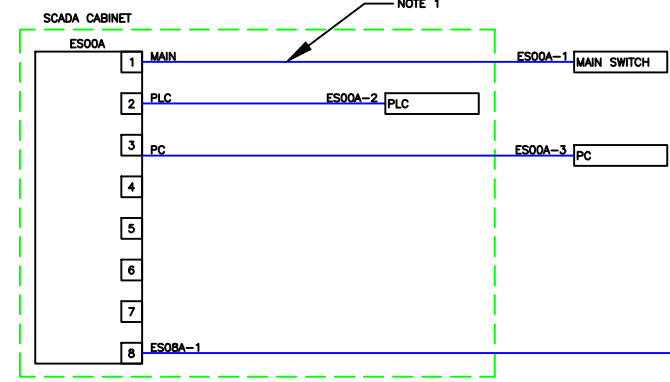
PLAN VIEW

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5122-P2
DATE: 03/29/2018	SET NO. SHEET NO. 2 OF 14

A B C D E F G H J K L M



NOTE 1



NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

CABINET 1

CABINET 2

CABINET 3

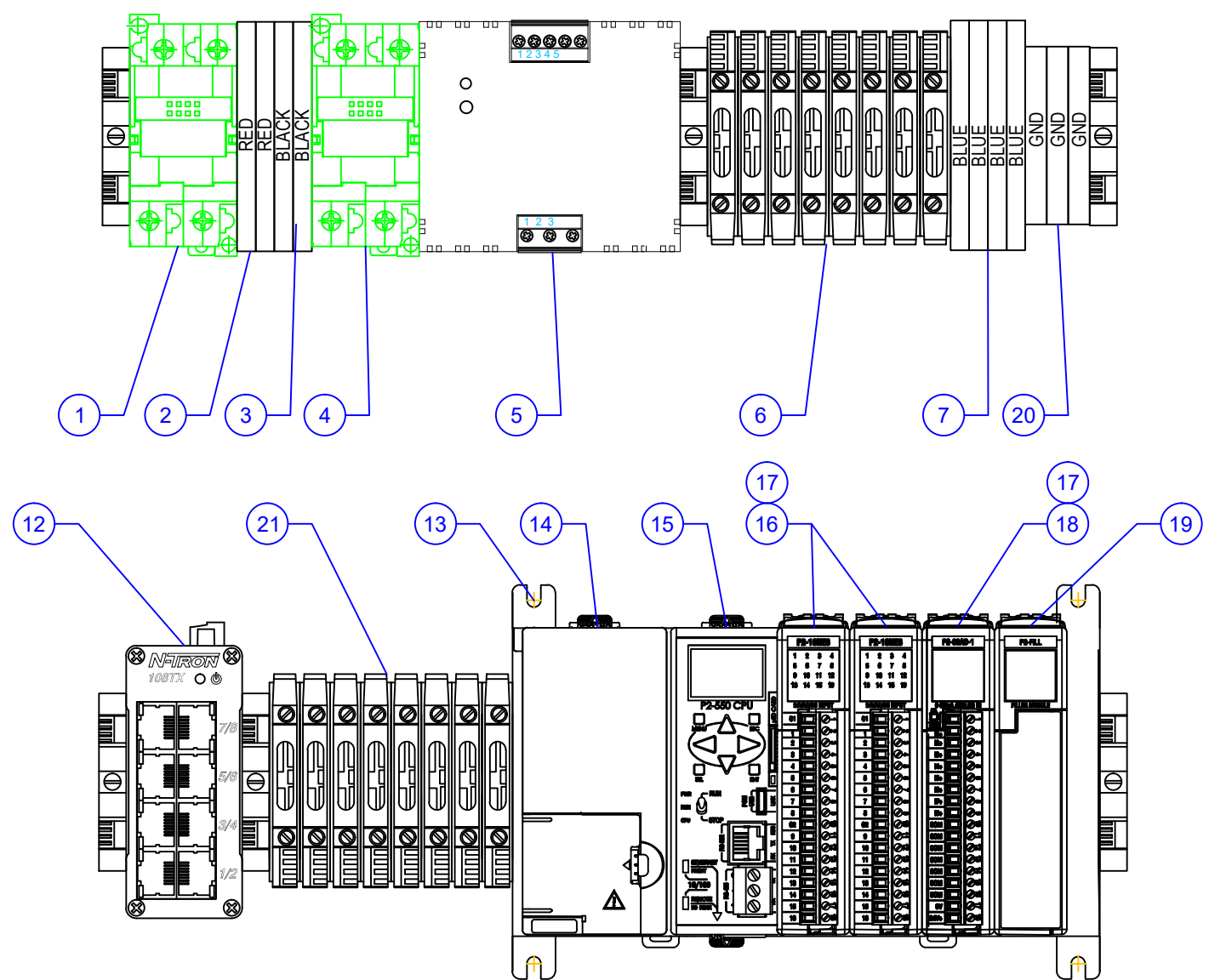
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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA SIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 19

NETWORK DIAGRAM

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5122-P3
DWG: 03/29/2018	SET NO. SHEET NO. 3 OF 14



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

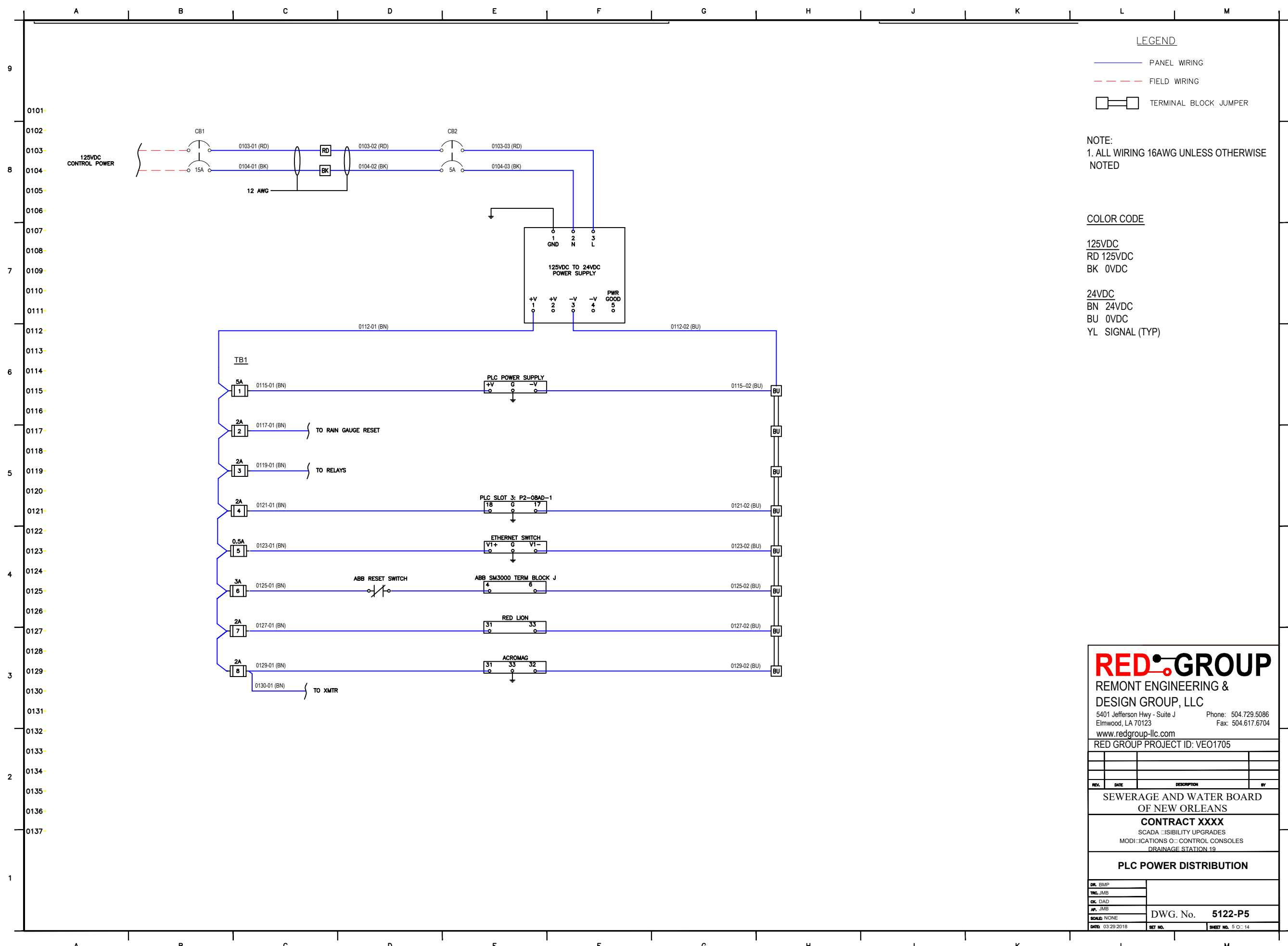
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SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 19

PLC LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5122-P4
DATE: 03/29/2018	SET NO. SHEET NO. 4 OF 14



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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SEWERAGE AND WATER BOARD OF NEW ORLEANS


CONTRACT XXXX

SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 19

PLC POWER DISTRIBUTION

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5122-P5
DWG: 03/29/2018	SET NO. SHEET NO. 5 OF 14

LEGEND

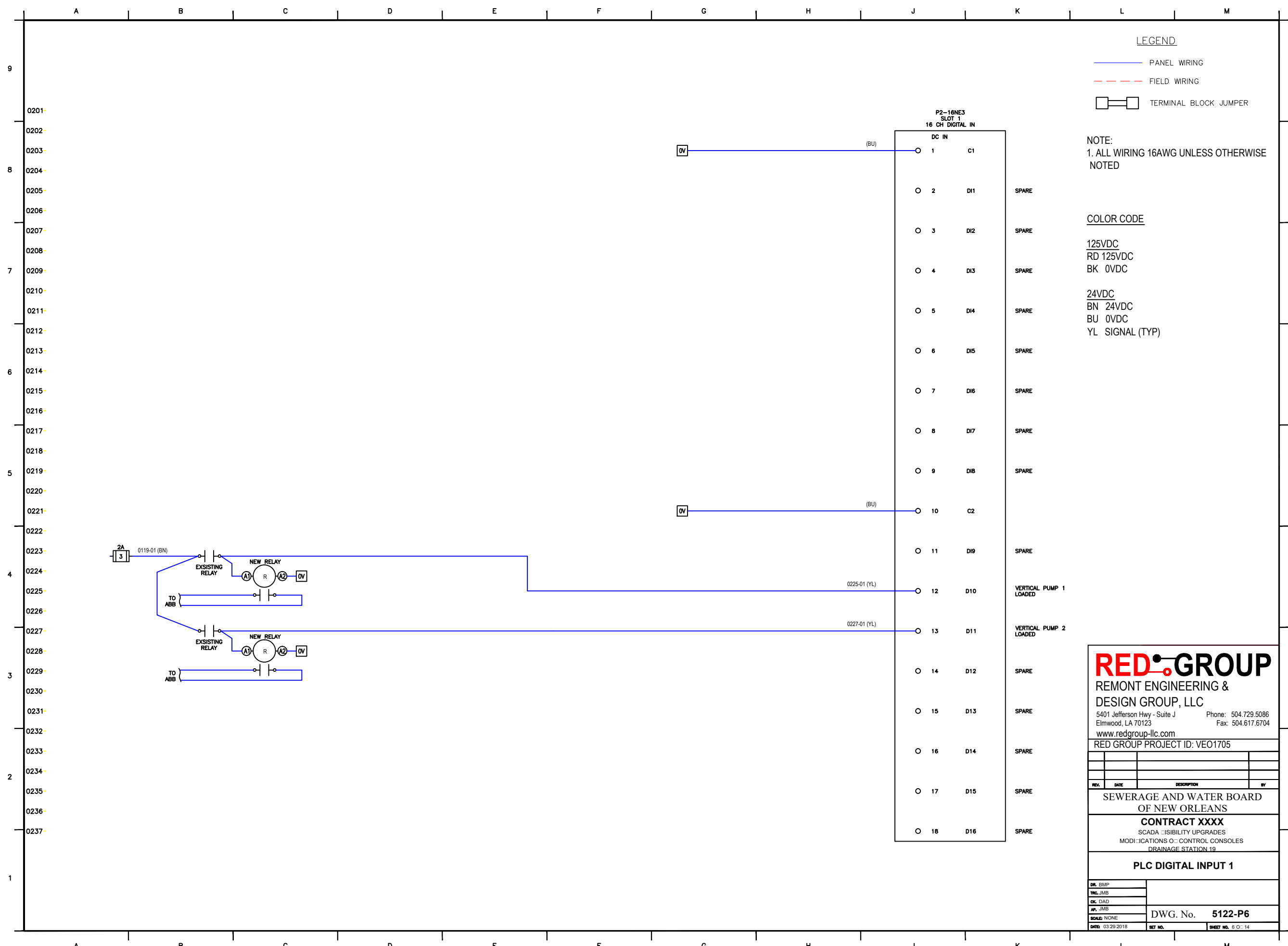
- PANEL WIRING
- - - FIELD WIRING
-  TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 19

PLC DIGITAL INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5122-P6
DATE: 03/29/2018	SHEET NO. 6 OF 14

A B C D E F G H J K L M

9
8
7
6
5
4
3
2
1

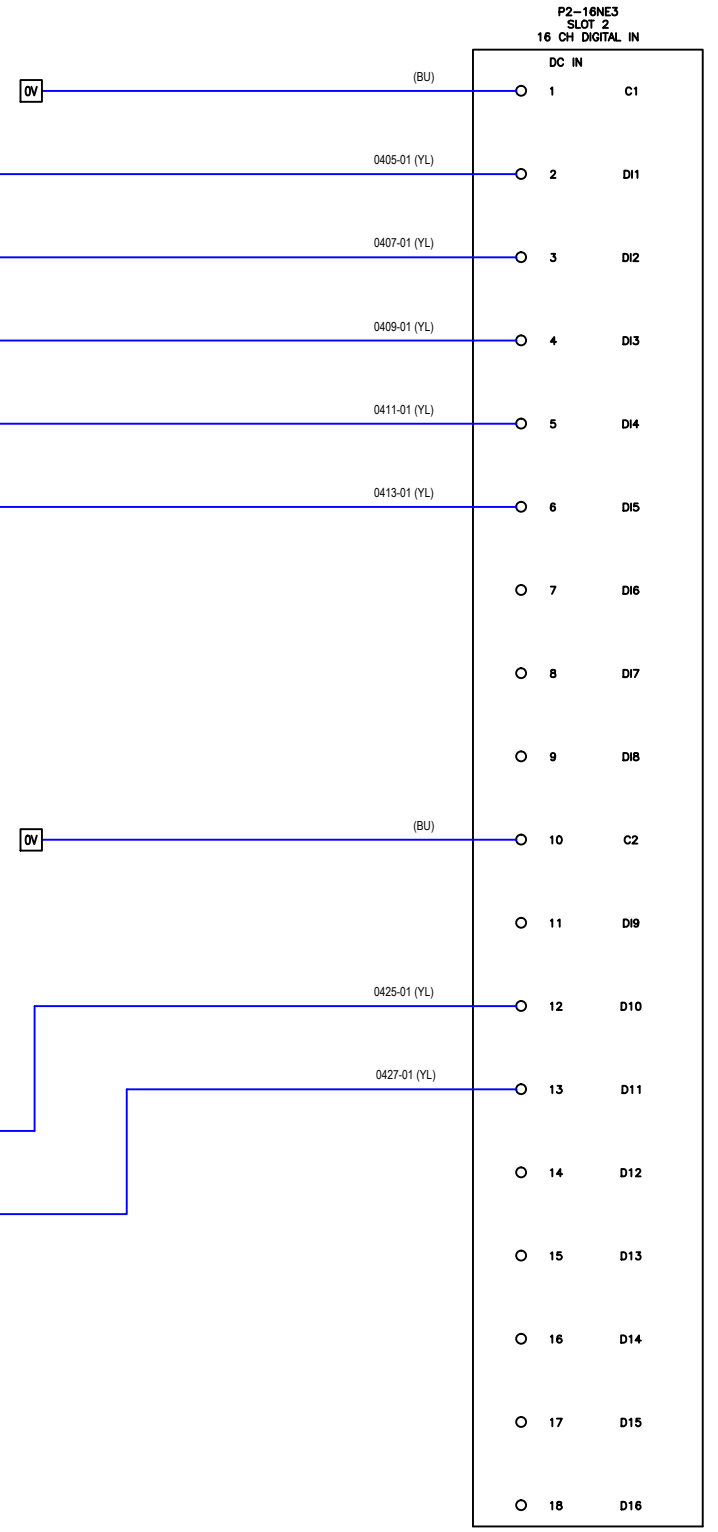
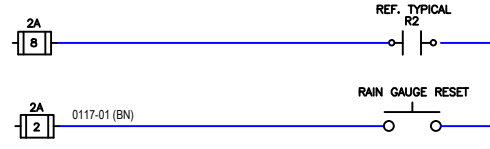
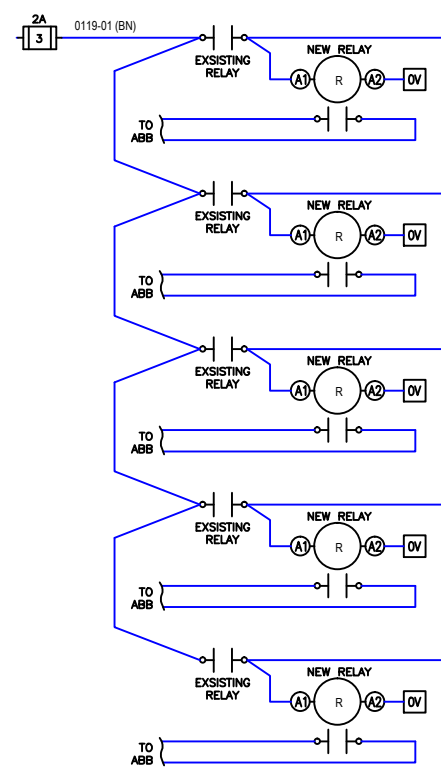
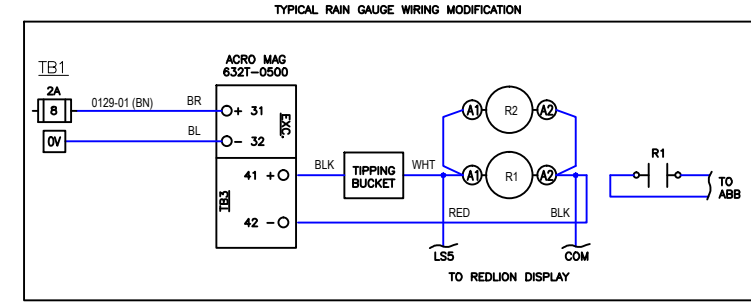
LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)



- GEN.1 RUNNING
- GEN.2 RUNNING
- HORIZONTAL PUMP 1 LOADED
- HORIZONTAL PUMP 2 LOADED
- HORIZONTAL PUMP 3 LOADED
- SPARE
- SPARE
- SPARE
- SPARE
- RAIN GAUGE TIP SIGNAL
- RAIN GAUGE RESET SWITCH
- SPARE
- SPARE
- SPARE
- SPARE
- SPARE

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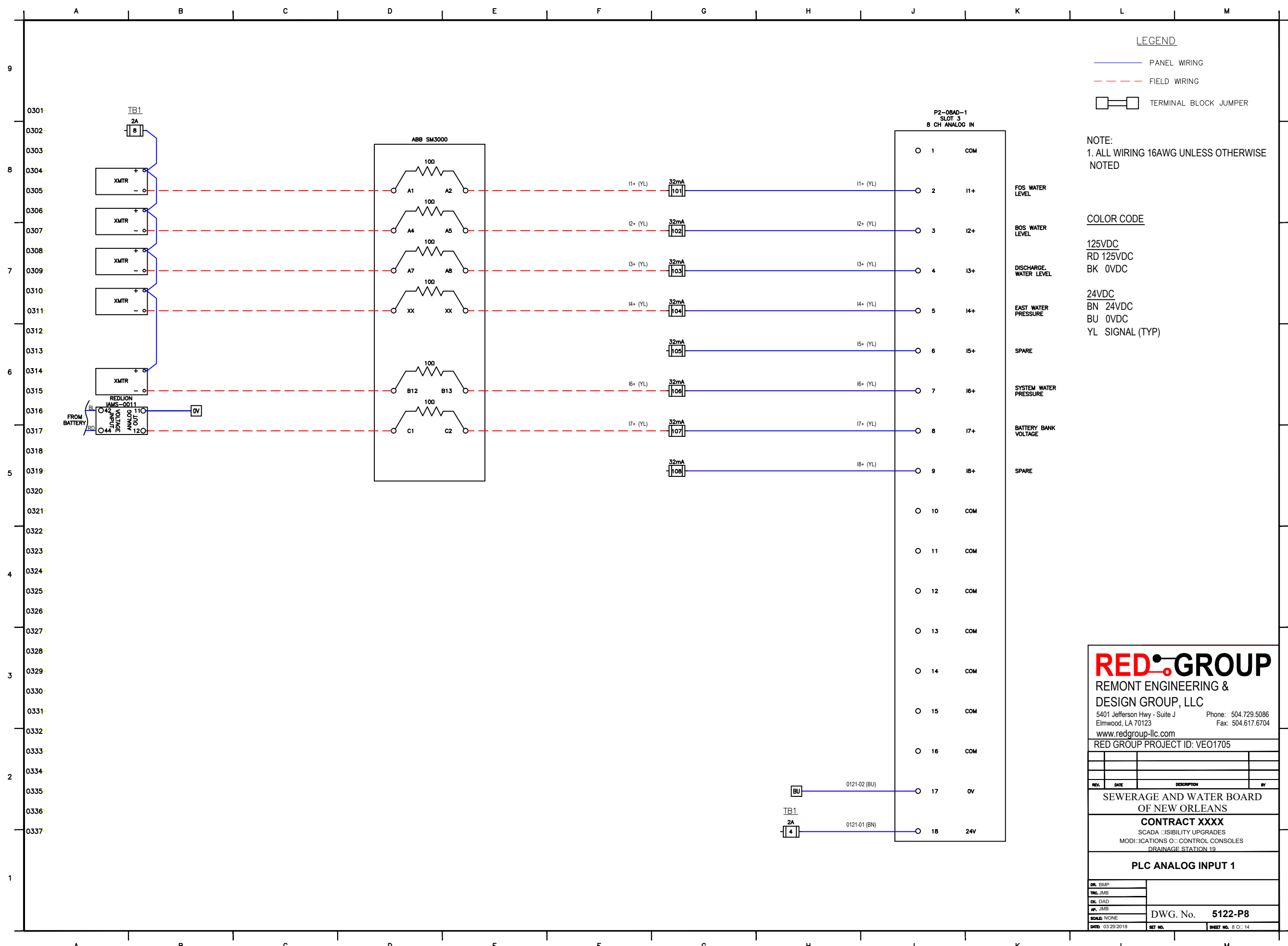
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA SIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 19

PLC DIGITAL INPUT 2

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5122-P7
DATE: 03/29/2018	SHEET NO. 7 OF 14

A B C D E F G H J K L M



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

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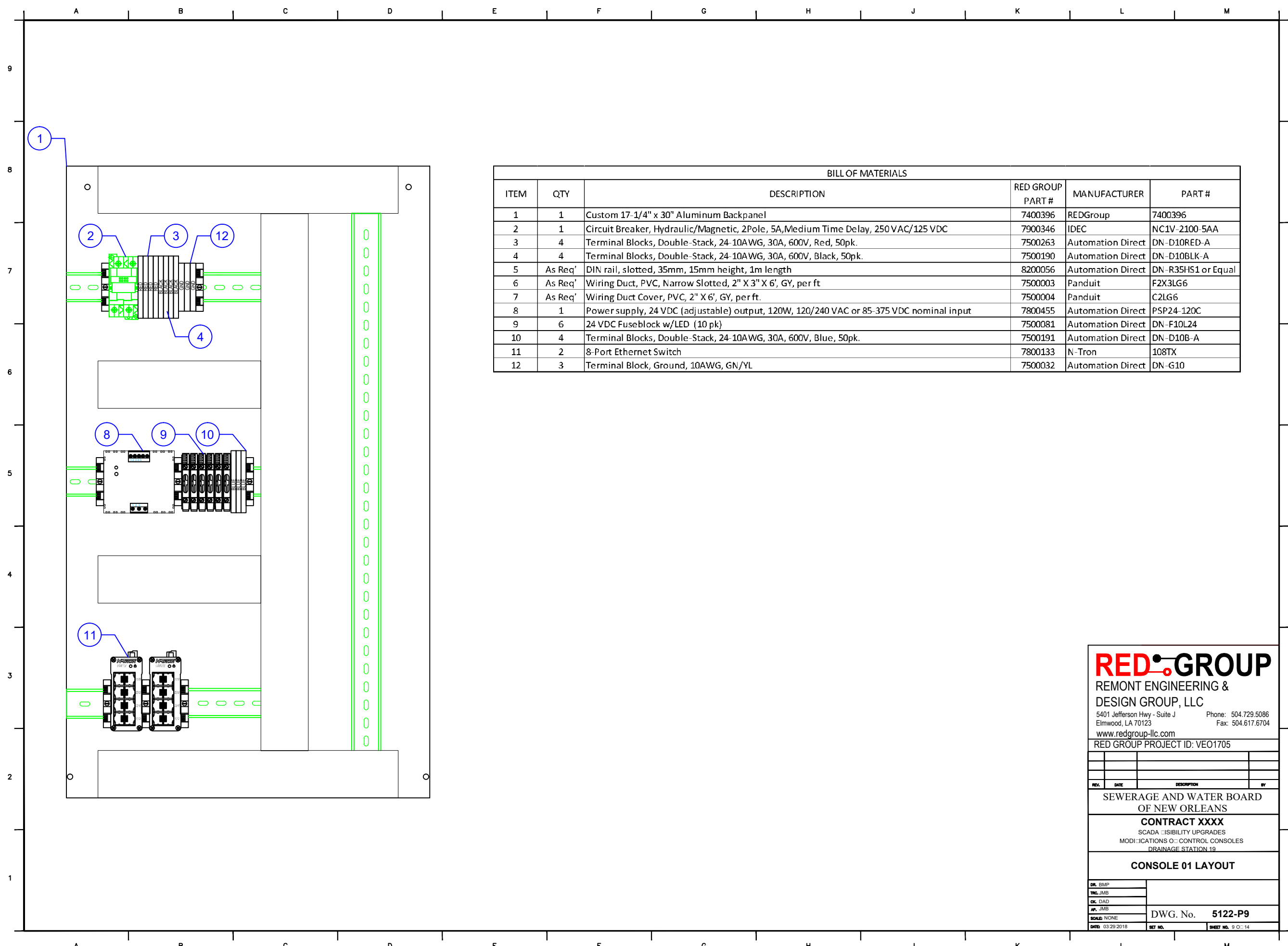
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 19

PLC ANALOG INPUT 1

DR. BMP	
TNG. JMB	
CK. DAD	
JM. JMB	
SCALE: NONE	DWG. No. 5122-P8
DATE: 03/29/2018	SET NO. SHEET NO. 8 OF 14



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

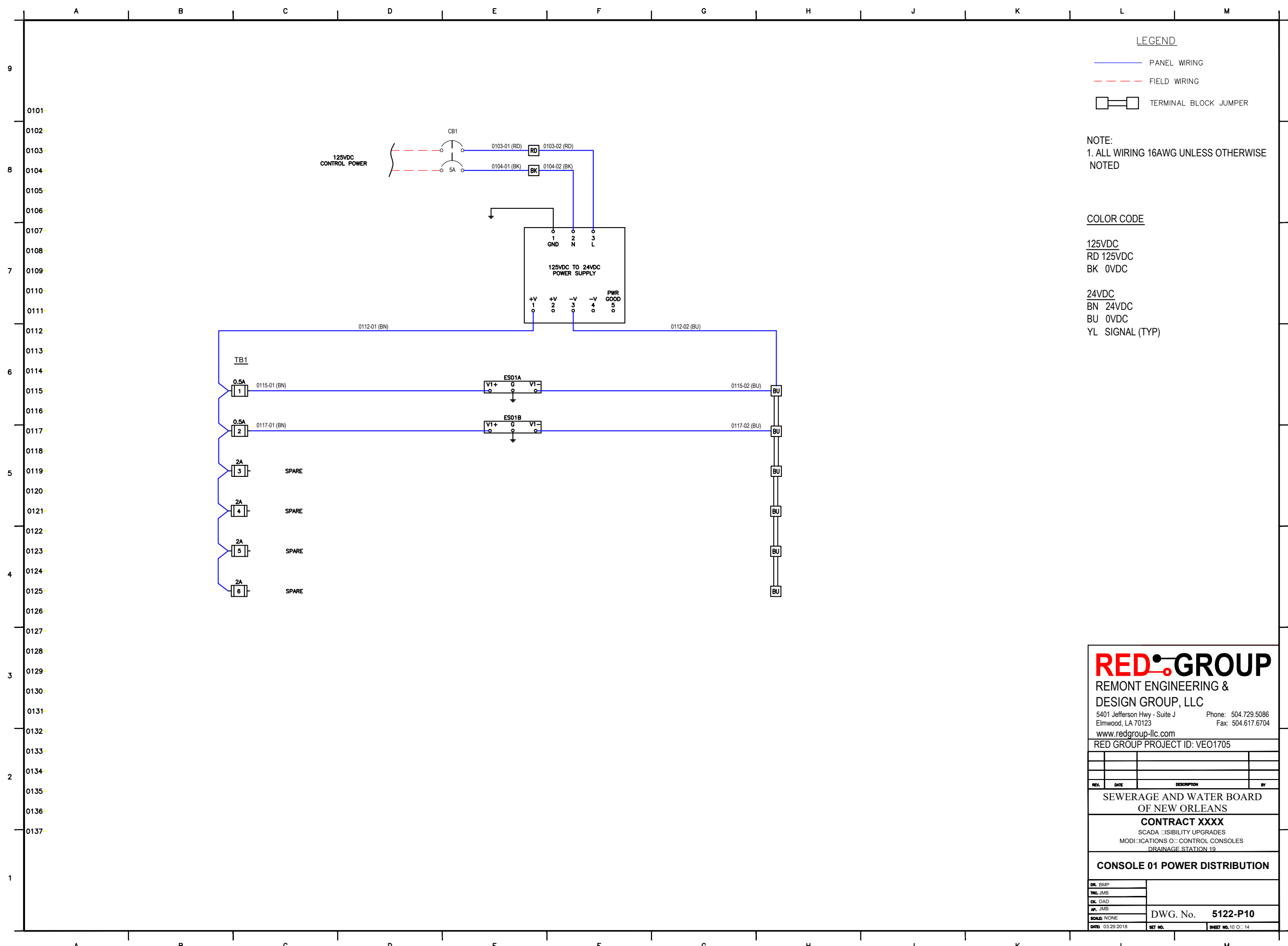
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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 19

CONSOLE 01 LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5122-P9
DATE: 03/29/2018	SHEET NO. 9 OF 14



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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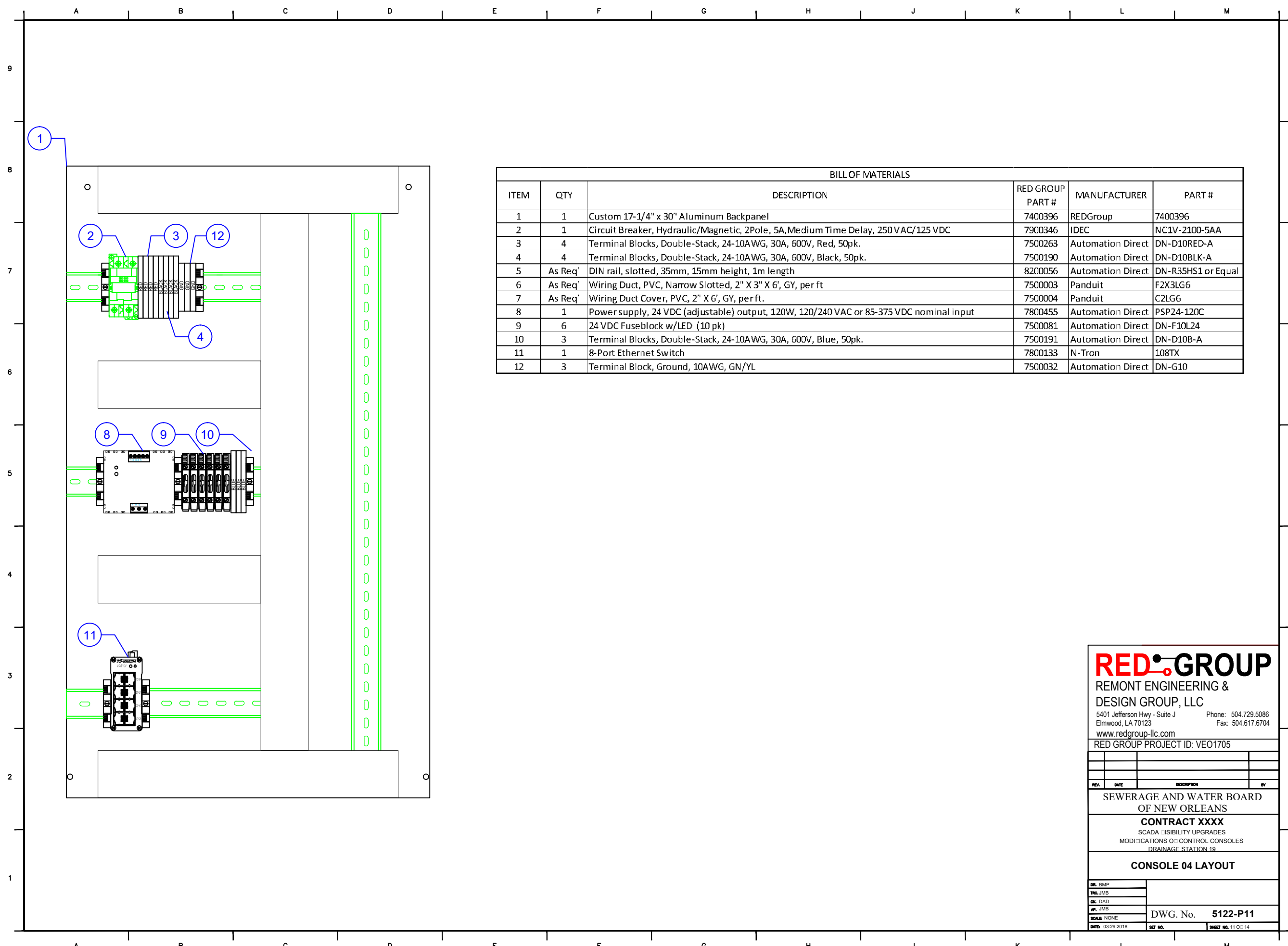
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 19

CONSOLE 01 POWER DISTRIBUTION

DR. BMP TRC. JMB CK. DAD AP. JMB SCALE: NONE DWG. No. 5122-P10 DATE: 03/29/2018 SET NO. SHEET NO. 10 OF 14	
---	--



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

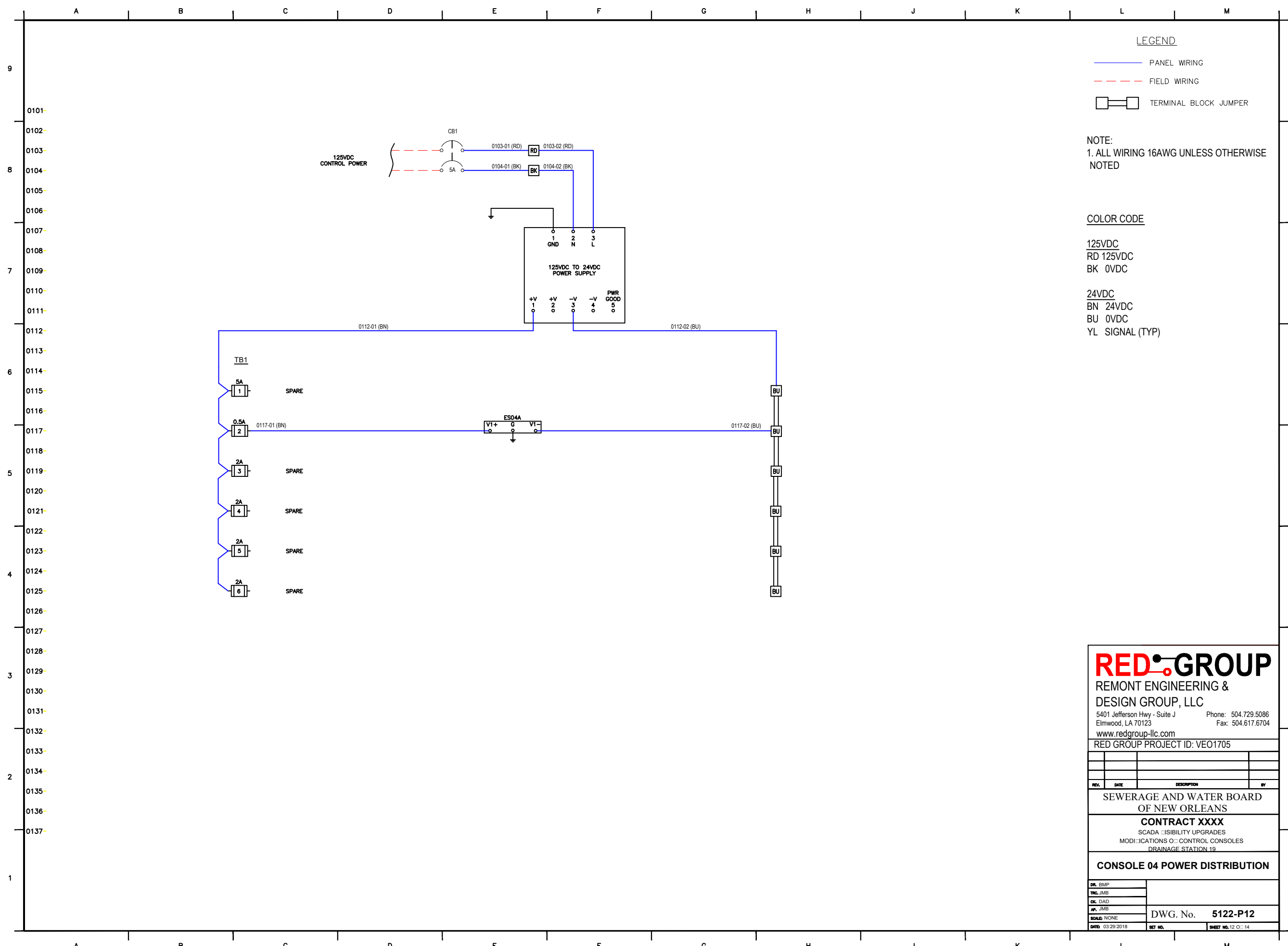
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 19

CONSOLE 04 LAYOUT

DR. BMP	
TNG. JMB	
CK. DAD	
JR. JMB	
SCALE: NONE	DWG. No. 5122-P11
DATE: 03/29/2018	SET NO. SHEET NO. 11 OF 14



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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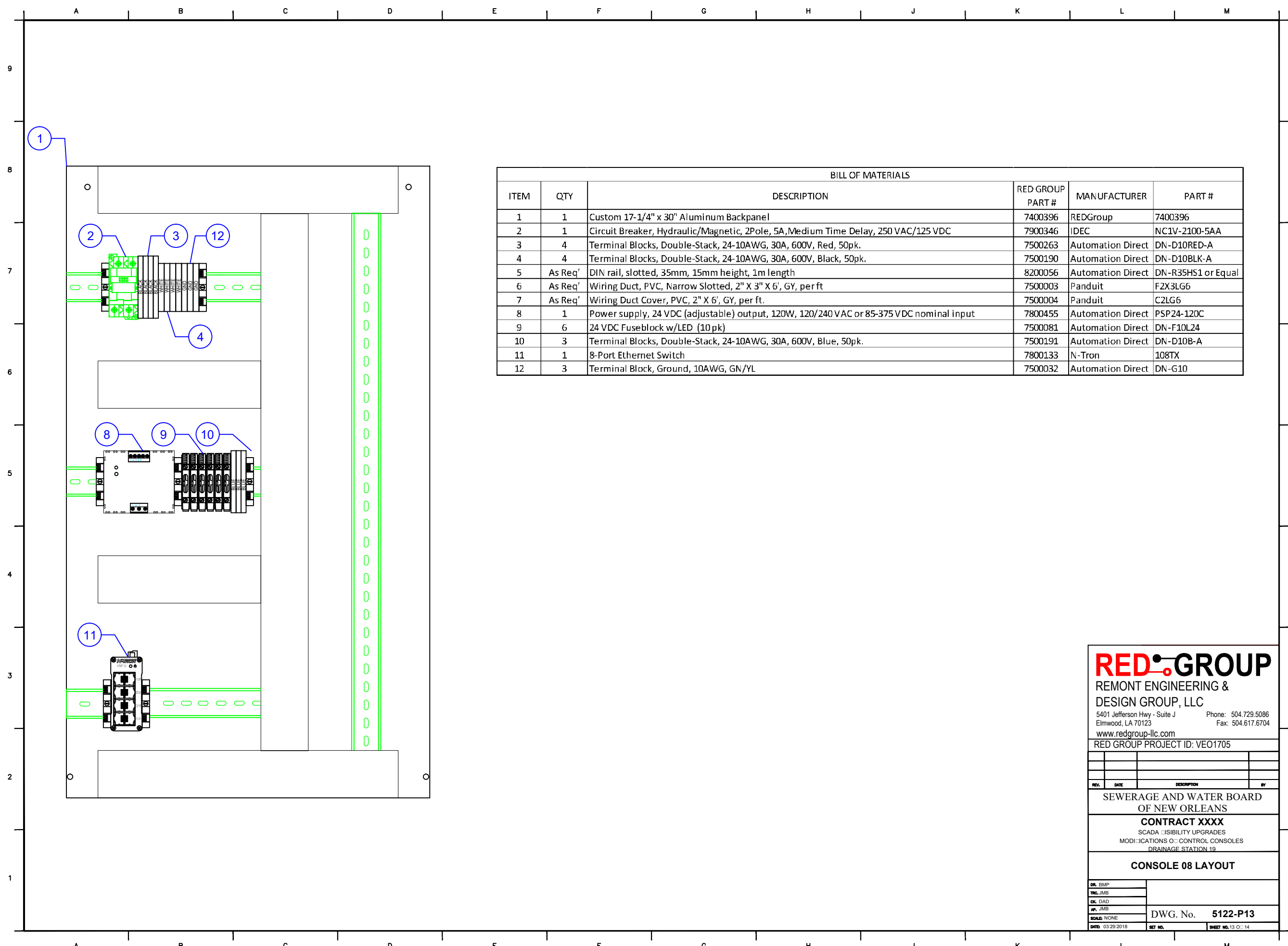
**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 19

CONSOLE 04 POWER DISTRIBUTION

DR: BMP	
TRC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	
DATE: 03/29/2018	DWG. No. 5122-P12
SET NO.	SHEET NO. 12 OF 14



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

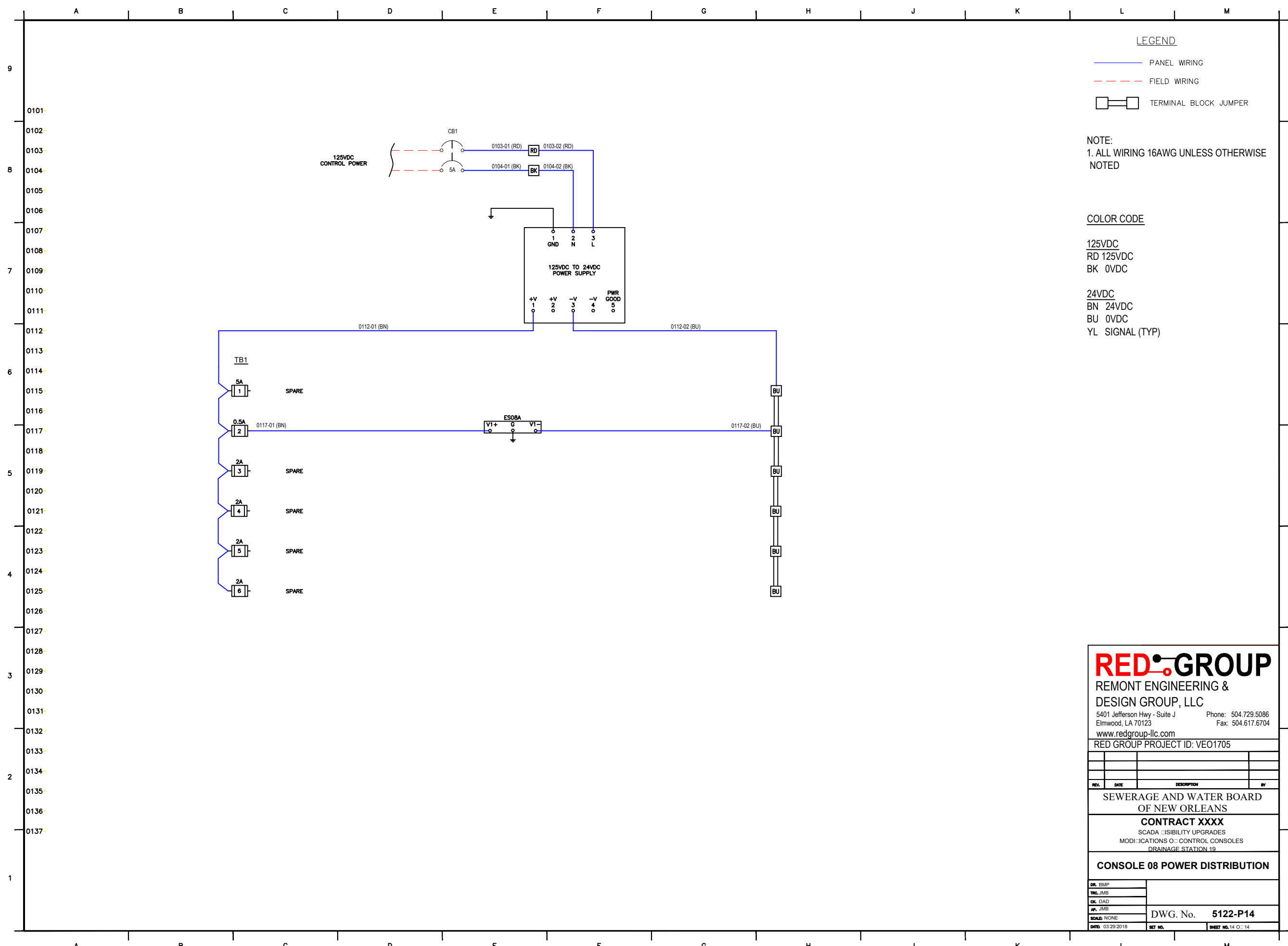
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 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 19

CONSOLE 08 LAYOUT

DR. BMP	
TNG. JMB	
CK. DAD	
JR. JMB	
SCALE: NONE	DWG. No. 5122-P13
DATE: 03/29/2018	SHEET NO. 13 OF 14



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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OF NEW ORLEANS

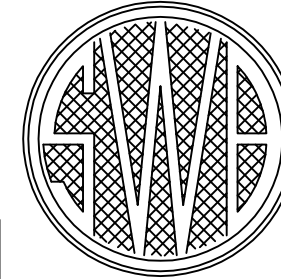
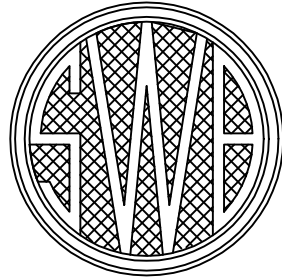
CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 19

CONSOLE 08 POWER DISTRIBUTION

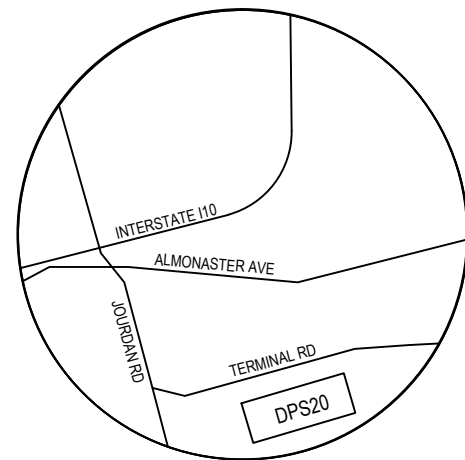
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DR. BMP											
TRC. JMB											
CK. DAD											
AP. JMB											
SCALE: NONE											
DATE: 03/29/2018	SHEET NO. 14 OF 14										

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION 20



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 02 LAYOUT		
10	CONSOLE 02 POWER DISTRIBUTION		
11	CONSOLE 03 LAYOUT		
12	CONSOLE 03 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 20

INDEX OF SHEETS

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	DWG. No. 5123-P1
SCALE: NONE	
DATE: 03/30/2018	SET NO. SHEET NO. 1 OF 12

A B C D E F G H J K L M

9

8

7

6

5

4

3

2

1

9

8

7

6

5

4

3

2

1

LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU

NETWORK EQUIPMENT

P.C. DESK

PANEL: PLC, P, E

CONSOLE 3

- (2) POWER METERS
 1 PUMP
 2 PUMP
 PANEL: P, E

CONSOLE 1

- (1) POWER METER
 GENERATOR

CONSOLE 2

- (2) POWER METERS
 EMERGENCY FEEDER
 EMERGENCY FEEDER
 PANEL: P, E

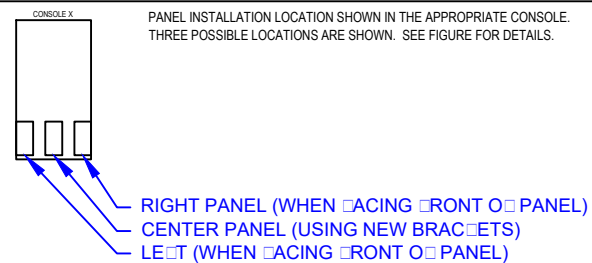
EXISTING CONDUIT

EXISTING CONDUIT

EXISTING CONDUIT

PANEL LOCATION

PANEL INSTALLATION LOCATION SHOWN IN THE APPROPRIATE CONSOLE. THREE POSSIBLE LOCATIONS ARE SHOWN. SEE FIGURE FOR DETAILS.



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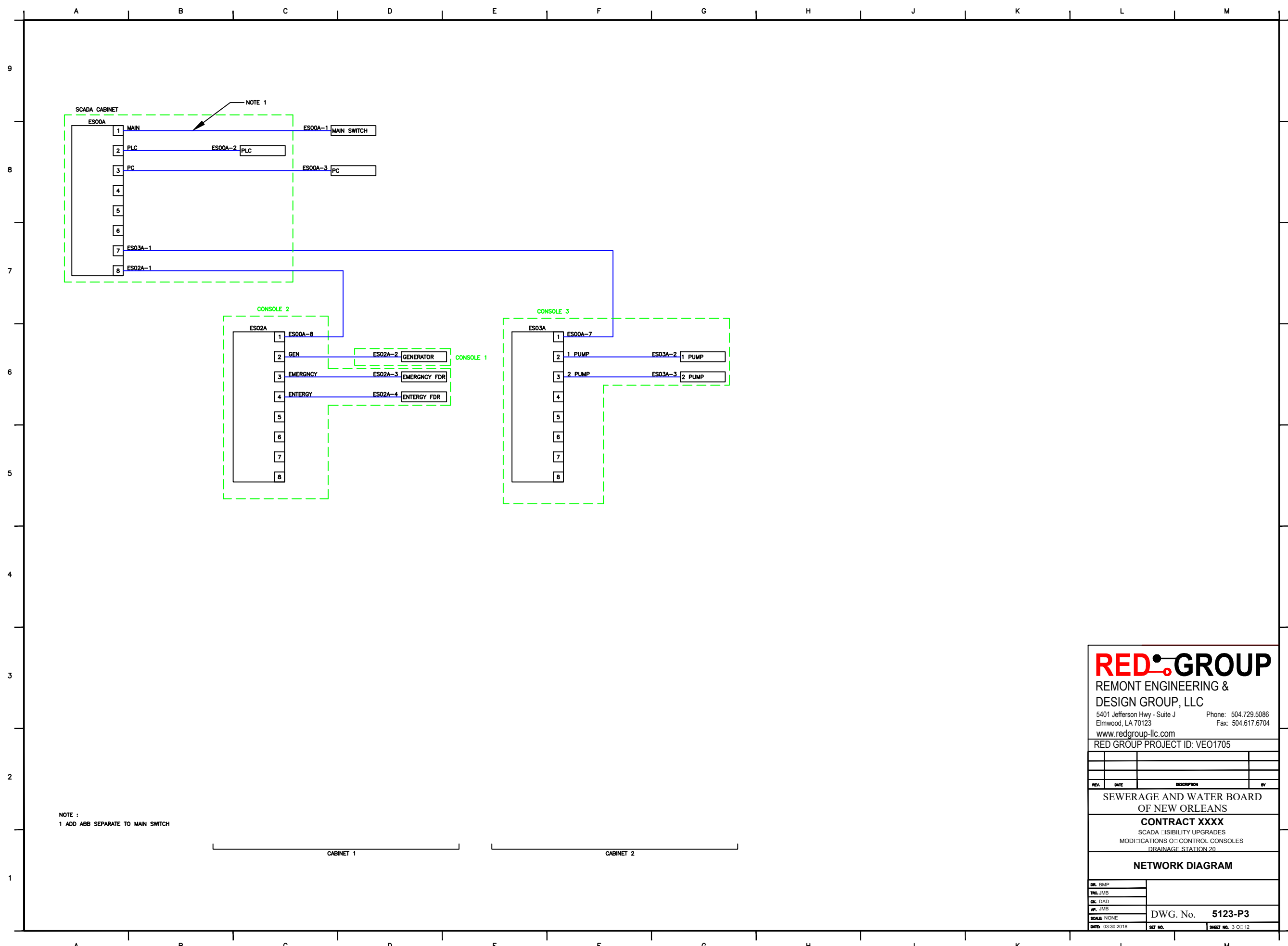
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 20

PLAN VIEW

DR: BMP	
TNC: JMB	
CK: DAD	
AP: JMB	
SCALE: NONE	DWG. No. 5123-P2
DATE: 03/30/2018	SET NO. SHEET NO. 2 OF 12

A B C D E F G H J K L M



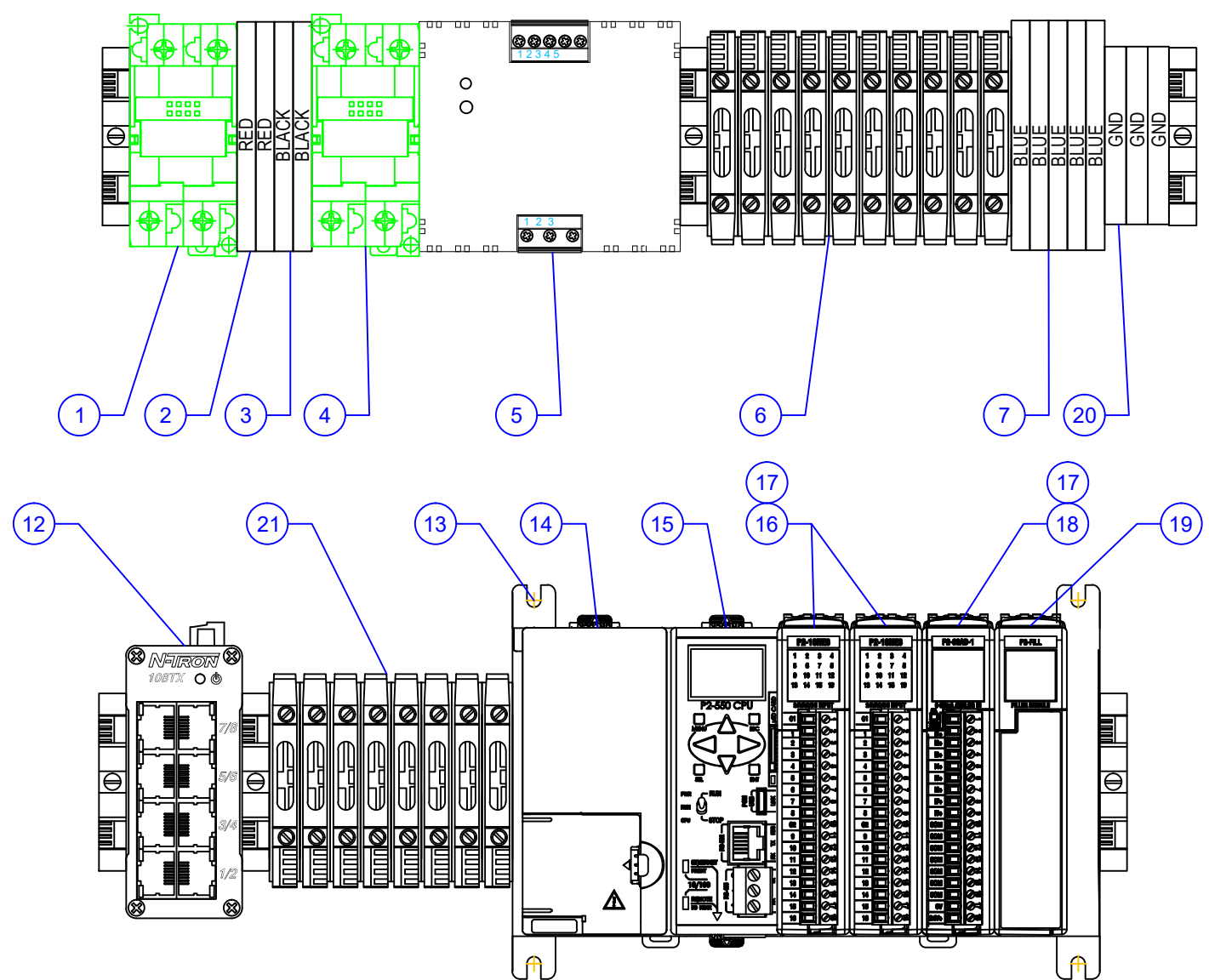
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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 20

NETWORK DIAGRAM

DR. BMP	
TNG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5123-P3
DATE: 03/30/2018	SET NO. SHEET NO. 3 OF 12



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input.	7800455	Automation Direct	PSP24-120C
6	10	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

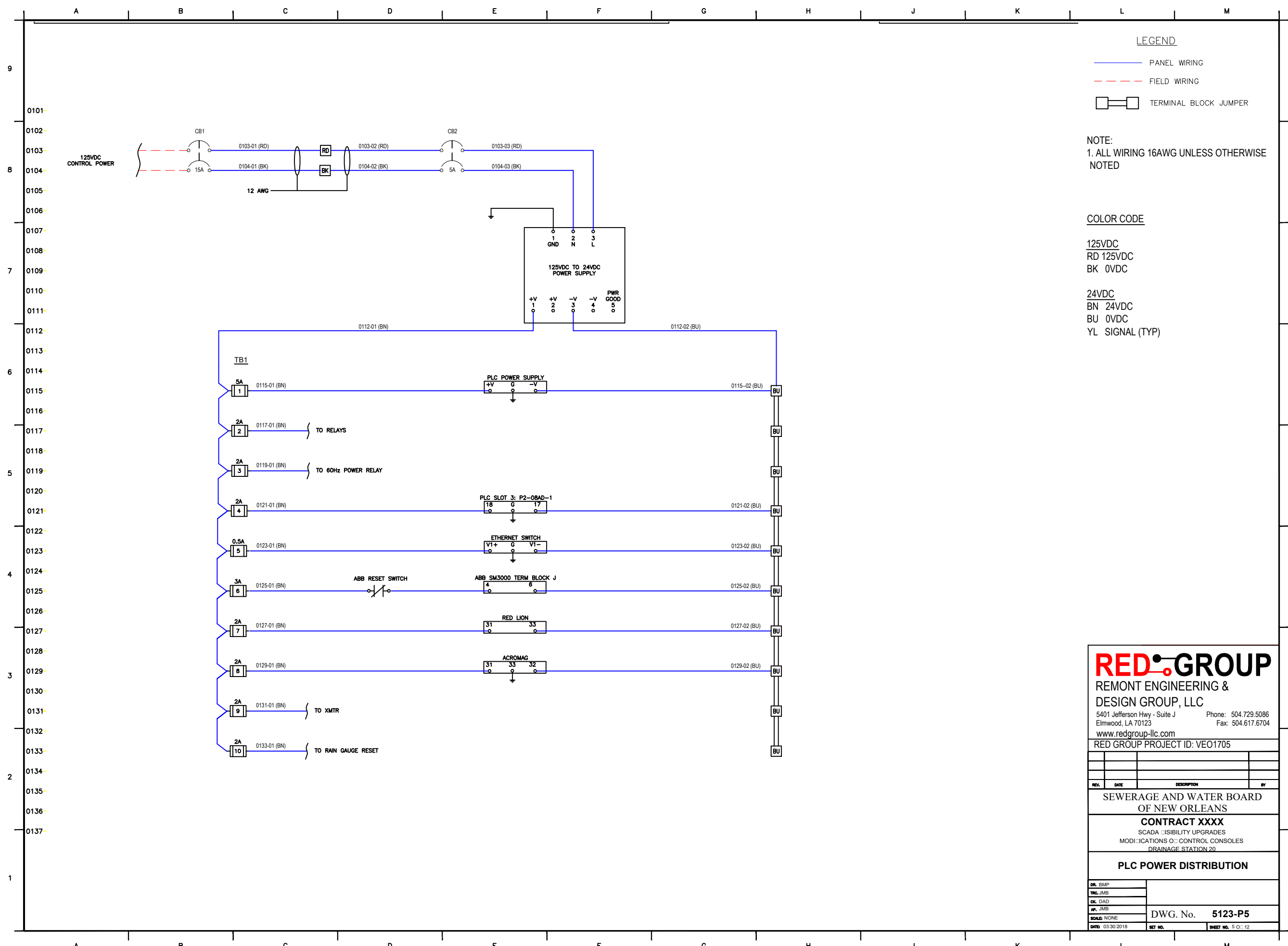
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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 20

PLC LAYOUT

DL BMP	
TNC JMB	
CK DAD	
AP JMB	
SCALE: NONE	DWG. No. 5123-P4
DATE: 03/30/2018	SET NO. SHEET NO. 4 OF 12



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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 DESIGN GROUP, LLC
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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 20

PLC POWER DISTRIBUTION

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5123-P5
DATE: 03/30/2018	SET NO. SHEET NO. 5 OF 12

LEGEND

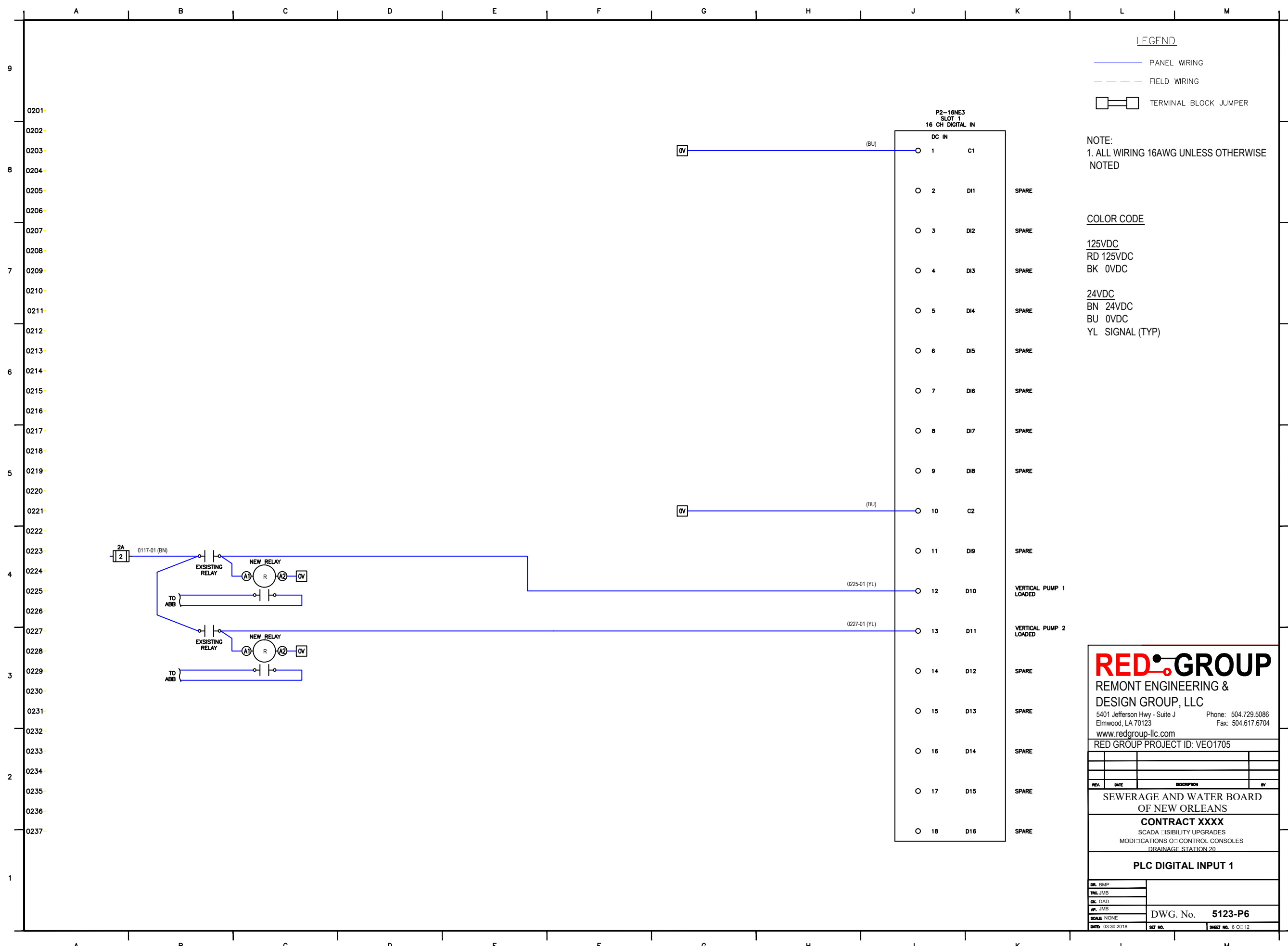
- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



RED GROUP
REMONT ENGINEERING &
DESIGN GROUP, LLC

5401 Jefferson Hwy - Suite J Phone: 504.729.5086
Elmwood, LA 70123 Fax: 504.617.6704
www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

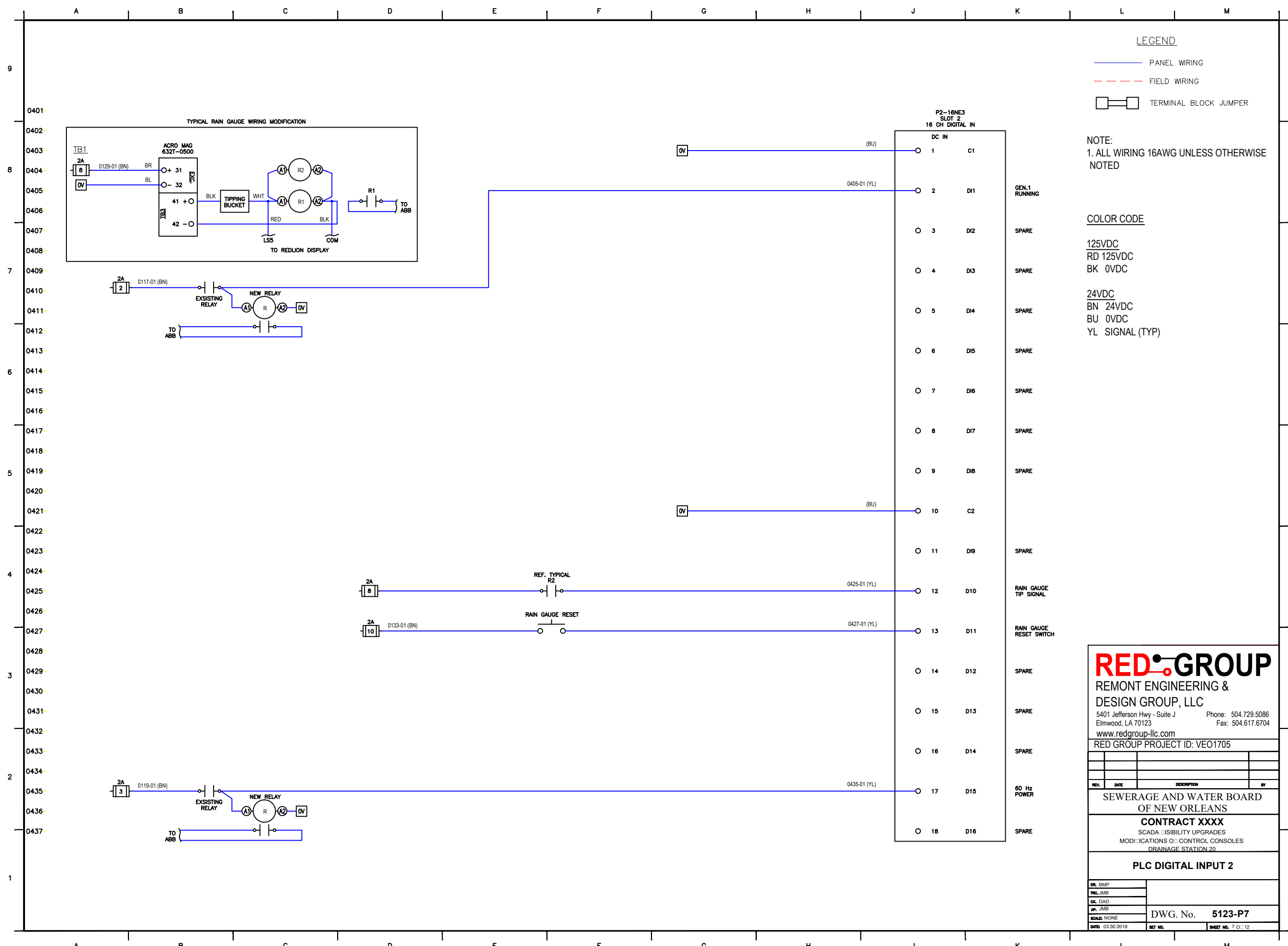
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 20

PLC DIGITAL INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5123-P6
DATE: 03/30/2018	SET NO. SHEET NO. 6 OF 12



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

RED GROUP

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

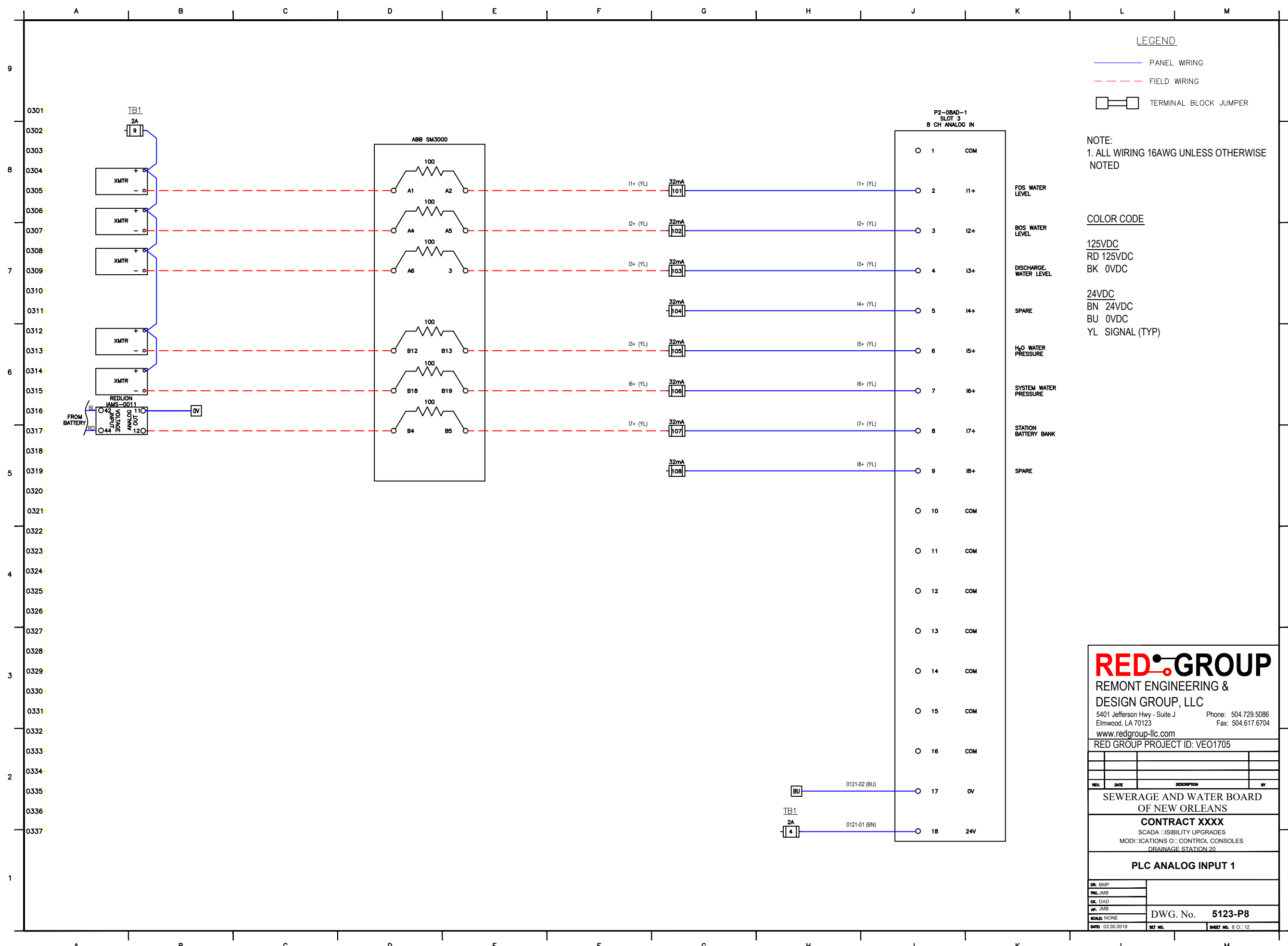
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 20

PLC DIGITAL INPUT 2

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5123-P7
DATE: 03/30/2018	SET NO. SHEET NO. 7 OF 12



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

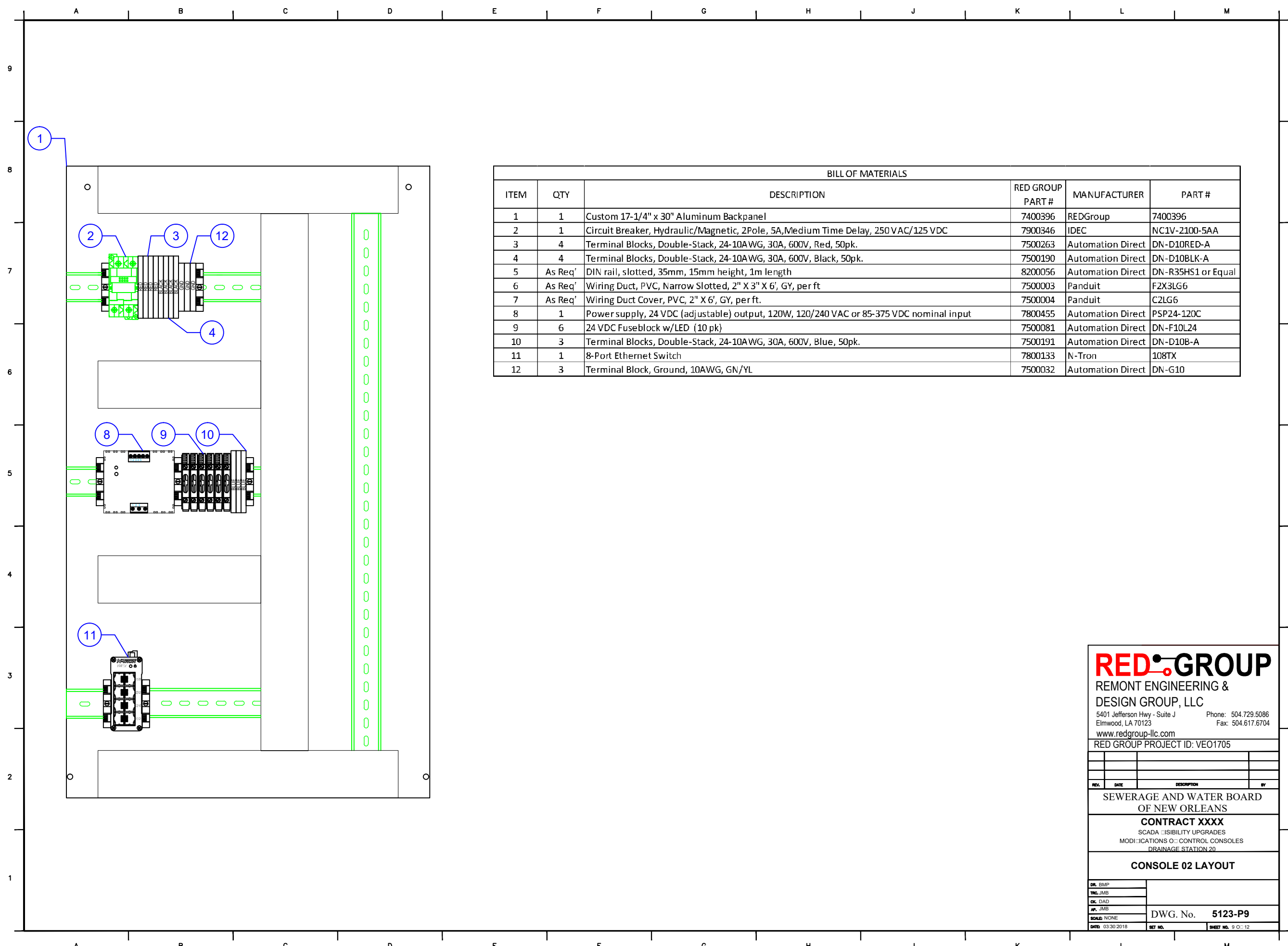
**SEWERAGE AND WATER BOARD
 OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 20

PLC ANALOG INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	
DATE: 03/30/2018	
SET NO.	
SHEET NO.	

DWG. No. 5123-P8



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft.	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

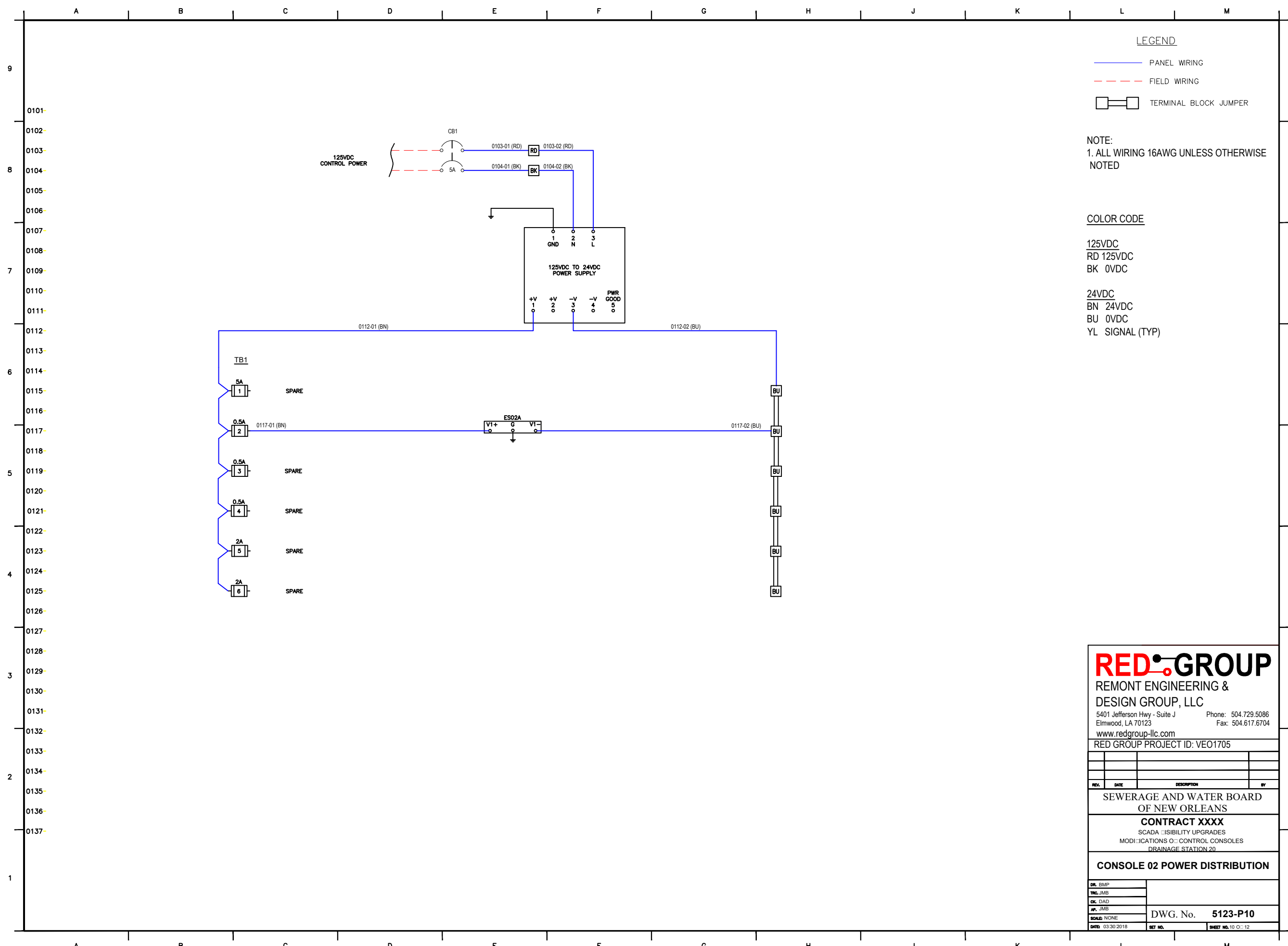
RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 20

CONSOLE 02 LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5123-P9
DATE: 03/30/2018	SHEET NO. 9 OF 12



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

RED GROUP

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

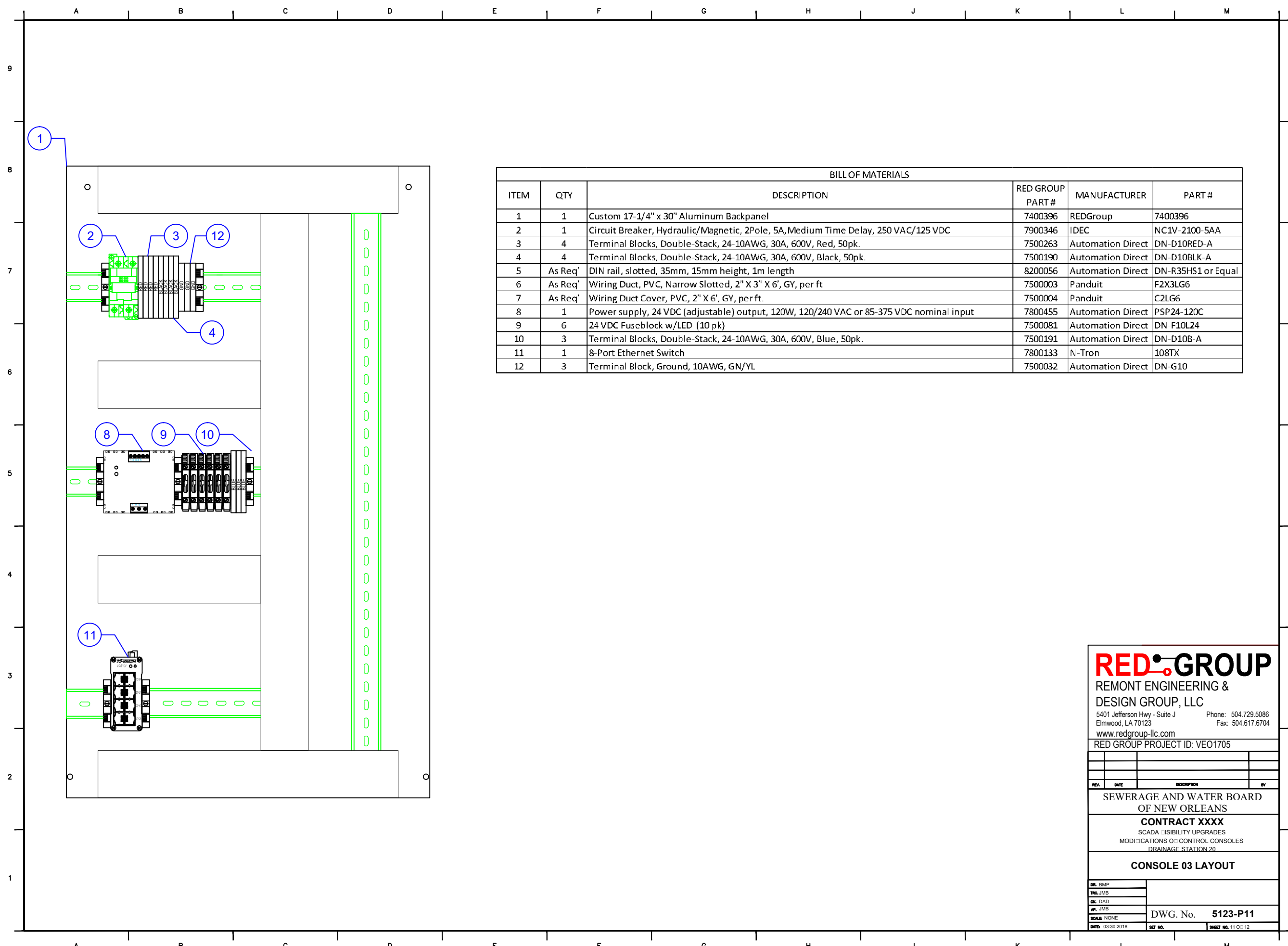
**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 20

CONSOLE 02 POWER DISTRIBUTION

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5123-P10
DATE: 03/30/2018	SET NO. SHEET NO. 10 OF 12



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

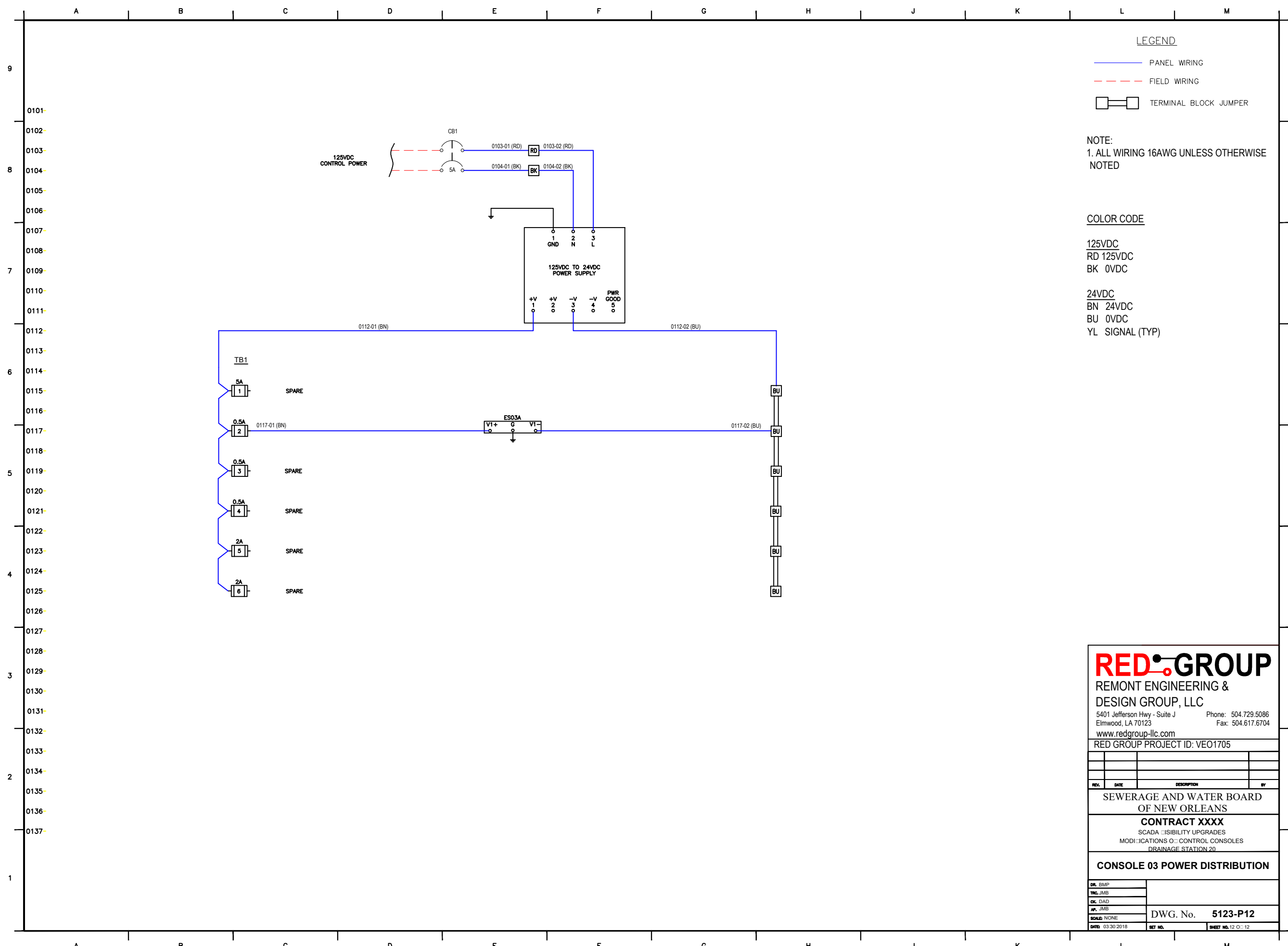
RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 20

CONSOLE 03 LAYOUT

DR. BMP	
TNG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5123-P11
DATE: 03/30/2018	SET NO. SHEET NO. 11 OF 12



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:

1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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REV.	DATE	DESCRIPTION	BY

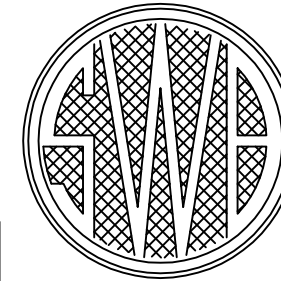
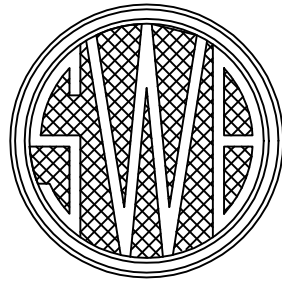
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 20

CONSOLE 03 POWER DISTRIBUTION

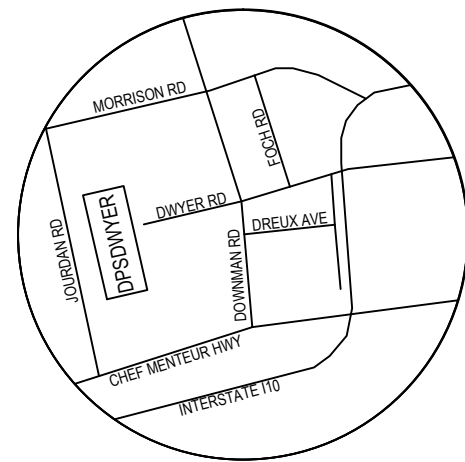
DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5123-P12
DATE: 03/30/2018	SET NO. SHEET NO. 12 OF 12

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION DWYER



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 03 LAYOUT		
10	CONSOLE 03 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION DWYER

INDEX OF SHEETS

DR. BMP	
TNC. JMB	
CC. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5124-P1
DATE: 04/03/2018	SET NO. SHEET NO. 1 OF 10

A B C D E F G H J K L M

9

8

7

6

5

4

3

2

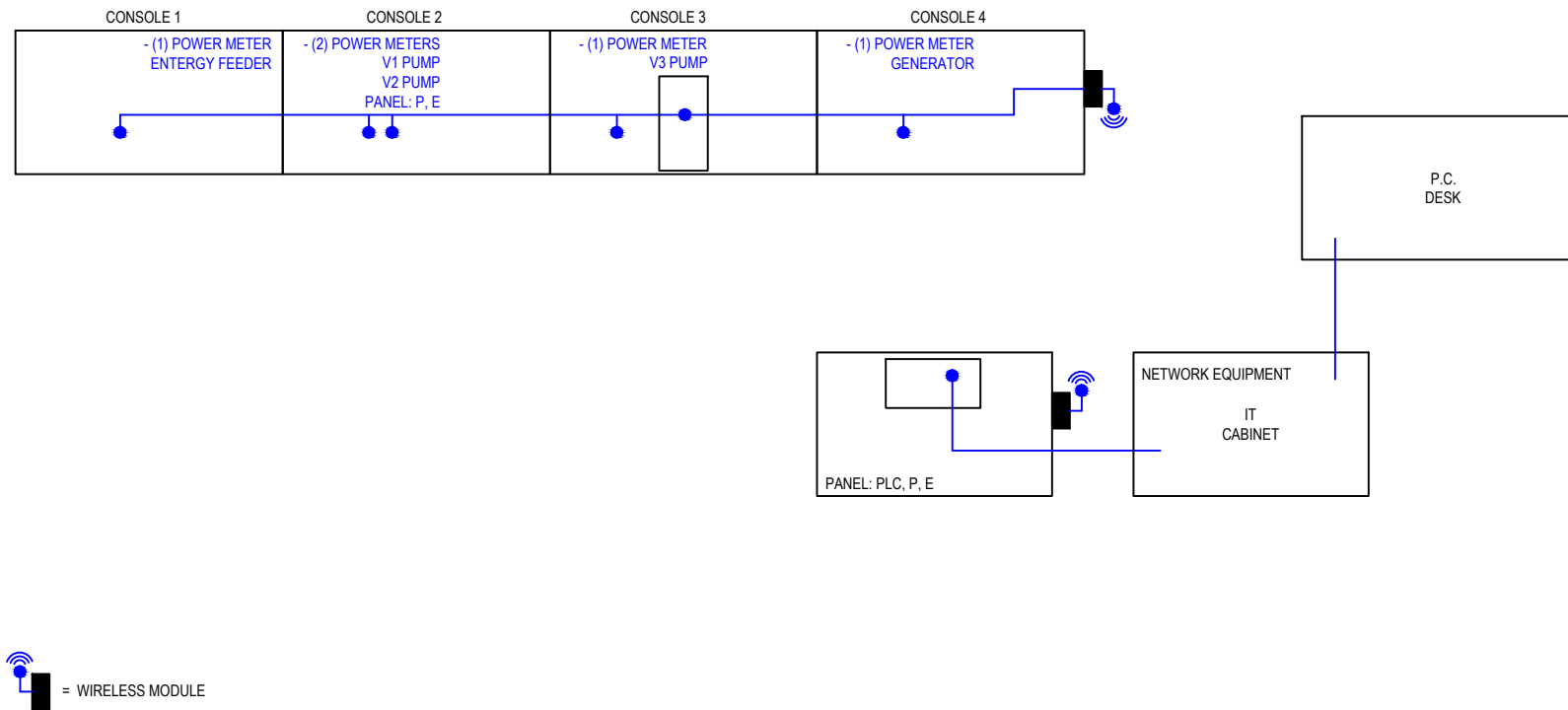
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LEGEND

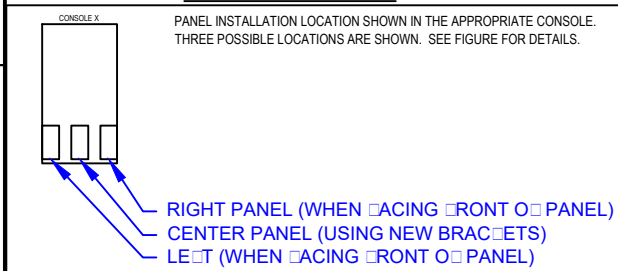
- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU

CABINET 1



PANEL LOCATION



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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

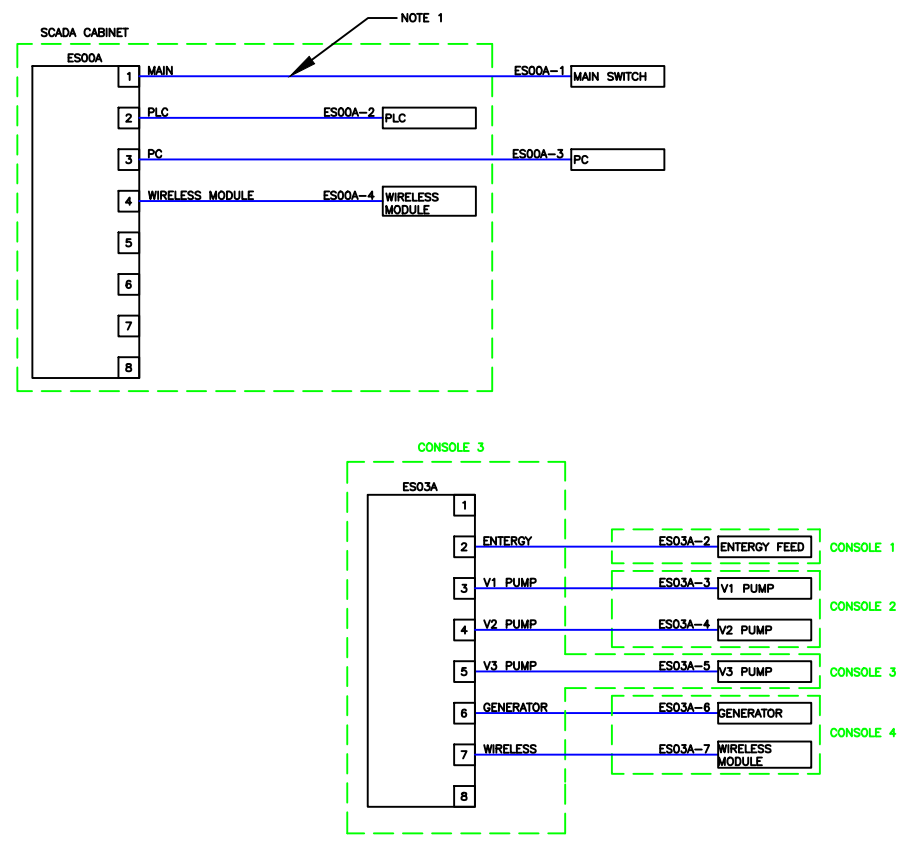
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION DWYER

PLAN VIEW

DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5124-P2
DATE: 04/03/2018	SET NO. SHEET NO. 2 OF 10

A B C D E F G H J K L M



CABINET 1

NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

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 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

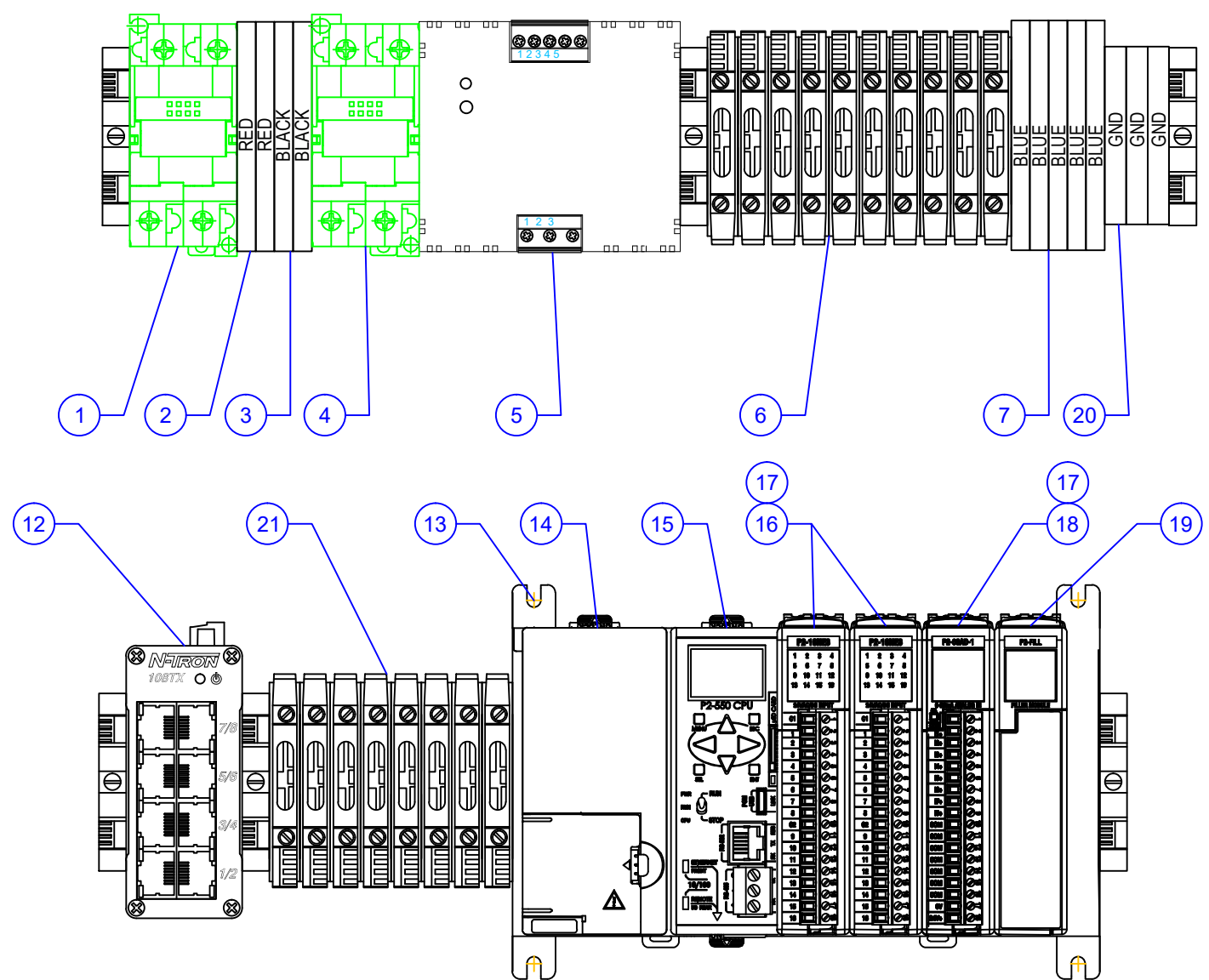
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION DWYER

NETWORK DIAGRAM

DR. BMP	
TNG. JMB	
CK. DAD	
JR. JMB	
SCALE: NONE	DWG. No. 5124-P3
DWG: 04/03/2018	SET NO. SHEET NO. 3 OF 10



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	10	24 VDC Fuseblock w/LED (10pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

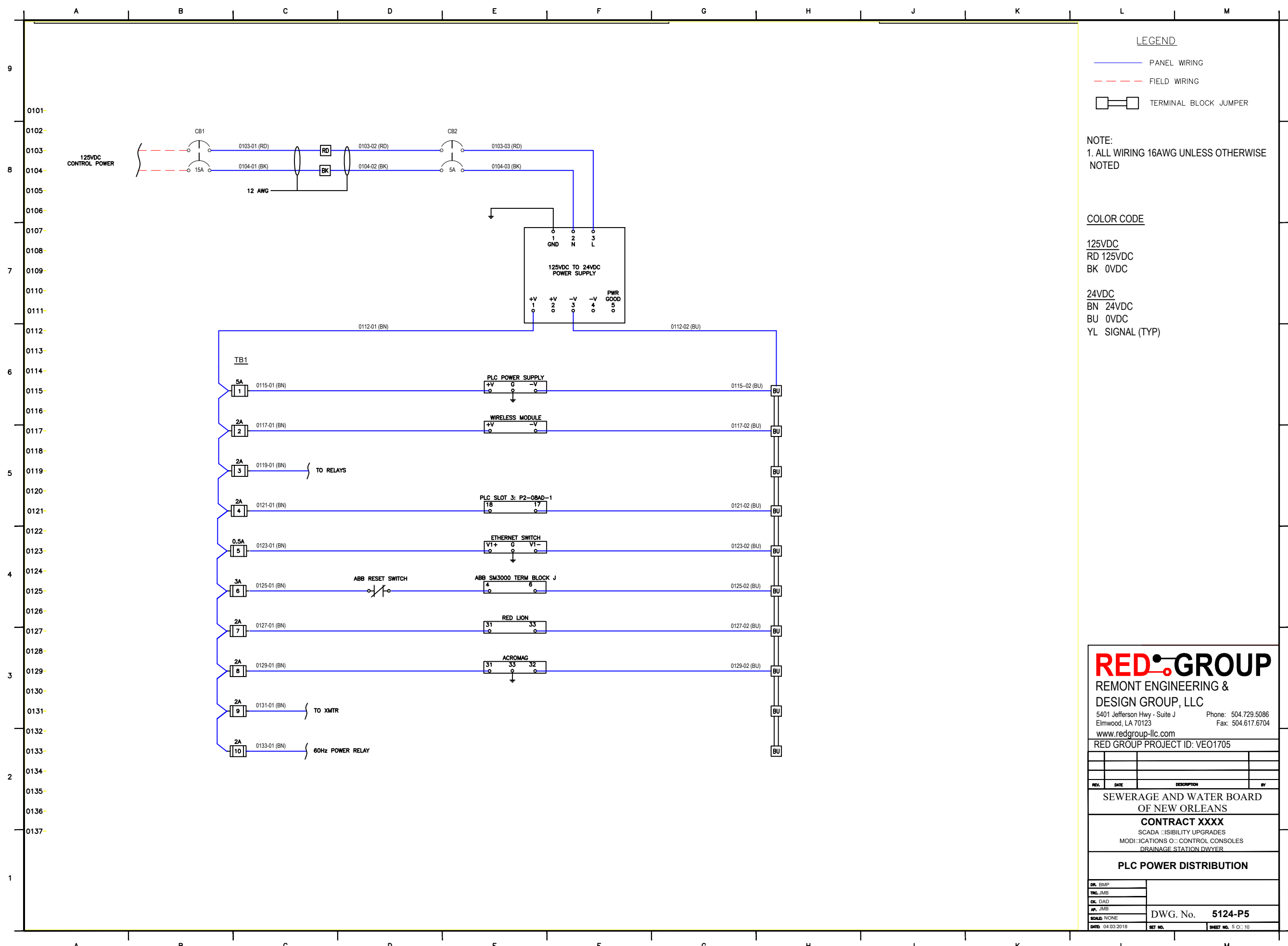
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SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION DWYER

PLC LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5124-P4
DATE: 04/03/2018	SET NO. SHEET NO. 4 OF 10



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC
- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

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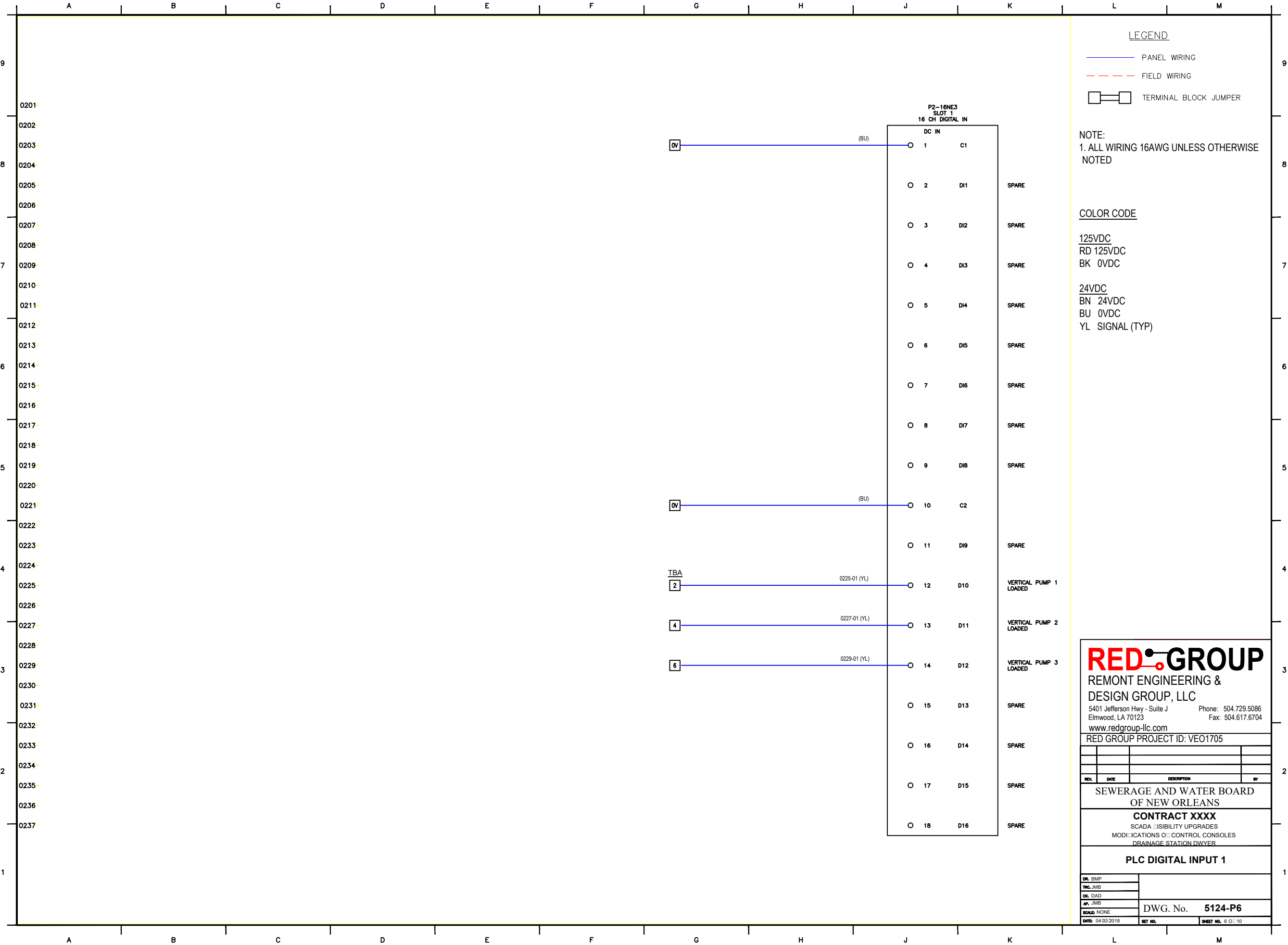
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION DWYER

PLC POWER DISTRIBUTION

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5124-P5
DWG: 04/03/2018	SET NO. SHEET NO. 5 OF 10



LEGEND

- PANEL WIRING
- - - - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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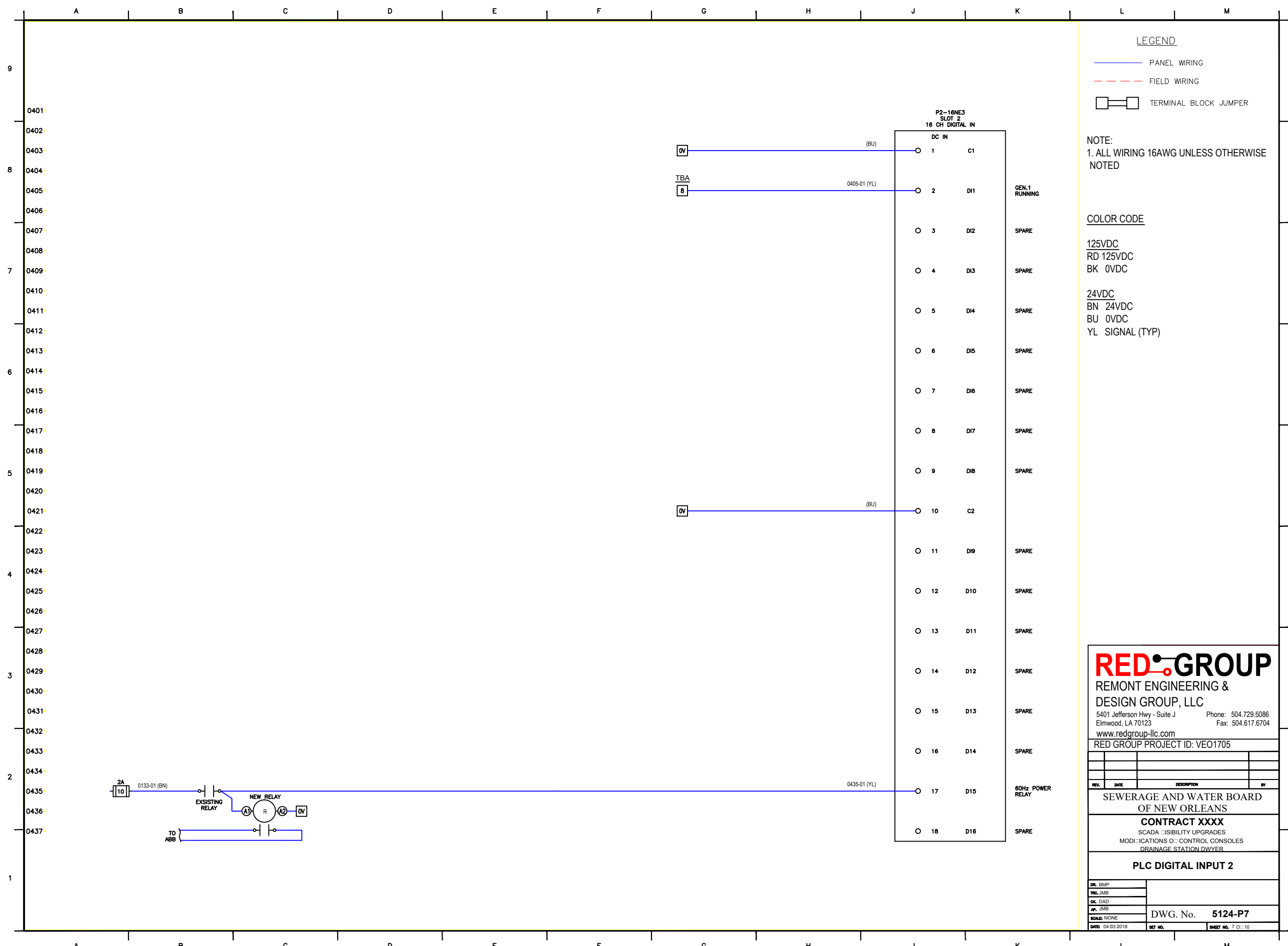
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION DWYER

PLC DIGITAL INPUT 1

DR. BMP	
TNG. JMB	
CK. DAD	
JR. JMB	
SCALE: NONE	DWG. No. 5124-P6
DATE: 04/03/2018	SHEET NO. 6 OF 10



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

RED GROUP

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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

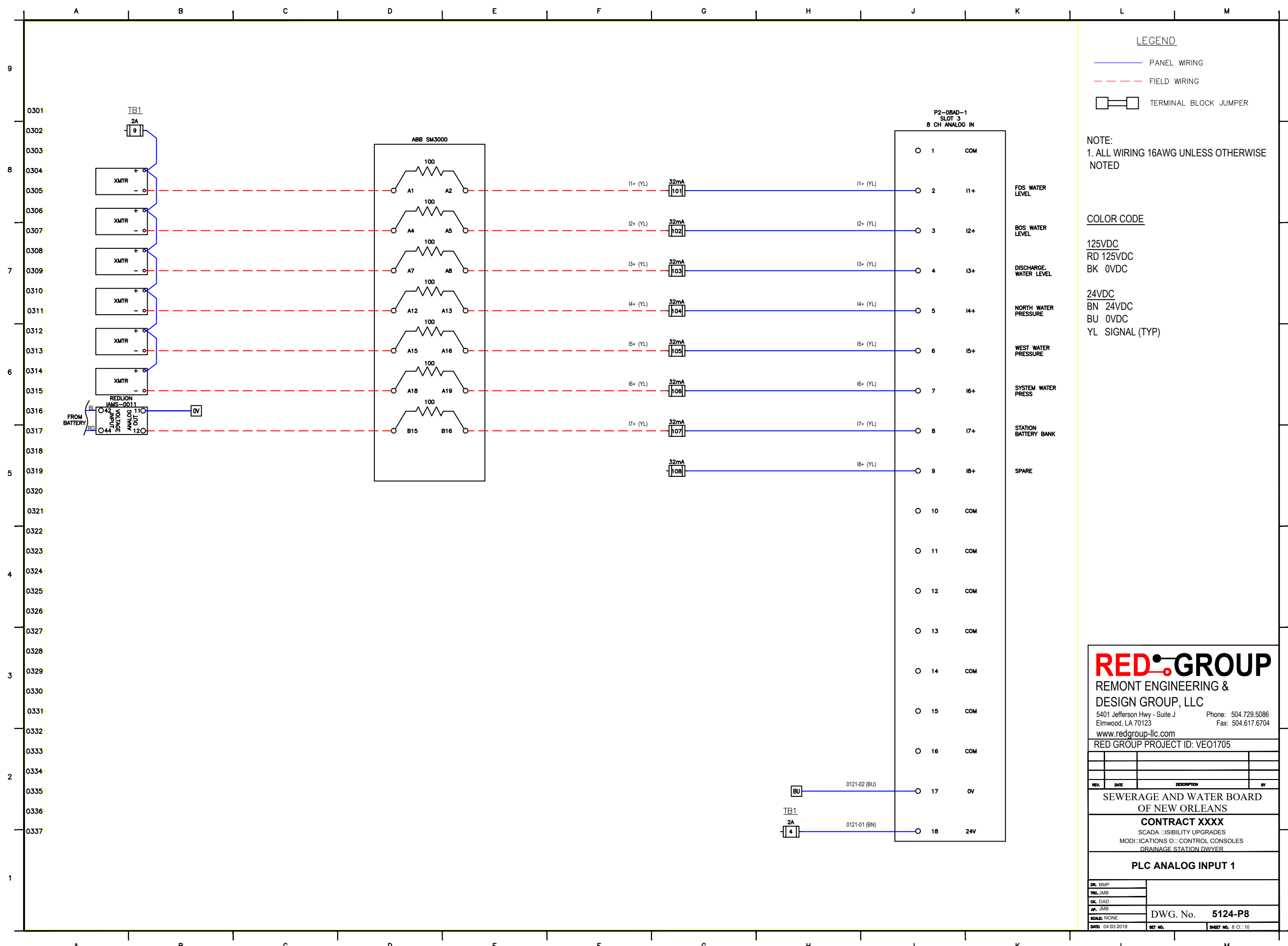
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION DWYER

PLC DIGITAL INPUT 2

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	
DATE: 04/03/2018	

DWG. No. 5124-P7

SHEET NO. 7 OF 10



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ — □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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www.redgroup-llc.com

RED GROUP PROJECT ID: VEO1705

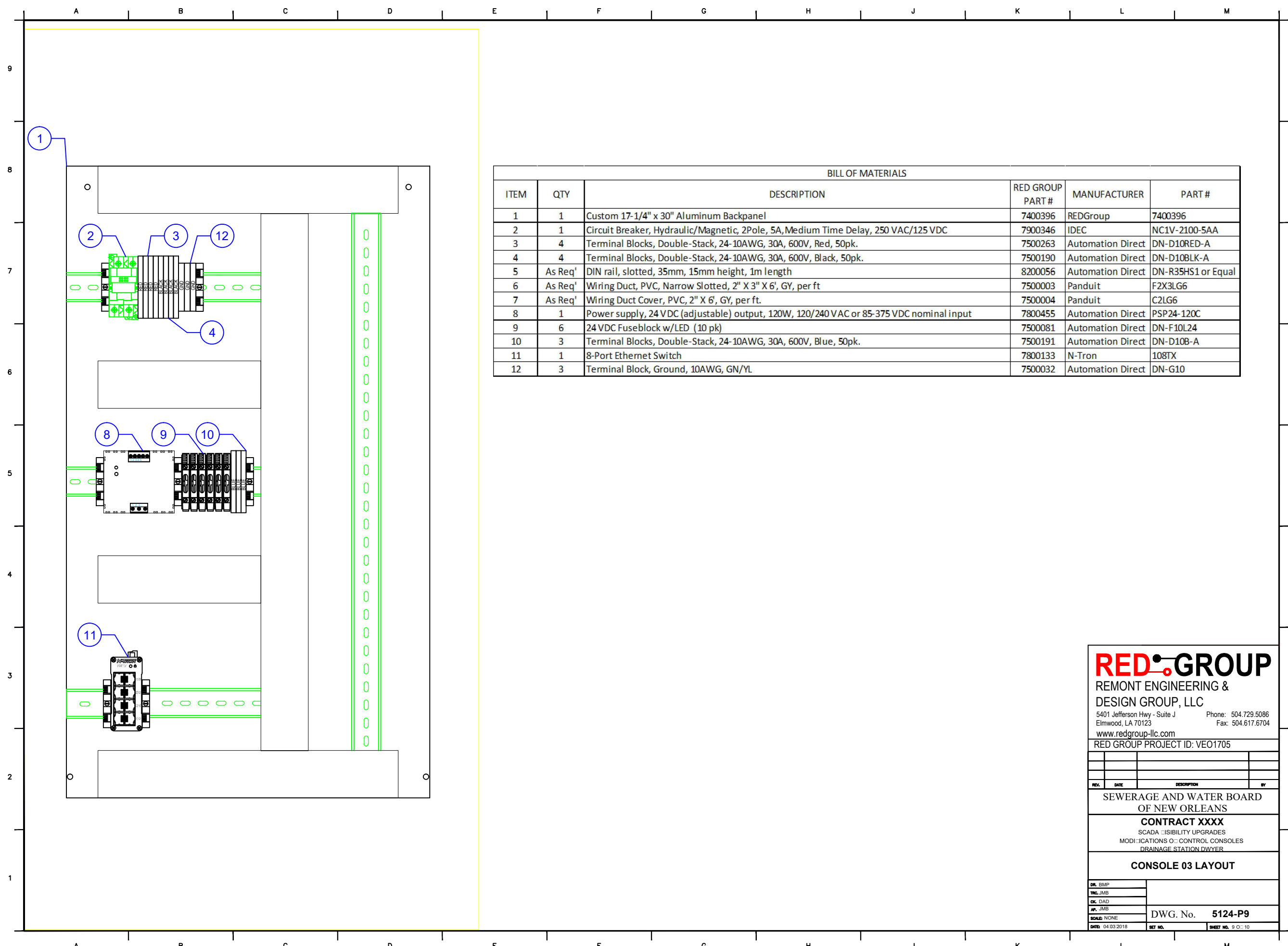
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION DWYER

PLC ANALOG INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5124-P8
DATE: 04/03/2018	SET NO. SHEET NO. 8 OF 10



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

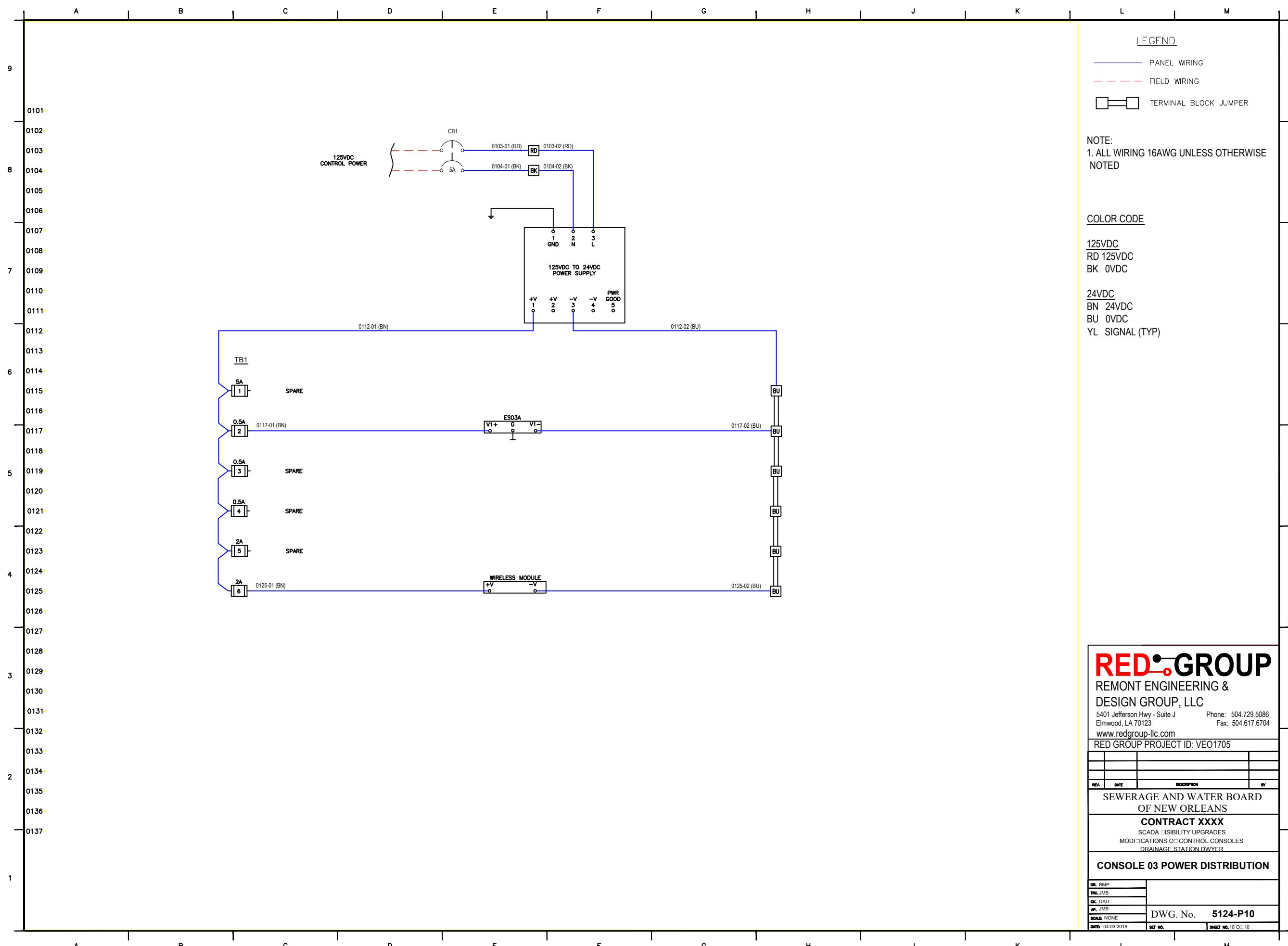
RED GROUP
 REMONT ENGINEERING &
 DESIGN GROUP, LLC
 5401 Jefferson Hwy - Suite J Phone: 504.729.5086
 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION DWYER

CONSOLE 03 LAYOUT

DL, BMP	
TNC, JMB	
CK, DAD	
AP, JMB	
SCALE: NONE	DWG. No. 5124-P9
DATE: 04/03/2018	SHEET NO. SHEET NO. 9 OF 10



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:

1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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REV.	DATE	DESCRIPTION	BY

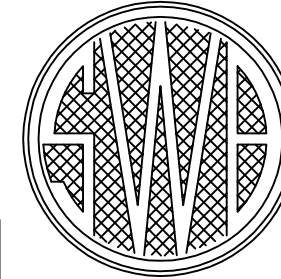
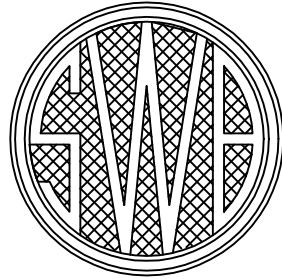
SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION DWYER

CONSOLE 03 POWER DISTRIBUTION

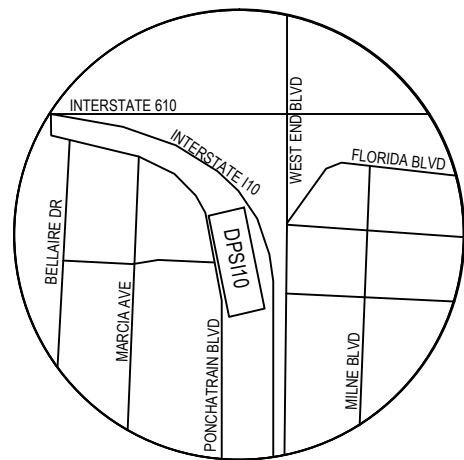
DR. BMP	
TRC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5124-P10
DWG: 04/03/2018	SET NO. SHEET NO. 10 OF 10

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION I10



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	CONSOLE 06 LAYOUT		
10	CONSOLE 06 POWER DISTRIBUTION		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION I10

INDEX OF SHEETS

DR. BMP	
TNC. JMB	
CC. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5125-P1
DATE: 04/03/2018	SET NO. SHEET NO. 1 OF 10

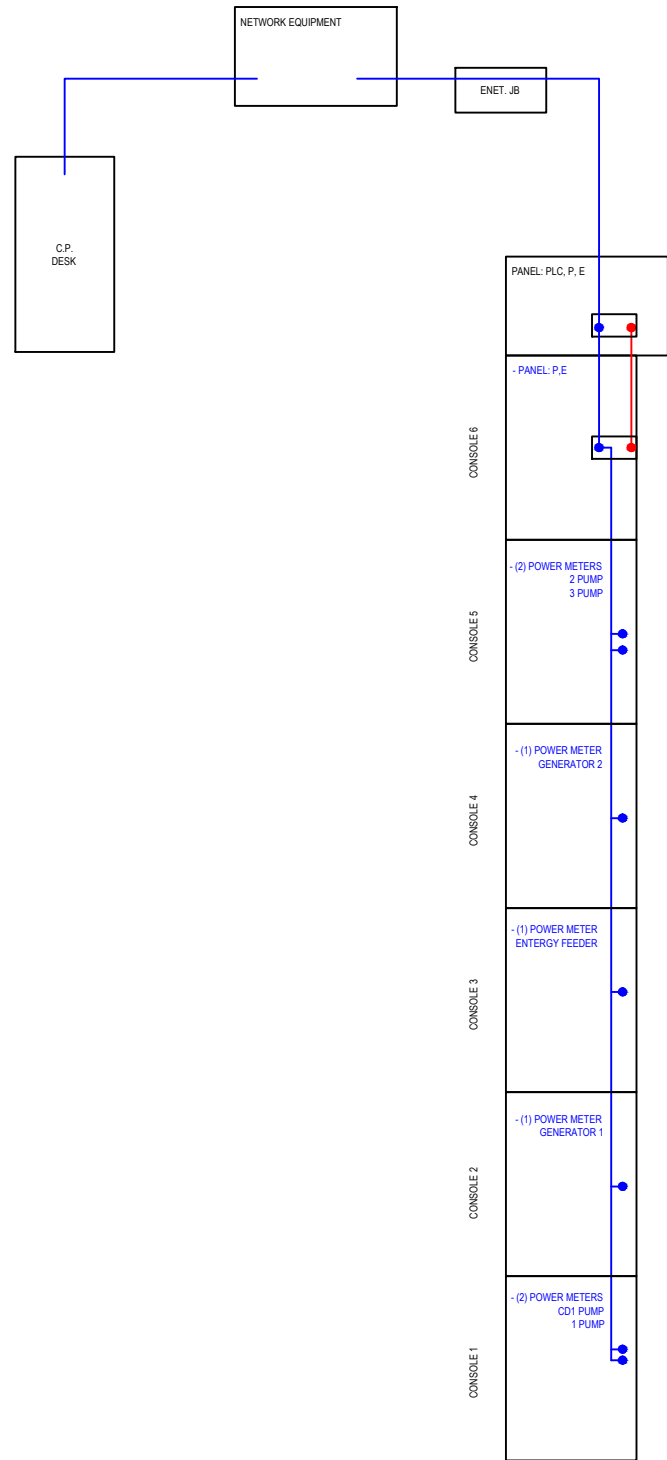
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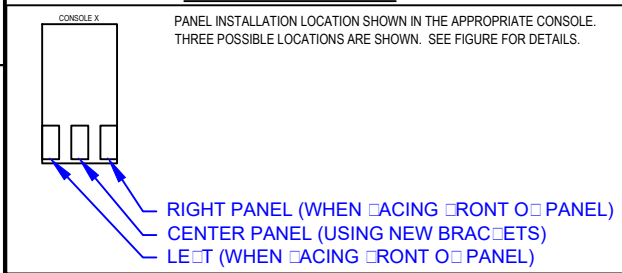
LEGEND

- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU



PANEL LOCATION



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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

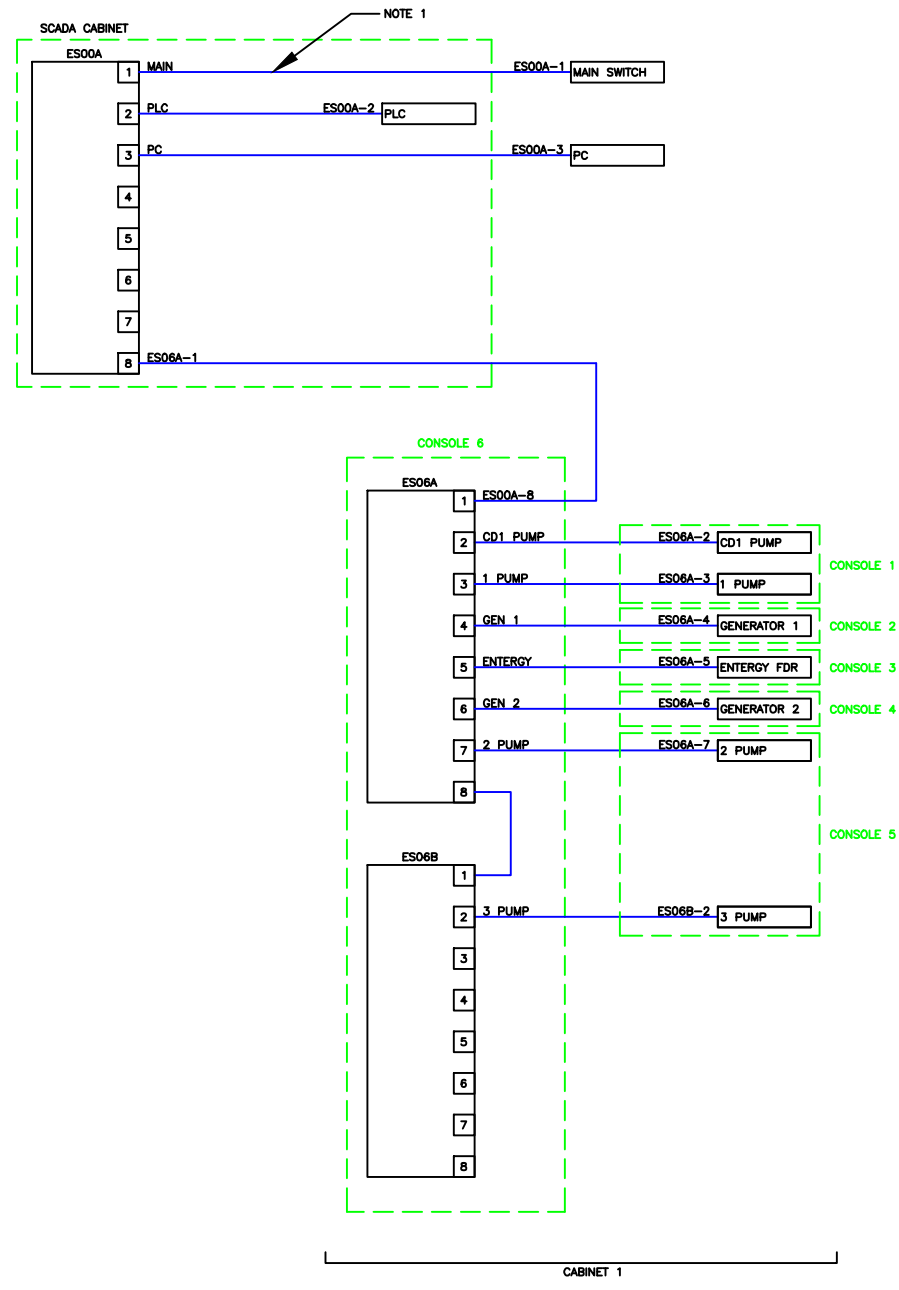
SEWERAGE AND WATER BOARD
 OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 110

PLAN VIEW

DR. BMP	
TRC. JMB	
CK. DAD	
JP. JMB	
SCALE: NONE	DWG. No. 5125-P2
DATE: 04/03/2018	SET NO. SHEET NO. 2 OF 10

A B C D E F G H J K L M



NOTE 1

NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

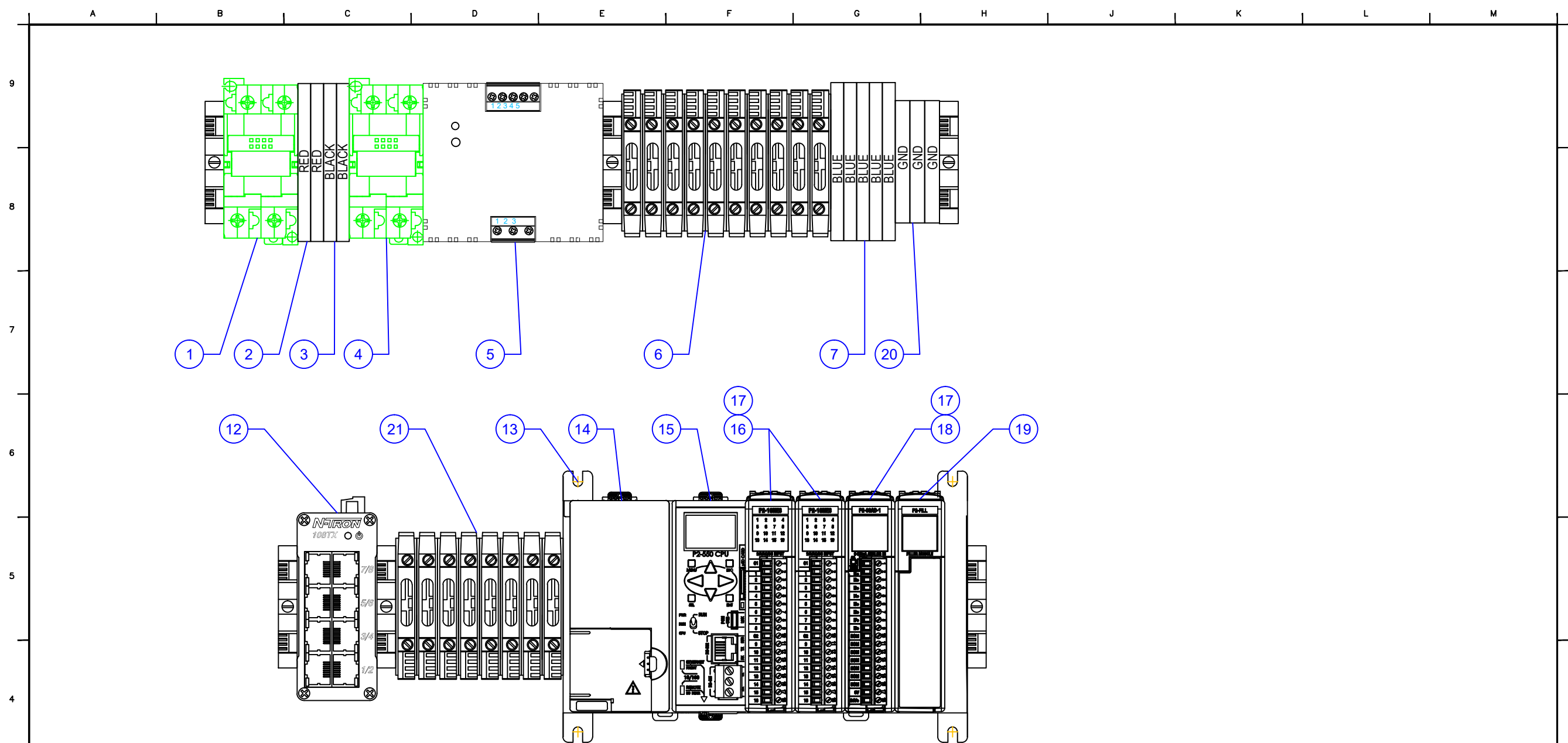
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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 110

NETWORK DIAGRAM

DR. BMP	
TNG. JMB	
CK. DAD	
JM. JMB	
SCALE: NONE	DWG. No. 5125-P3
DWG: 04/03/2018	SET NO. SHEET NO. 3 OF 10



BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	10	24 VDC Fuseblock w/LED (10pk)	7500081	Automation Direct	DN-F10L24
7	5	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	2	Productivity2000 discrete input module, 16-point, 24 VAC/VDC, sinking/sourcing, 2 isolated common(s)	7800451	Automation Direct	P2-16NE3
17	3	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	1	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

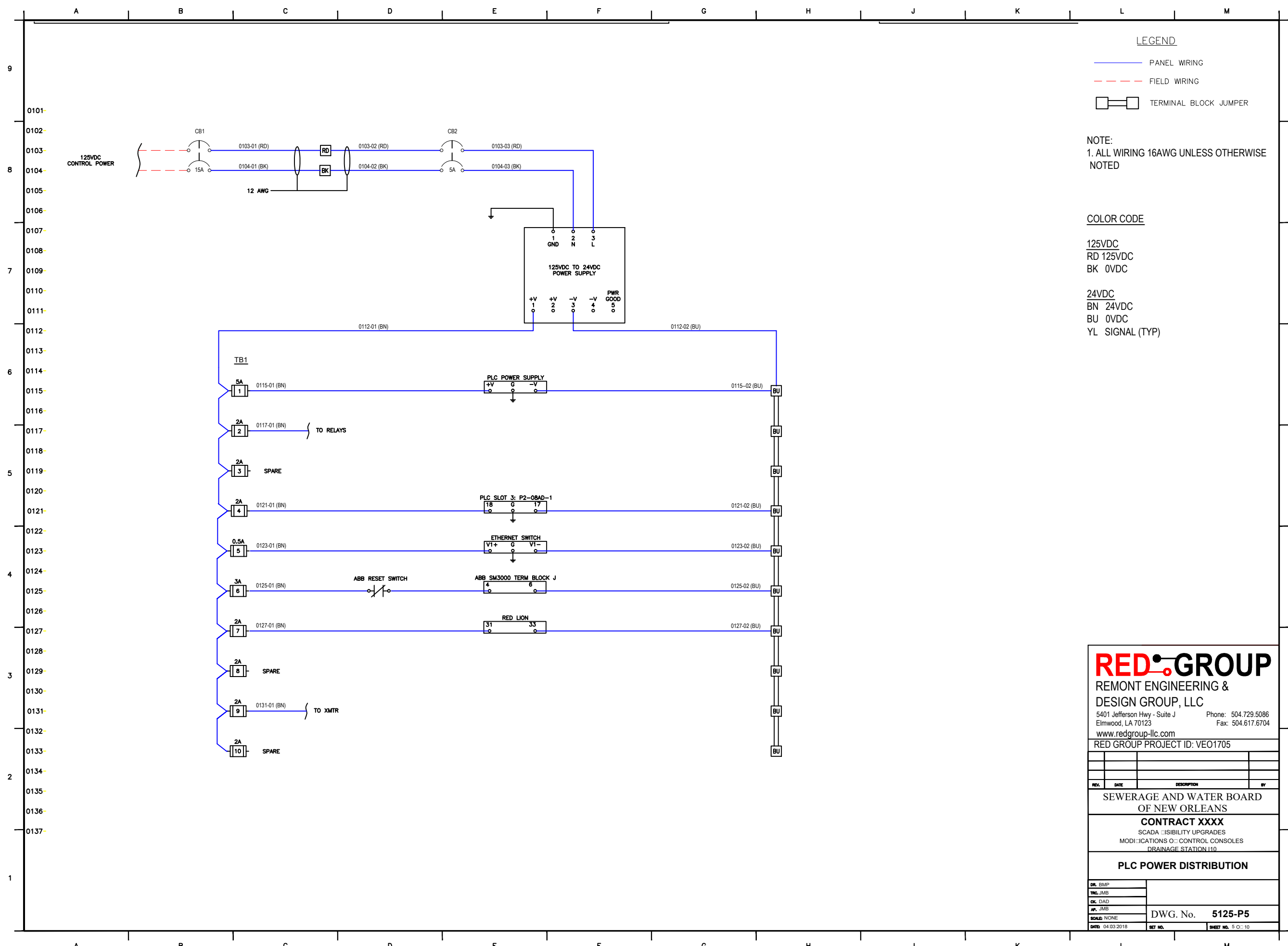
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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 110

PLC LAYOUT

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5125-P4
DATE: 04/03/2018	SET NO. SHEET NO. 4 OF 10



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

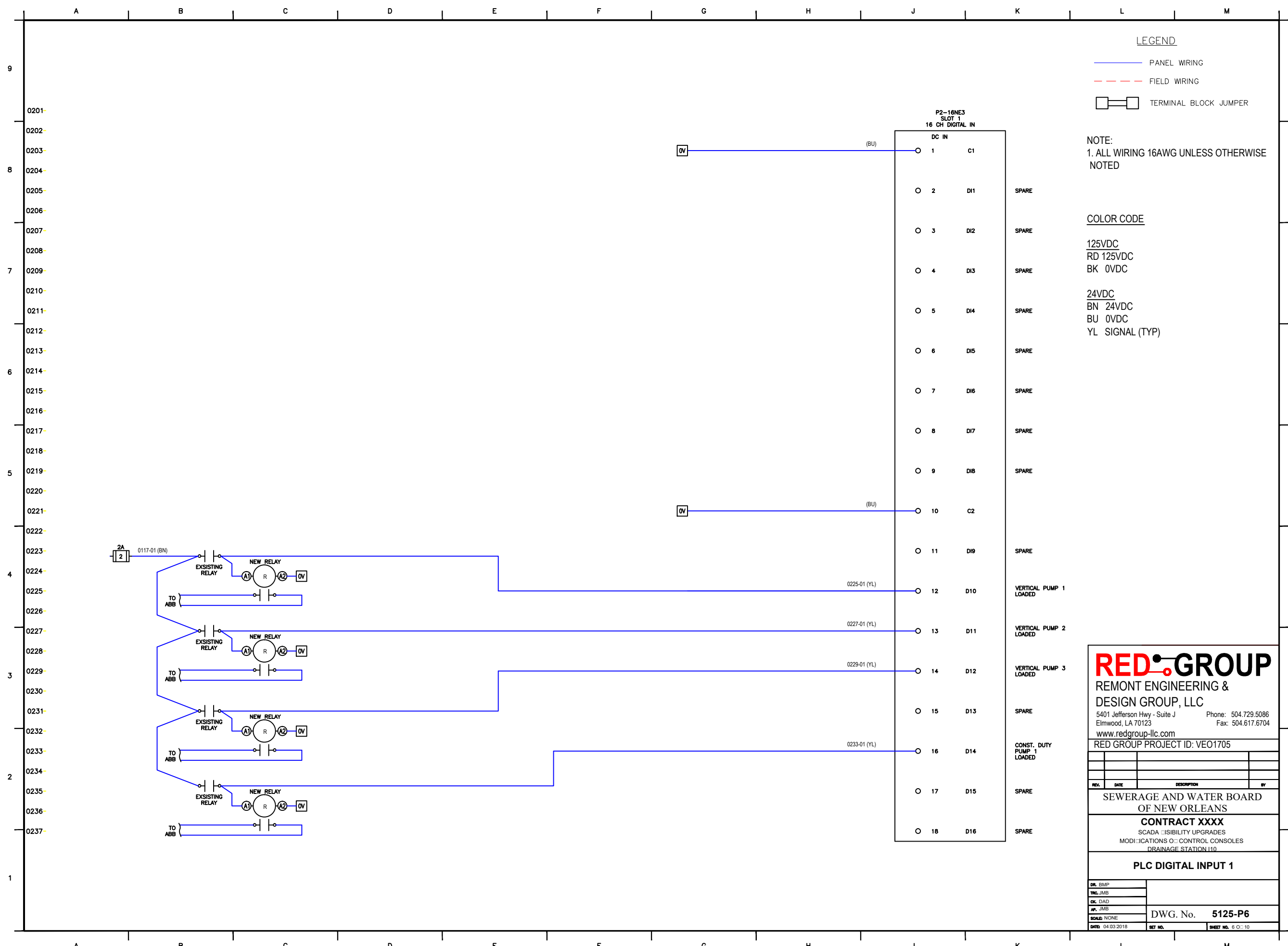
SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 110

PLC POWER DISTRIBUTION

DR. BMP	
TNC. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5125-P5
DATE: 04/03/2018	SET NO. SHEET NO. 5 OF 10



LEGEND

- PANEL WIRING
- FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

P2-16NE3 SLOTT 1 16 CH DIGITAL IN		
DC IN		
1	C1	
2	D1	SPARE
3	D2	SPARE
4	D3	SPARE
5	D4	SPARE
6	D5	SPARE
7	D6	SPARE
8	D7	SPARE
9	D8	SPARE
10	C2	
11	D9	SPARE
12	D10	VERTICAL PUMP 1 LOADED
13	D11	VERTICAL PUMP 2 LOADED
14	D12	VERTICAL PUMP 3 LOADED
15	D13	SPARE
16	D14	CONST. DUTY PUMP 1 LOADED
17	D15	SPARE
18	D16	SPARE

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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 110

PLC DIGITAL INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5125-P6
DATE: 04/03/2018	SET NO. SHEET NO. 6 OF 10

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LEGEND

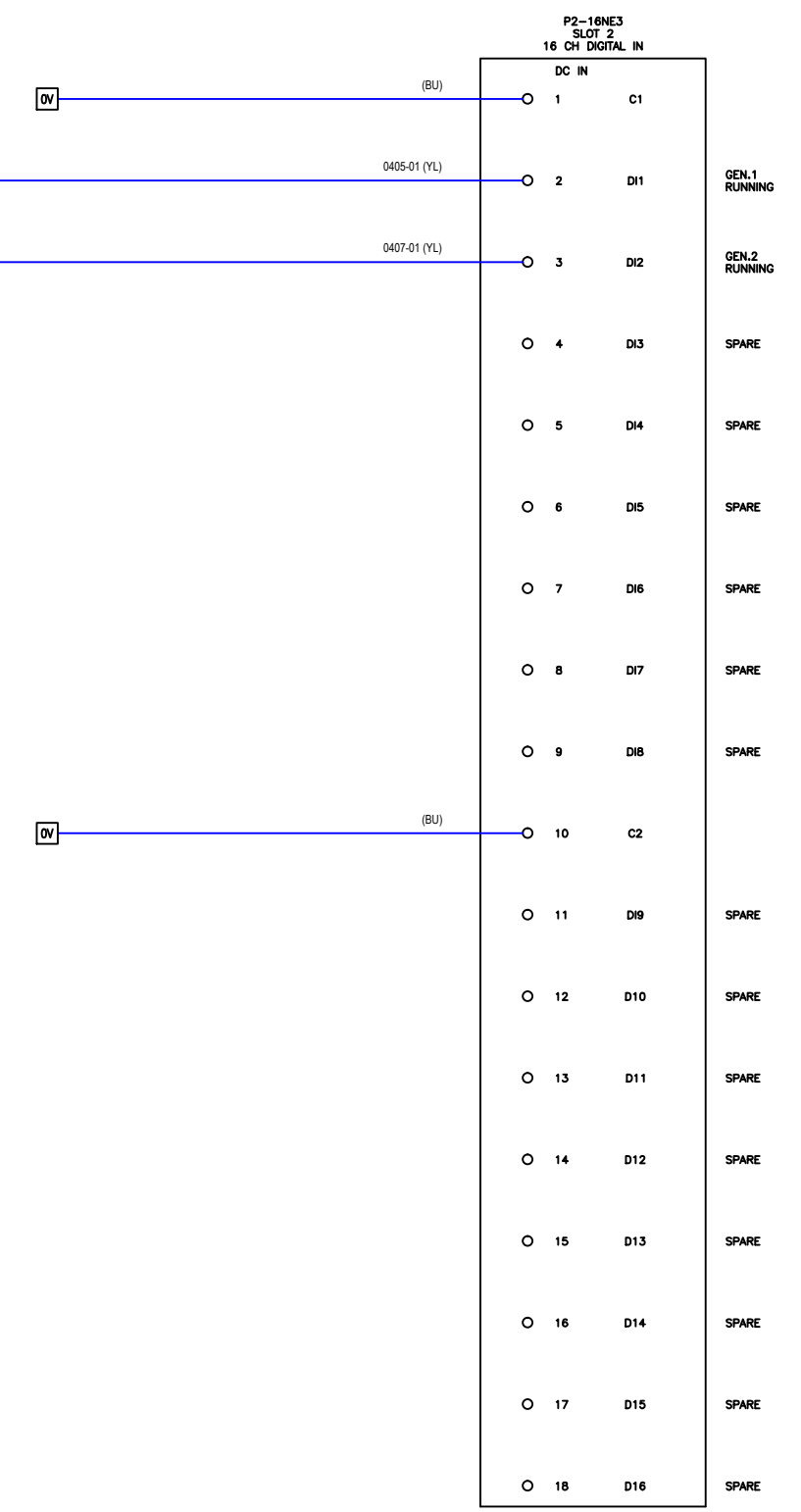
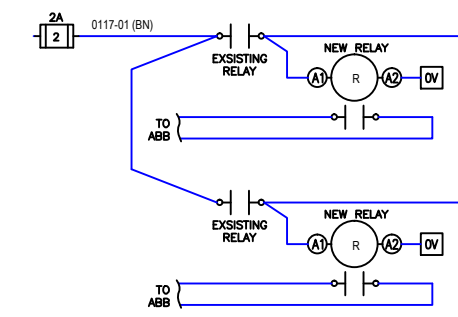
- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 110

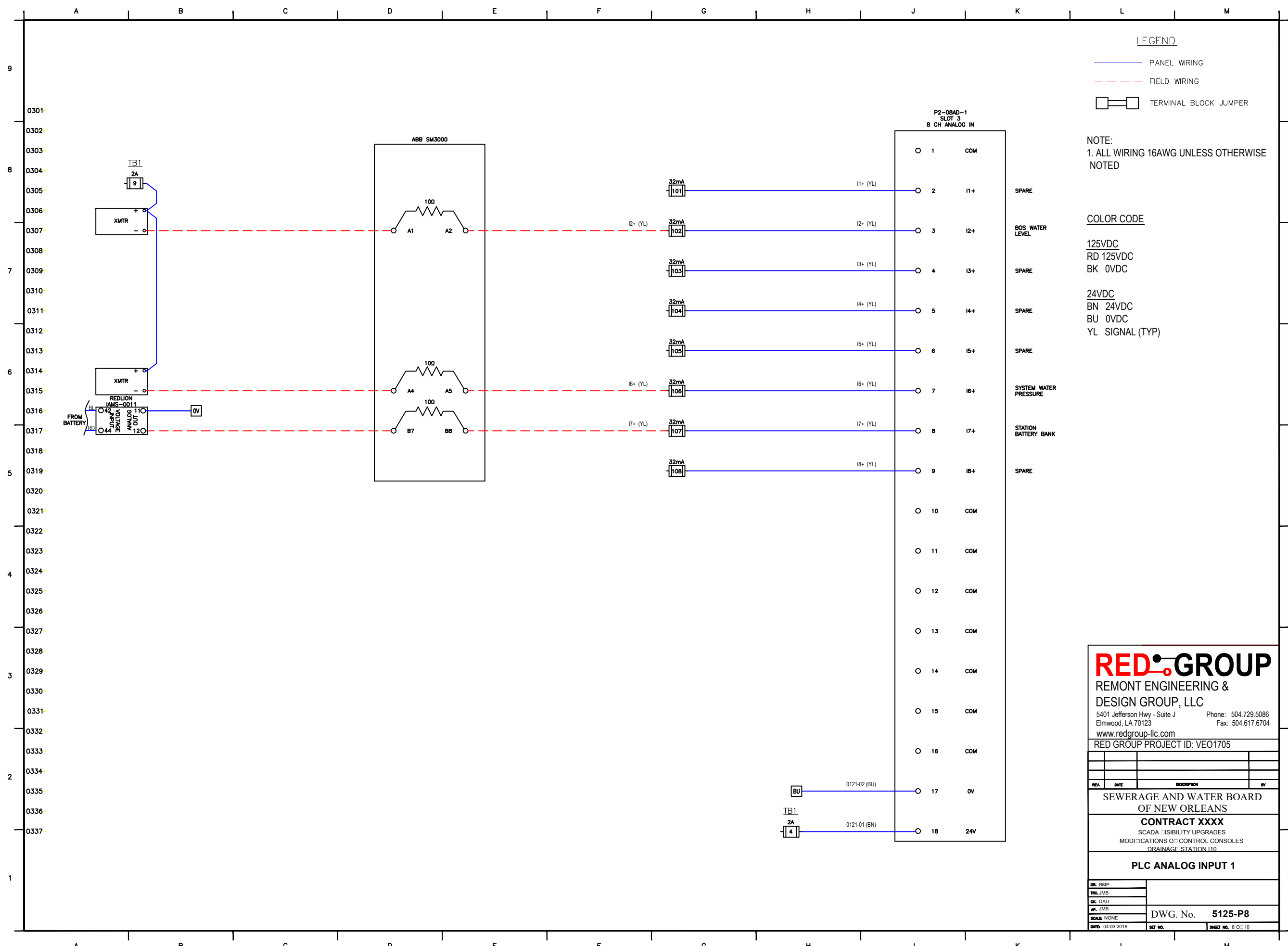
PLC DIGITAL INPUT 2

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	
DATE: 04/03/2018	

DWG. No. 5125-P7

SHEET NO. 7 OF 10

A B C D E F G H J K L M



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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 Elmwood, LA 70123 Fax: 504.617.6704
 www.redgroup-llc.com
 RED GROUP PROJECT ID: VEO1705

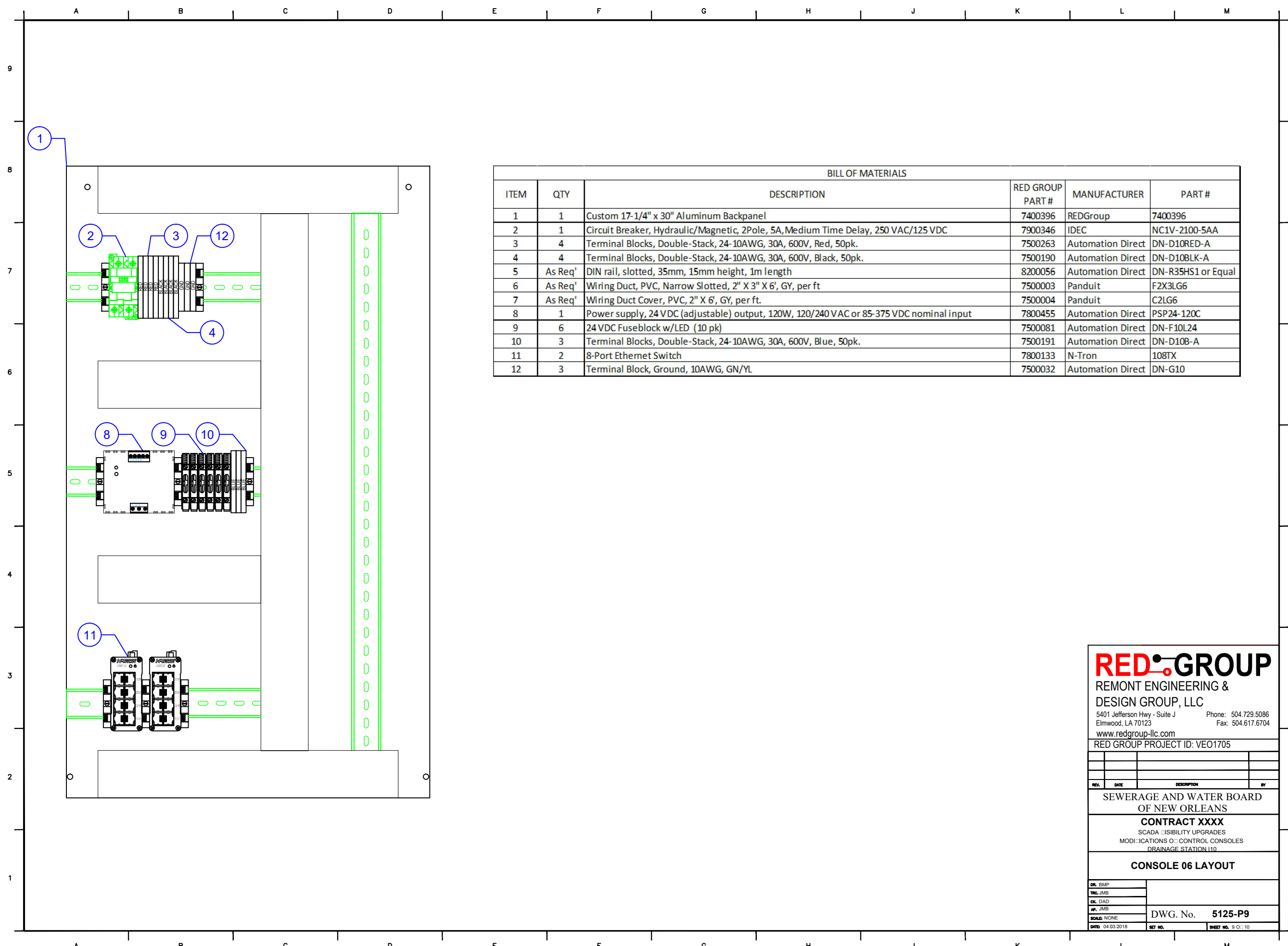
REV.	DATE	DESCRIPTION	BY

**SEWERAGE AND WATER BOARD
OF NEW ORLEANS**

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION 110

PLC ANALOG INPUT 1

DR. BMP	
TRG. JMB	
CK. DAD	
AP. JMB	
SCALE: NONE	DWG. No. 5125-P8
DATE: 04/03/2018	SHEET NO. 8 OF 10



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Custom 17-1/4" x 30" Aluminum Backpanel	7400396	REDGroup	7400396
2	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
3	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
4	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
5	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
6	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
7	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
8	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
9	6	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
10	3	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
11	2	8-Port Ethernet Switch	7800133	N-Tron	108TX
12	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10

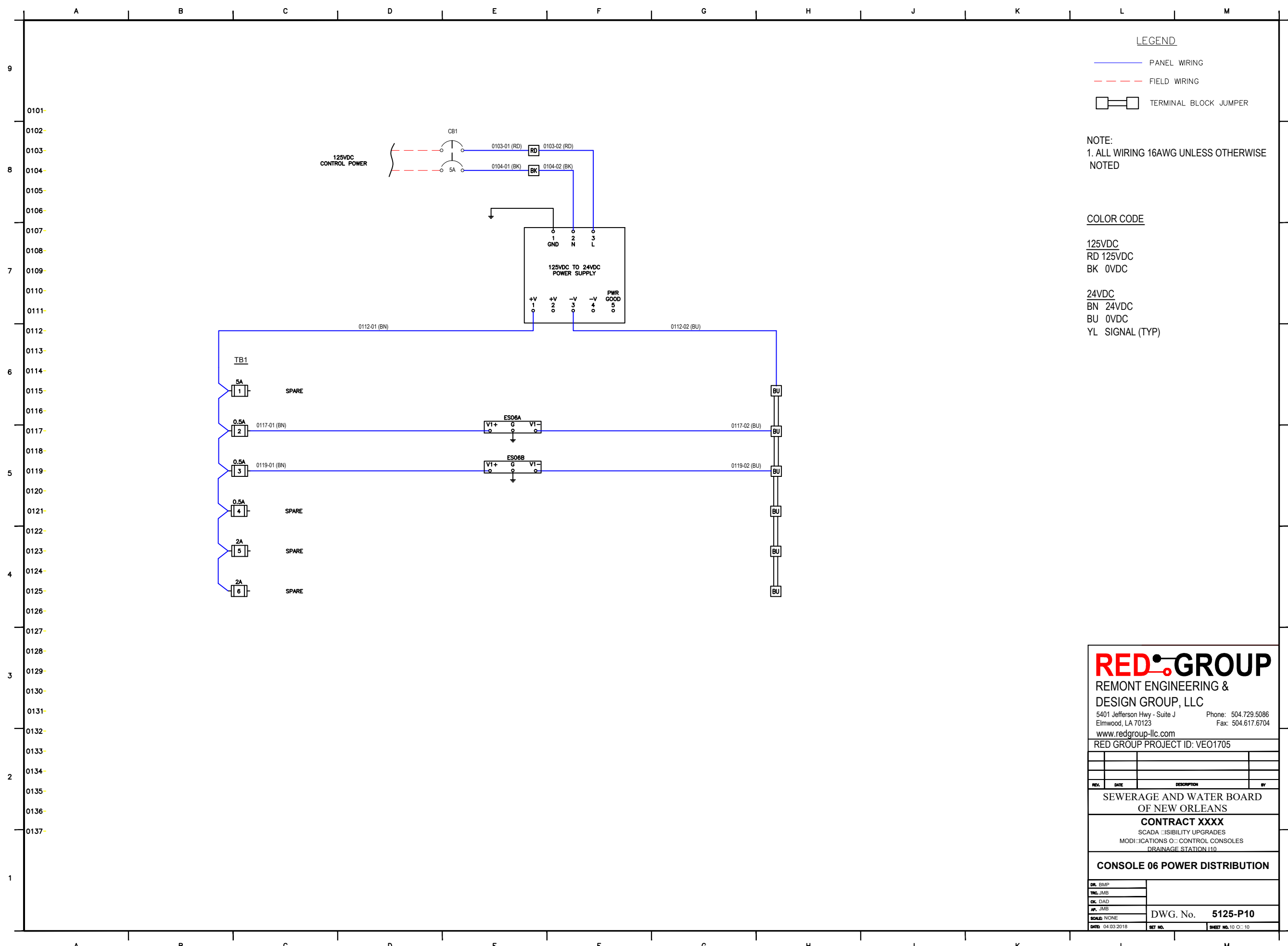
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 RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS CONTROL CONSOLES
 DRAINAGE STATION 110

CONSOLE 06 LAYOUT

DL, BMP	
TNC, JMB	
CK, DAD	
AP, JMB	
SCALE: NONE	DWG. No. 5125-P9
DATE: 04/03/2018	SHEET NO. SHEET NO. 9 OF 10



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

- 125VDC
- RD 125VDC
- BK 0VDC

- 24VDC
- BN 24VDC
- BU 0VDC
- YL SIGNAL (TYP)

RED GROUP

REMONT ENGINEERING &
DESIGN GROUP, LLC

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Elmwood, LA 70123 Fax: 504.617.6704

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RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

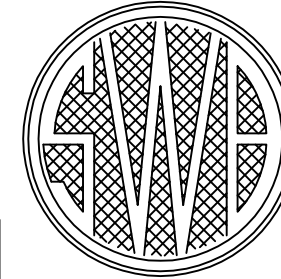
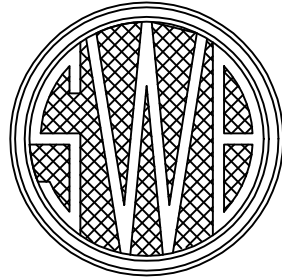
CONTRACT XXXX

SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION 110

CONSOLE 06 POWER DISTRIBUTION

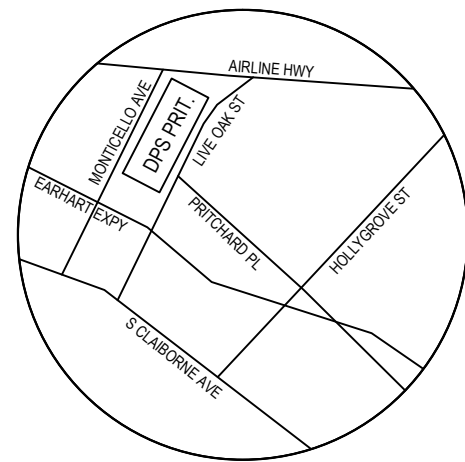
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DR. BMP											
TRG. JMB											
CK. DAD											
AP. JMB											
SCALE: NONE											
DATE: 04/03/2018	SHEET NO. 10 OF 10										

SEWERAGE AND WATER BOARD OF NEW ORLEANS



ENGINEERING DEPARTMENT

CONTRACT XXXX SCADA VISIBILITY UPGRADES DRAINAGE STATION PRITCHARD



SITE OR LOCATION PLAN

SHEET No.	TITLE	SHEET No.	TITLE
1	INDEX OF SHEETS		
2	PLAN VIEW		
3	NETWORK DIAGRAM		
4	PLC LAYOUT		
5	PLC POWER DISTRIBUTION		
6	PLC DIGITAL INPUT 1		
7	PLC DIGITAL INPUT 2		
8	PLC ANALOG INPUT 1		
9	POWER RAIL		

THIS ACKNOWLEDGES THAT THE ATTACHED DRAWINGS HAVE BEEN RECEIVED BY THE SEWERAGE & WATER BOARD OF NEW ORLEANS AND HEREBY FORWARDED FOR PROCUREMENT. THE SEWERAGE & WATER BOARD OF NEW ORLEANS DOES NOT RELEASE CONSULTANT/DESIGNER FROM ANY LEGAL LIABILITY THAT MAY ARISE FROM THE BOARD'S ACCEPTANCE OR USE OF THE ATTACHED DRAWINGS FOR THEIR INTENDED PURPOSE.

INTERIM GENERAL SUPERINTENDENT

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REMONT ENGINEERING & DESIGN GROUP, LLC
5401 Jefferson Hwy - Suite J Elmwood, LA 70123 Phone: 504.729.5086 Fax: 504.617.6704
www.redgroup-llc.com
RED GROUP PROJECT ID: VEO1705

REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
SCADA VISIBILITY UPGRADES
MODIFICATIONS CONTROL CONSOLES
DRAINAGE STATION PRITCHARD

INDEX OF SHEETS

DR. JMB	
TNC. N/A	
CC. DAD	
AP. JR	DWG. No. 5126-P1
SCALE: NONE	
DATE: 09/30/2018	SET NO. SHEET NO. 1 OF 9

A B C D E F G H J K L M

9

8

7

6

5

4

3

2

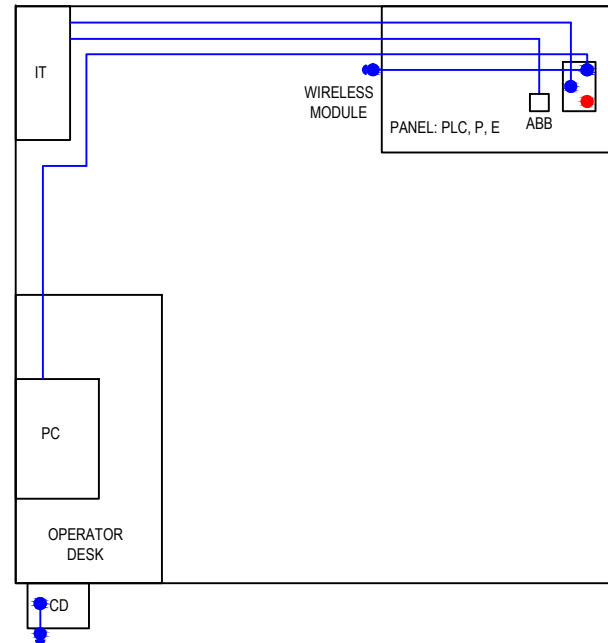
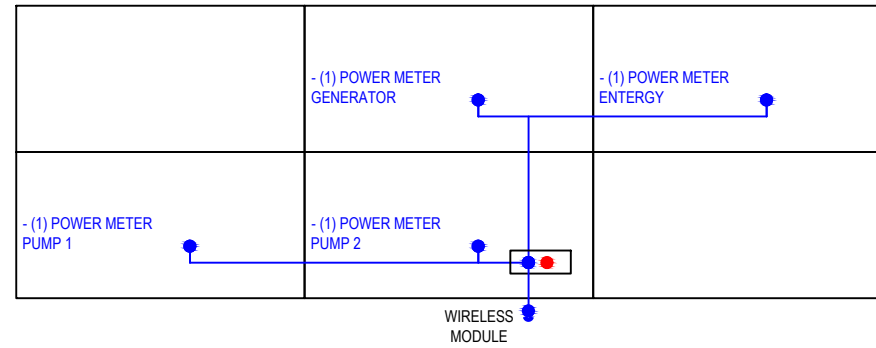
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LEGEND

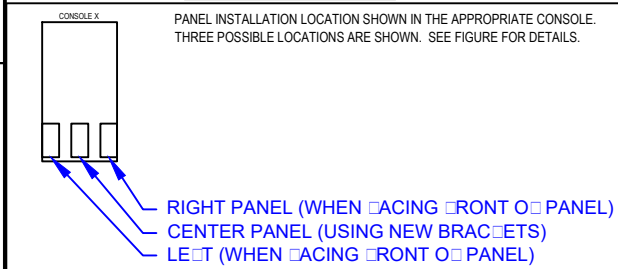
- MODBUS 485
- ETHERNET TCP/IP
- - - ETHERNET - PROTOS EXPANSION
- 125VDC CONTROL POWER

PANEL OPTIONS:
 P - POWER DISTRIBUTION
 E - ETHERNET SWITCHES
 R - RTU

SWITCH GEAR



PANEL LOCATION



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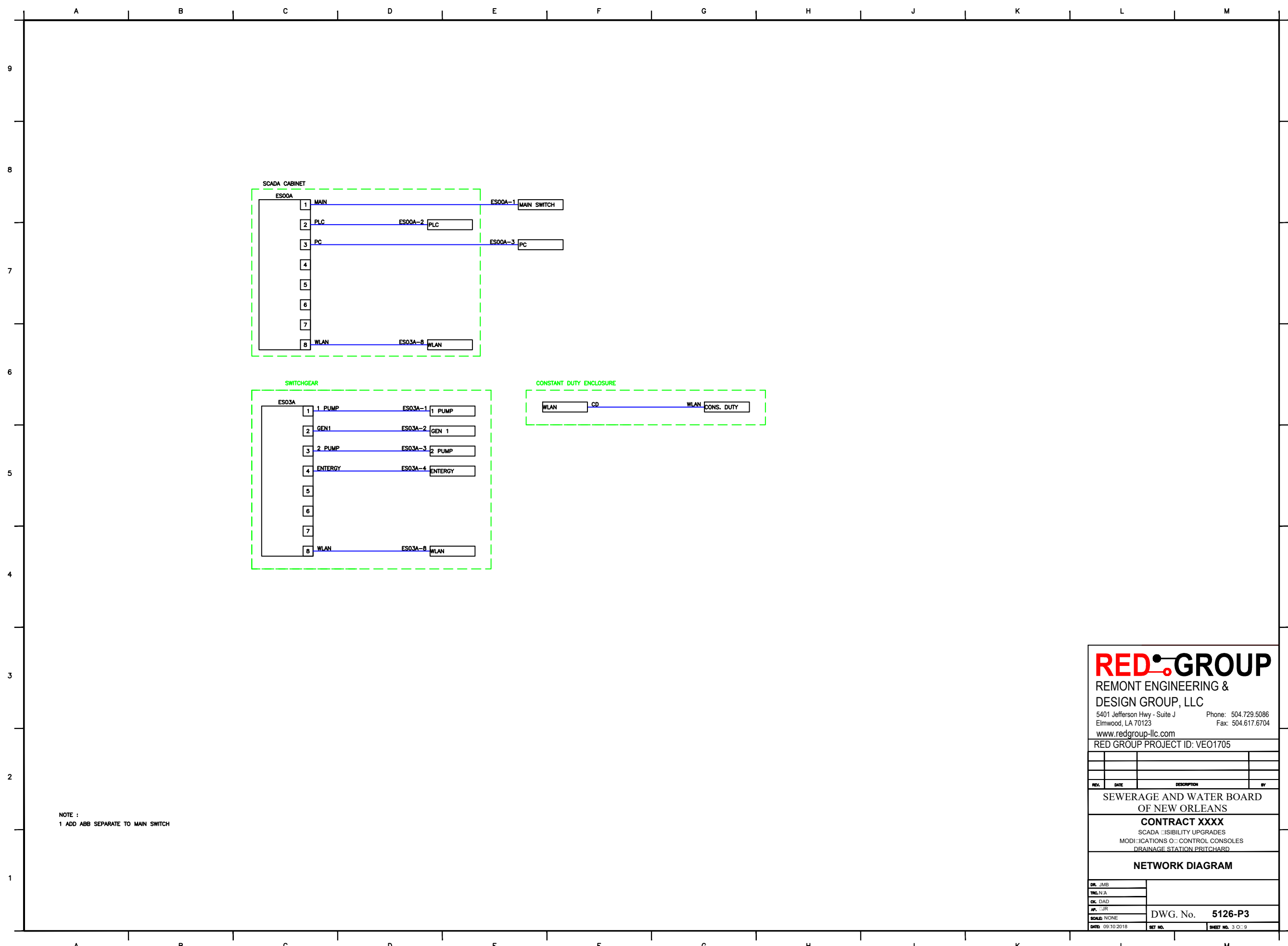
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION PRITCHARD

PLAN VIEW

DR: JMB	DWG. No. 5126-P2
TITLE: N/A	
CHK: DAD	
APP: JJR	
SCALE: NONE	SET NO. 2 OF 9
DATE: 09/10/2018	SHEET NO. 2 OF 9

A B C D E F G H J K L M



NOTE :
1 ADD ABB SEPARATE TO MAIN SWITCH

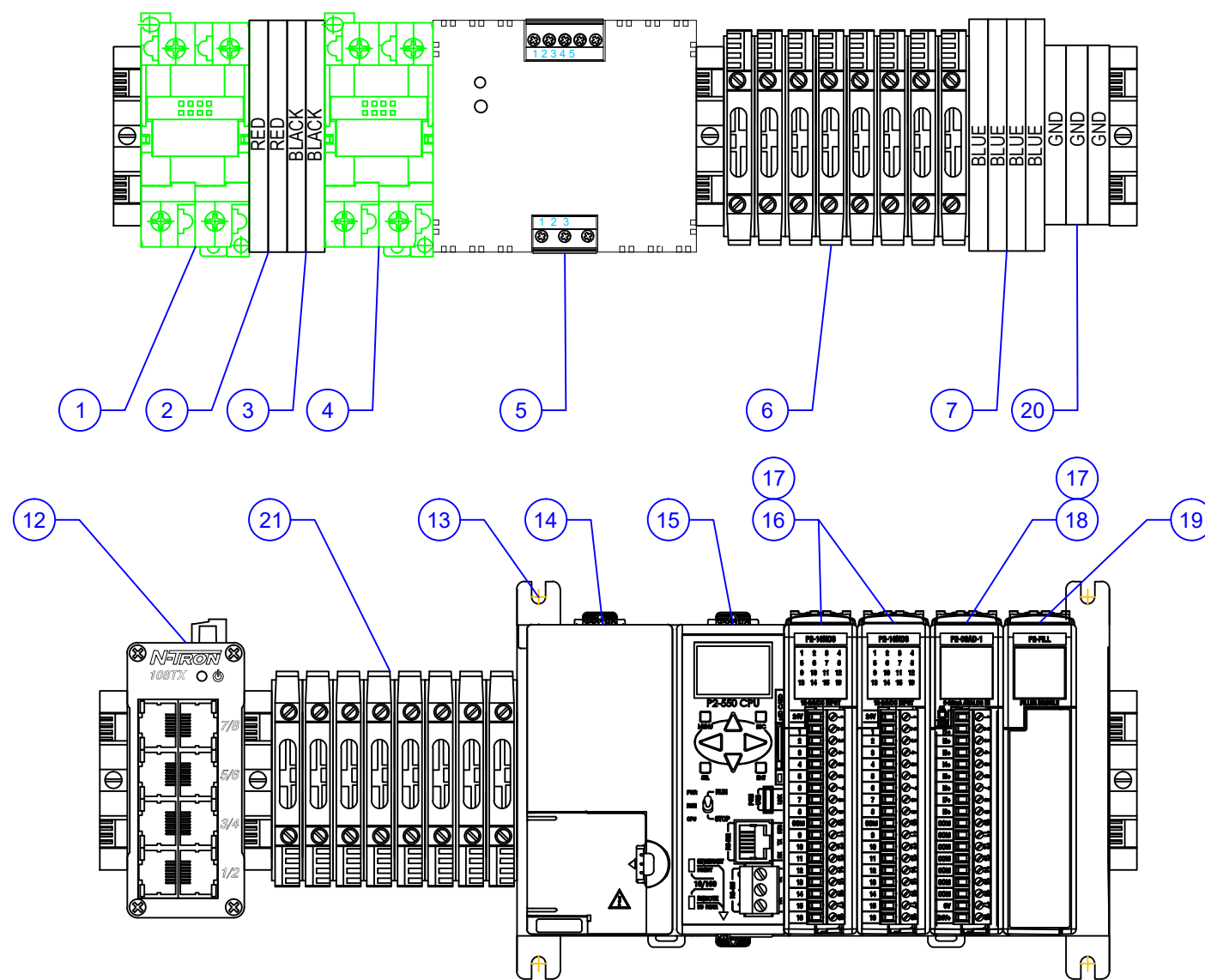
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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION PRITCHARD

NETWORK DIAGRAM

DR: JMB	
TNC: N/A	
CK: DAD	
AP: JJR	
SCALE: NONE	DWG. No. 5126-P3
DATE: 09/30/2018	SET NO. SHEET NO. 3 OF 9



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 1A, Medium Time Delay, 250 VAC/125 VDC	7900345	IDEC	NC1V-2100-15AA
2	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Red, 50pk.	7500263	Automation Direct	DN-D10RED-A
3	2	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Black, 50pk.	7500190	Automation Direct	DN-D10BLK-A
4	1	Circuit Breaker, Hydraulic/Magnetic, 2Pole, 5A, Medium Time Delay, 250 VAC/125 VDC	7900346	IDEC	NC1V-2100-5AA
5	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
6	8	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
7	4	Terminal Blocks, Double-Stack, 24-10AWG, 30A, 600V, Blue, 50pk.	7500191	Automation Direct	DN-D10B-A
8	As Req'	DIN rail, slotted, 35mm, 15mm height, 1m length	8200056	Automation Direct	DN-R35HS1 or Equal
9	As Req'	Wiring Duct, PVC, Narrow Slotted, 2" X 3" X 6', GY, per ft	7500003	Panduit	F2X3LG6
10	As Req'	Wiring Duct Cover, PVC, 2" X 6', GY, per ft.	7500004	Panduit	C2LG6
11	1	Custom 17.25" x 30" Aluminum Backpanel	3800009	REDGroup	3800009
12	1	8-Port Ethernet Switch	7800133	N-Tron	108TX
13	1	Productivity2000 I/O base, 4-slot, DIN rail or flush mount.	7800448	Automation Direct	P2-04B
14	1	Productivity2000 AC/DC base power supply, 12-24 VDC/24 VAC	7800449	Automation Direct	P2-01DCAC
15	1	Productivity2000 CPU	7800450	Automation Direct	P2-550
16	1	Productivity2000 discrete input module, 16-point, 12-24 VDC, sinking/sourcing, 1 isolated	7800451	Automation Direct	P2-16ND3
17	2	Productivity2000 terminal block, 18-pin spring clamp	7800452	Automation Direct	P2-RTB-1
18	1	Productivity2000 analog input module, 8-channel, current, 0-20 mA	7800453	Automation Direct	P2-08AD-1
19	2	Productivity2000 filler module	7800454	Automation Direct	P2-FILL
20	3	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
21	8	Fuseblock 50/PK 5X20mm 30A 10AWG 300V	7500064	Automation Direct	DN-F10

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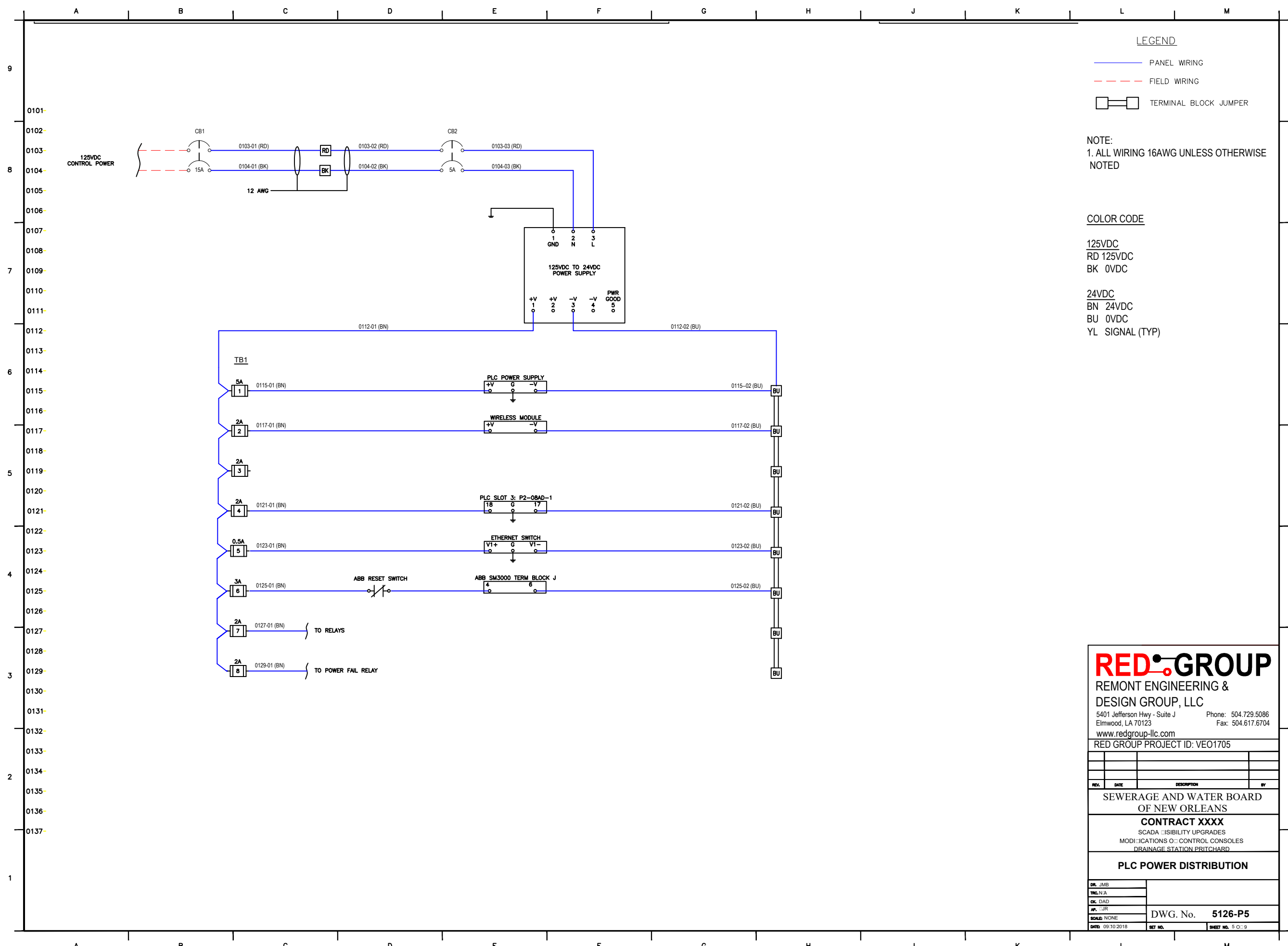
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SEWERAGE AND WATER BOARD OF NEW ORLEANS
 CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION PRITCHARD

PLC LAYOUT

DR: JMB
 TNC: N/A
 CK: DAD
 AP: JJR
 SCALE: NONE
 DATE: 09/30/2018

DWG. No. **5126-P4**
 SET NO. SHEET NO. 4 OF 9



LEGEND

— PANEL WIRING
 - - - FIELD WIRING
 □ □ TERMINAL BLOCK JUMPER

NOTE:
 1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
 RD 125VDC
 BK 0VDC

24VDC
 BN 24VDC
 BU 0VDC
 YL SIGNAL (TYP)

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REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD OF NEW ORLEANS

CONTRACT XXXX

SCADA VISIBILITY UPGRADES
 MODIFICATIONS OF CONTROL CONSOLES
 DRAINAGE STATION PRITCHARD

PLC POWER DISTRIBUTION

DR: JMB	
TNC: N/A	
CC: DAD	
AP: JJR	
SCALE: NONE	DWG. No. 5126-P5
DATE: 09/30/2018	SHEET NO. 5 OF 9

LEGEND

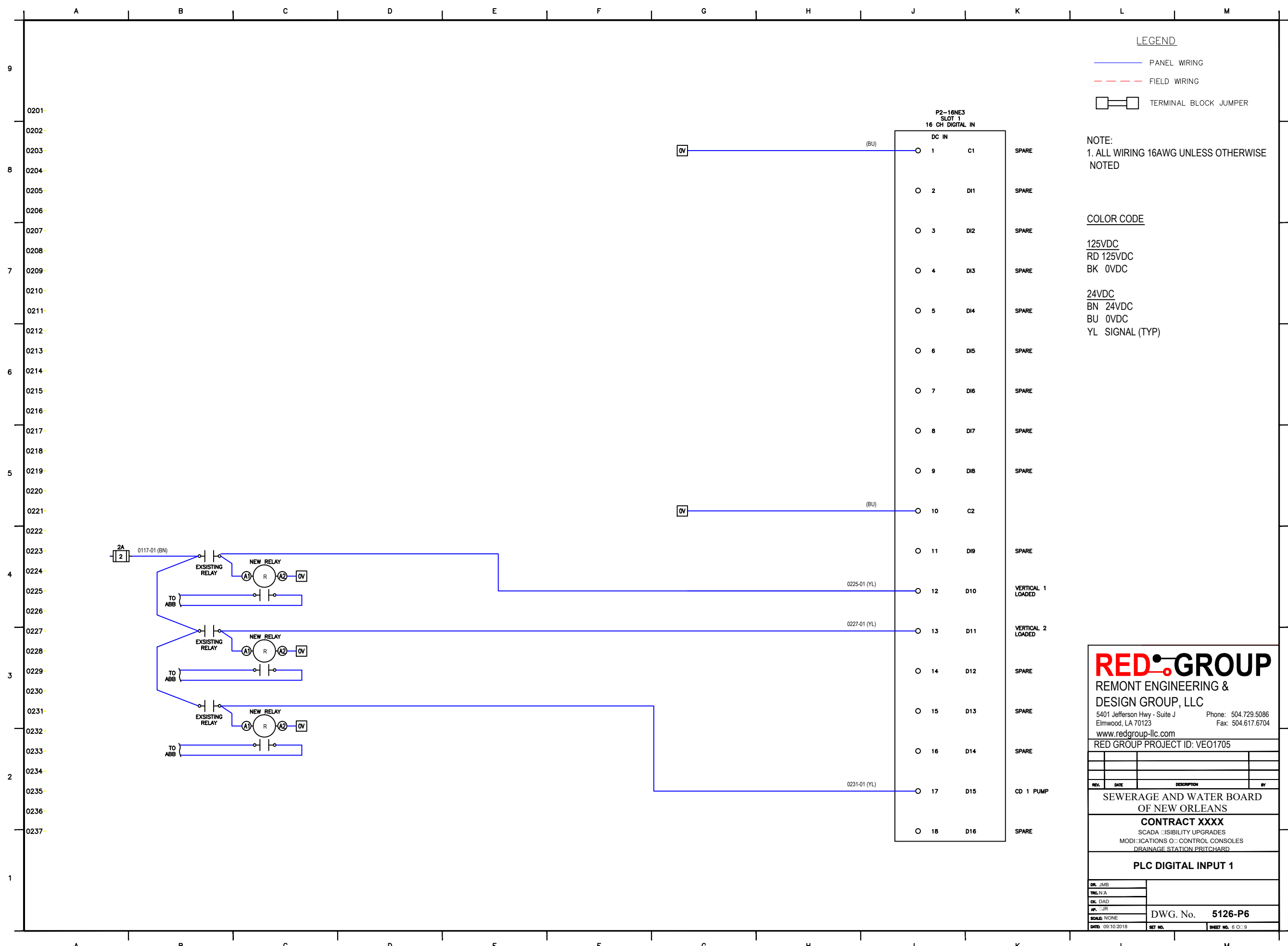
- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)



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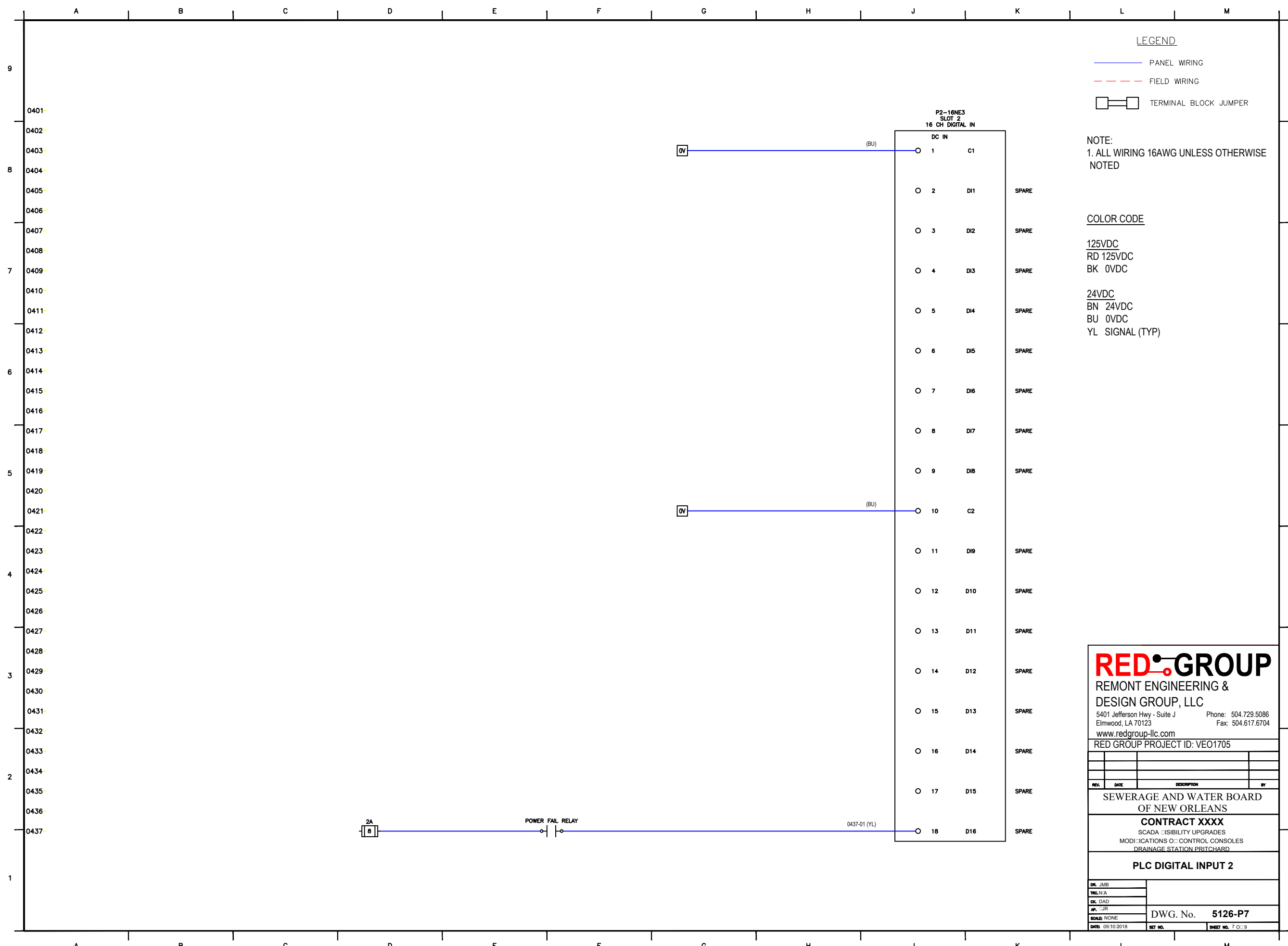
REV.	DATE	DESCRIPTION	BY

SEWERAGE AND WATER BOARD
OF NEW ORLEANS

CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION PRITCHARD

PLC DIGITAL INPUT 1

DR. JMB	
TRG. N/A	
CK. DAD	
AP. IJR	
SCALE: NONE	DWG. No. 5126-P6
DATE: 09/10/2018	SHEET NO. 6 OF 9



LEGEND

- PANEL WIRING
- - - FIELD WIRING
- TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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OF NEW ORLEANS

CONTRACT XXXX

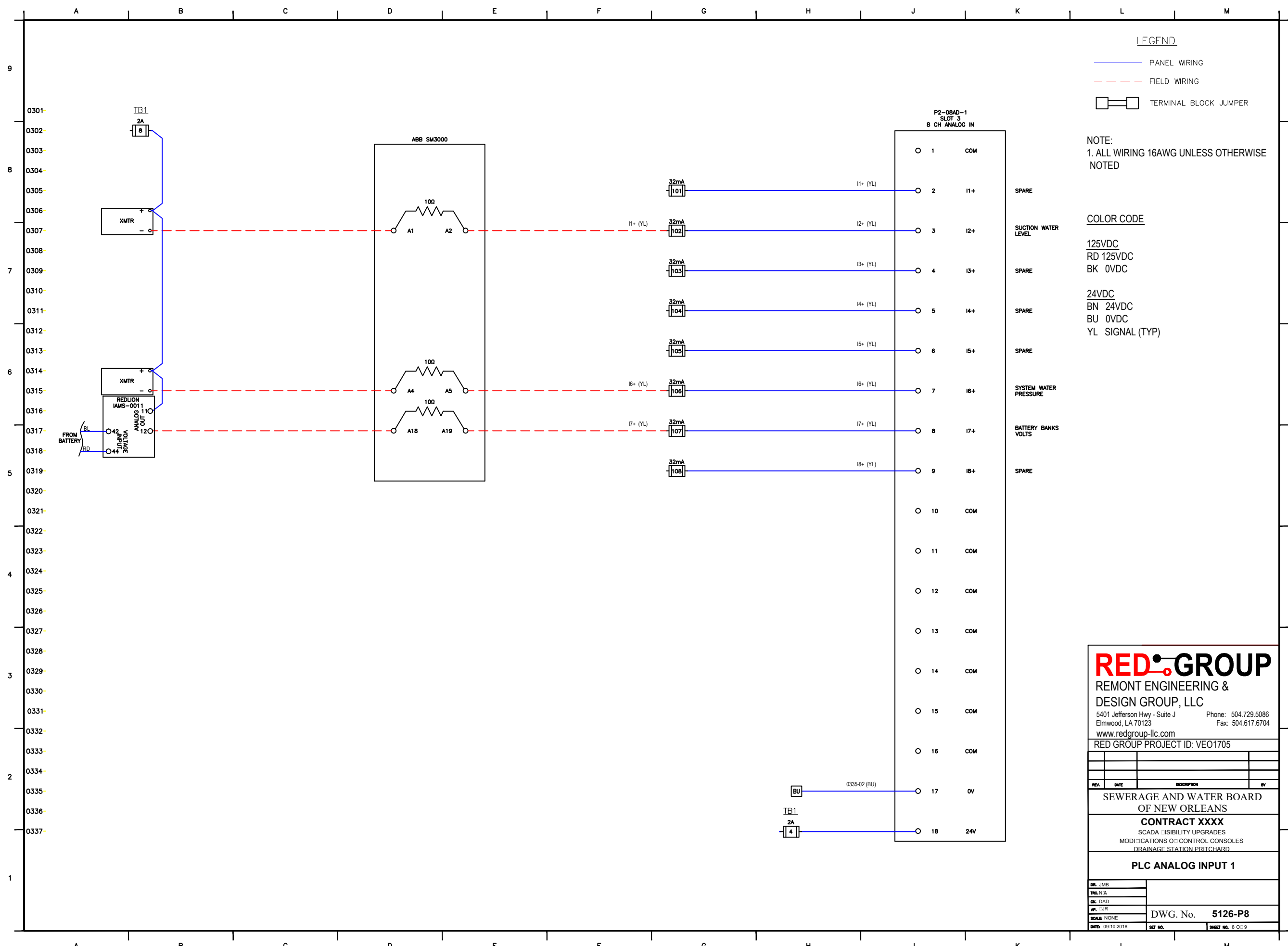
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION PRITCHARD

PLC DIGITAL INPUT 2

DR. JMB	
TNG. N/A	
CK. DAD	
AP. IJR	
SCALE: NONE	
DATE: 09/30/2018	

DWG. No. 5126-P7

SET NO. SHEET NO. 7 OF 9



LEGEND

— PANEL WIRING

- - - FIELD WIRING

□ □ TERMINAL BLOCK JUMPER

NOTE:
1. ALL WIRING 16AWG UNLESS OTHERWISE NOTED

COLOR CODE

125VDC
RD 125VDC
BK 0VDC

24VDC
BN 24VDC
BU 0VDC
YL SIGNAL (TYP)

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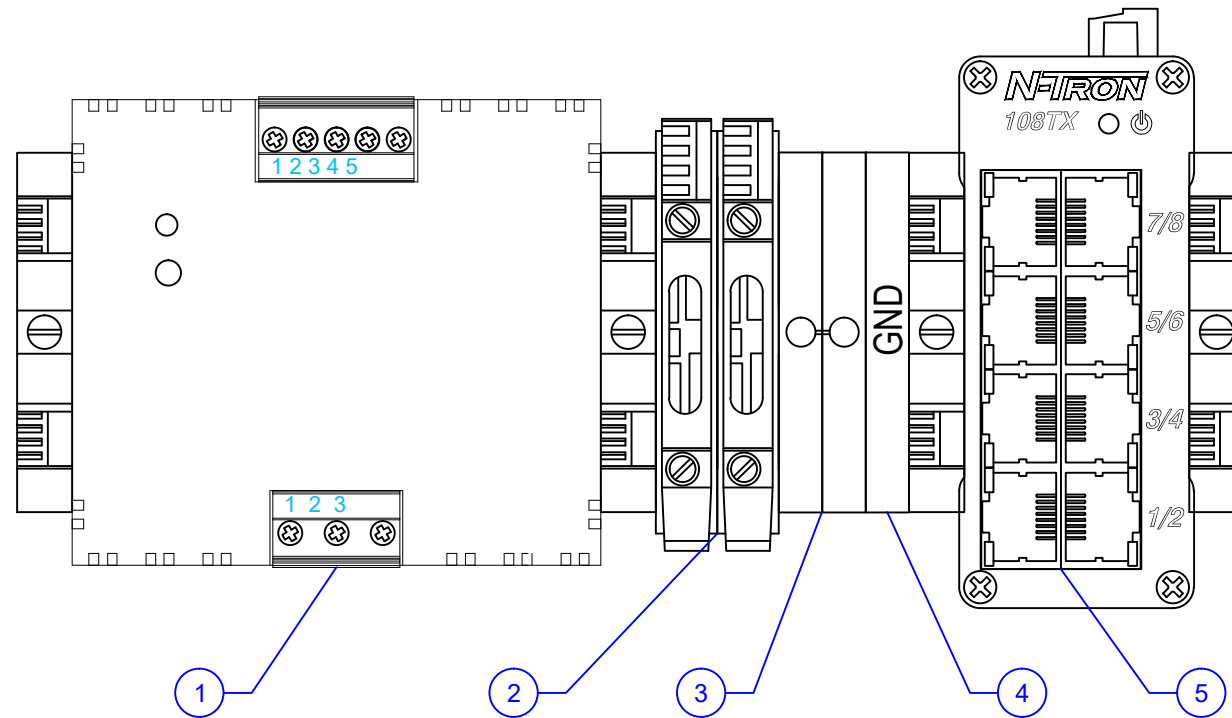
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OF NEW ORLEANS

CONTRACT XXXX

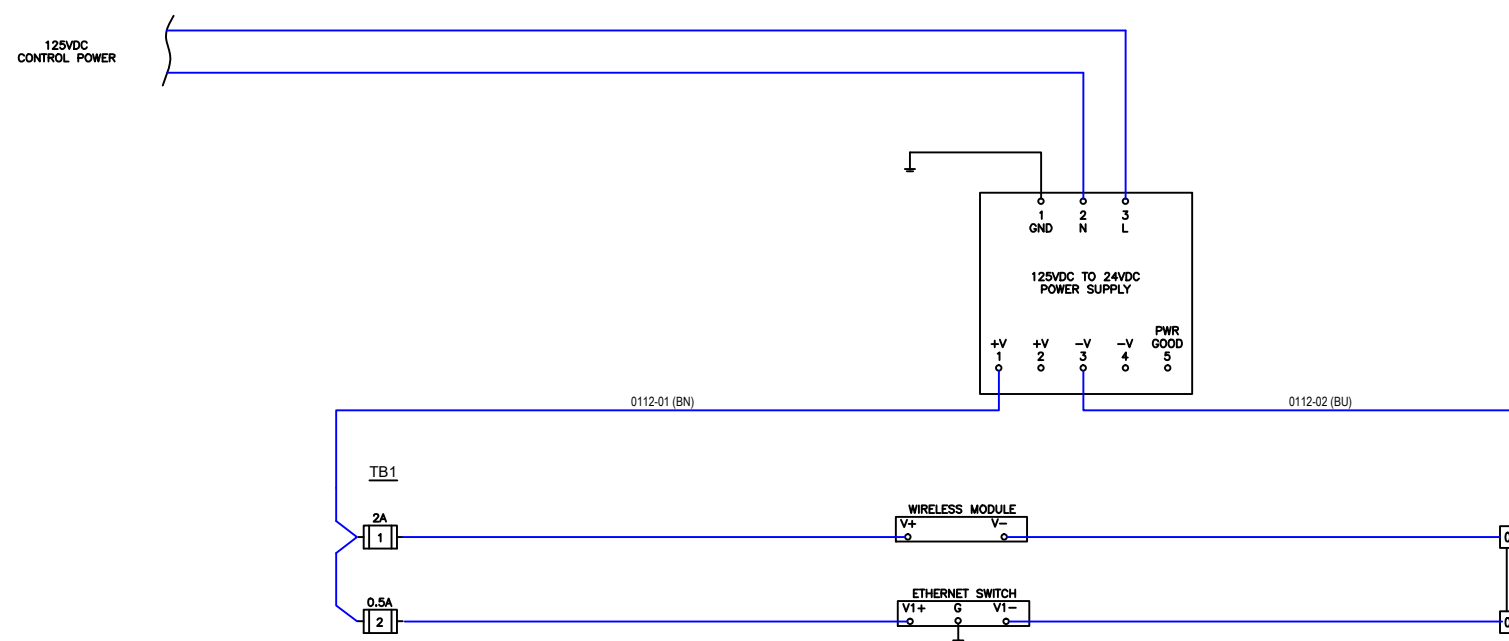
SCADA VISIBILITY UPGRADES
MODIFICATIONS TO CONTROL CONSOLES
DRAINAGE STATION PRITCHARD

PLC ANALOG INPUT 1

DR. JMB	DWG. No. 5126-P8
TNC. N/A	
CK. DAD	
AP. JJR	
SCALE: NONE	
DATE: 09/10/2018	SET NO. SHEET NO. 8 OF 9



BILL OF MATERIALS					
ITEM	QTY	DESCRIPTION	RED GROUP PART #	MANUFACTURER	PART #
1	1	Power supply, 24 VDC (adjustable) output, 120W, 120/240 VAC or 85-375 VDC nominal input	7800455	Automation Direct	PSP24-120C
2	2	24 VDC Fuseblock w/LED (10 pk)	7500081	Automation Direct	DN-F10L24
3	2	Terminal Block, 100EA / Box	7500029	Automation Direct	DN-T10-A
4	1	Terminal Block, Ground, 10AWG, GN/YL	7500032	Automation Direct	DN-G10
5	2	8-Port Ethernet Switch	7800133	N-Tron	108TX



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SEWERAGE AND WATER BOARD
 OF NEW ORLEANS
CONTRACT XXXX
 SCADA VISIBILITY UPGRADES
 MODIFICATIONS TO CONTROL CONSOLES
 DRAINAGE STATION PRITCHARD

POWER RAIL

DR. JMB	
TNC. N/A	
CK. DAD	
AP. JJR	
SCALE: NONE	DWG. No. 5126-P9
DATE: 09/10/2018	SET NO. SHEET NO. 9 OF 9