ST. TAMMANY PARISH

MICHAEL B. COOPER
PARISH PRESIDENT

September 4, 2024

Please find the following addendum to the below mentioned BID.

Addendum No.: **2**

Bid#: **24-35-2**

Project Name: **Diversified Water Well Pretreatment System**

Bid Due Date: **Tuesday, September 10, 2024**

Receipt of this addendum shall be acknowledged by inserting its number in the space provided on the Proposal.

GENERAL INFORMATION:

1. Non-Mandatory pre-bid was conducted on Wednesday, August 7, 2024.
    a. Sign-in sheet and meeting minutes for the pre-bid meeting are attached.

2. Technical Specifications Section 02 32 19 Exploratory Excavation, Section 1.04 General Requirements, **add** the following paragraphs C and D:

    "C. Exploratory excavations or test pits are limited, specific excavations for the purpose of verifying the location of a utility or conflict as identified on the Plans or as directed by the Owner or Engineer. The contractor shall coordinate with the Engineer (or the Parish) prior to commencing any exploratory excavations or test pits to determine the location and extent of the excavation. Exploratory excavations or test pits shall be directed by the Engineer and/or the Parish. Exploratory excavations will be paid per Paragraph 3.03.A of this Section.

D. Potholing, hydro-excavation, or other open cut excavations required to adequately locate utilities and/or underground structures in the path of construction or at the jobsite will be considered incidental to the work, and the cost of this incidental excavation work shall be included in the associated lump sum bid items. There will be no direct payment for this incidental excavation work."

3. Technical Specifications Section 43 23 21 Horizontal Split-Case Centrifugal Pumps, Section 1.4 Submittals, Paragraph C, in the first sentence: "The Pump Manufacturer shall submit the following with the bid:" **delete** the following: "with the bid".

4. Technical Specifications Section 43 23 21 Horizontal Split-Case Centrifugal Pumps, Section 1.4 Submittals, Paragraph D, **add** the following to the list of required submittals:

   "36. Manufacturer's Certified Pump Performance Curves"

5. Technical Specifications Section 43 23 21 Horizontal Split-Case Centrifugal Pumps, Section 2.24 Shop Testing, **delete** Section B Factory Witness Testing in its entirety.

6. Technical Specifications Section 43 23 21 Horizontal Split-Case Centrifugal Pumps, Section 2.24 Shop Testing, Section C Factory Testing, **delete** paragraph 7 in its entirety.

7. Technical Specifications Section 10 73 26 Protective Covers, Part 2 Products, **Add** the following Section 2.6:

   "2.6 Approved Alternate Materials

   A. Aluminum Frame and Members; extruded aluminum, ASTM B221, 6063 alloy, T6 temper, with powder coated finish. Canopy decking: 24-gauge aluminum interlocking panels."

8. **Delete** Technical Specifications Section 26 05 00 Electrical General Provisions in its entirety and **Replace** with the attached revised Section 26 05 00 Electrical General Provisions, consisting of 11 pages.

9. **Delete** Technical Specifications Section 26 05 19 Conductors and Cables in its entirety and **Replace** with the attached revised Section 26 05 19 Conductors and Cables, consisting of 6 pages.

10. **Delete** Technical Specifications Section 26 05 33 Raceways and Boxes in its entirety and **Replace** with the attached revised Section 26 05 33 Raceways and Boxes, consisting of 11 pages.

11. **Delete** Technical Specifications Section 26 27 26 Wiring Devices in its entirety and **Replace** with the attached revised Section 26 27 26 Wiring Devices, consisting of 5 pages.

12. **Delete** Technical Specifications Section 26 32 13 Standby Power System Gas Generator Set in its entirety and **Replace** with the attached revised Section 26 32 13 Standby Power System Natural Gas Generator Set, consisting of 20 pages.

13. Technical Specifications Section 33 05 19 Ductile Iron Pipe and Fittings, Part 2 Products, Section 2.02 Protective Coatings, **Add** the following Paragraph D:

"D. EXPOSED WATER PIPE & FITTINGS FINISH COLOR SCHEDULE

LINE TYPE	LDH COLOR	TNEMEC COLOR	PIPE MARKERS*
RAW WATER/ FILTER INFLUENT	OLIVE GREEN	HUNTER GREEN 08SF	"FILTER INFLUENT"
FILTER EFFLUENT	AQUA	AQUA SKY 10GN	"FILTER EFFLUENT"
BACKWASH SUPPLY	DARK BLUE	TRUE BLUE/ SAFETY 11SF	"BACKWASH SUPPLY"
BACKWASH DRAIN	LIGHT BROWN	DESERT SANDS 04BR	"BACKWASH WASTE"

*Provide adhesive vinyl pipe identification labels. Flow direction arrow labels shall also be provided. Pipe labels and text sizes shall conform to ASME A13.1-2020."

14. Technical Specifications Section 13 34 19 Metal Buildings, Part 2 Products, **delete** paragraph 2.01.C Design Loads in its entirety and replace with the following:

    "C. Design Loads

        1. Refer to Plan Sheet S-001 for design loads and structural specifications."

15. Technical Specifications Section 13 34 19 Metal Buildings, Part 2 Products, **delete** Section 2.03 Roof and Wall Covering in its entirety and replace with the following:

    "2.03 Roof and Wall Covering

        A. Refer to Specification Sections 07 41 13 and 07 42 00 for Roof and Wall Panels."

16. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Part 1 General, Paragraph 1.03.C(4) Requirements, **Change** the first sentence as follows: Change "A Guarantee for a period of nine (9) months" to "A Guarantee for a period of twelve (12) months."

17. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Part 2 Products, Paragraph 2.01 Equipment Design, A(2) Filter Tanks, **Change** the first sentence as follows: Change "…designed working pressure of 100 psi" to "…working pressure of 75 psi."

18. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Part 2 Products, Paragraph 2.01 Equipment Design, F(1)(a) Filter exterior valving and piping; Automatic valving, **Add** the following to the first paragraph:

    "Equivalent quality globe valves and electric actuators in lieu of Bray Series 3W butterfly valves and Series 70 electric actuators may also be utilized as long as filter functional operations are maintained."

19. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Part 2 Products, Paragraph 2.01 Equipment Design, F(1)(d) Filter exterior valving and piping; Air/Pressure release valve, **delete** in its entirety and replace with the following:

"d. Air Release Valves (ARV) shall be installed at the top of each filter unit and sized to release up to 4.25 scfm when air is present.
e. Pressure Release Valves (PRV) shall be installed on the main filter supply/inlet feed line and on the backwash water supply line. PRVs shall have a field set adjustable set point set at 100 psi."

20. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Part 2 Products, Paragraph 2.01.Equipment Design, H(1)(a) System accessories; Filter pressure Equipment, **Add** the following sentence to the end of this paragraph:

    "Filter system may use multiple pressure transducers in lieu of a differential pressure switch provided the filter control panel has a PLC that can calculate and display the pressure drop across each filter."

21. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Paragraph 2.01.C(1) Underdrain System, **delete** in its entirety and replace with the following:

    1. "Each filter shall be furnished with a non-ferrous underdrain system designed to uniformly distribute backwash water and for collection of filtered water. The collection laterals shall be constructed of Schedule 80 PVC, stainless steel or HDPE.
        a. Laterals shall be supported from the filter tank bottom using 304 stainless steel threaded studs and clips to securely secure the laterals in place.
        b. All underdrain systems shall have at least ten (10) successful installations and comply with the most current Louisiana Sanitary Code."

22. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Paragraph 2.01.C(3) Underdrain System, **delete** in its entirety and replace with the following:

    3. "The underdrain systems are to be installed by the filter manufacturer prior to shipment or at the job site."

23. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Paragraph 2.02.E(11) Filtration Media, **delete** in its entirety and replace with the following:

    11. "All filter media shall be provided by the filter manufacturer and installed, by the filter supplier or contractor, under the direction of the filter manufacturer. After

media installation, the filter manufacturer shall certify that filter underdrain, gravel support, underdrain laterals and media were installed in accordance with the filter manufacturers recommendations."

24. Technical Specifications Section 46 61 21 Vertical Pressure Filters, Paragraph 2.01.J(1, 2 & 3) Shop Assembly, **delete** these three paragraphs in their entirety and replace with the following:

    1. "Each filter unit shall be mounted on structural steel supports and placed and properly anchored to the concrete floor. Other vertical and horizontal steel members shall be provided to anchor exterior filter piping, valves, instruments, electrical conduits and control panels. If the filter units are not skid mounted, the filter supplier shall notify and provide the contractor with written instructions of how to unload and assemble the filter units on site.
    2. The filter media, interconnecting piping, and system auxiliary equipment shall be shipped loose to the job site for installation by the filter manufacturer or contractor.
    3. All ferrous metals associated with filter unit or structural support members shall be cleaned by power wire brushing and painted with one (1) shop coat (3.0 – 5.0 mils DFT) of Tnemec 69F primer prior to assembly, one (1) intermediate cost (3.0-5.0 mils DFT) of Tnemec 161-EN15, and one (1) finish coat (2.5-5.0 mils DFT) of Tnemec 73-112GN Endura Shield ANSI #61."

25. Plan Sheet G-003, Estimated Work Quantities, Bid Item No. 5 Chemical Feed System Estimated Quantities Table, **revise** Item No. 10 to "**Peristaltic** Chemical Pump (Duplex Pump)".

26. Plan Sheet G-003, Estimated Work Quantities, Lump Sum Base Bid Item No. 7 Site Electrical and Controls System, **replace** "200 KW" with "250 KW".

27. Plan Sheet C-023, Filter Cross Section Detail, Underdrain System call-out, **replace** "Hub-curved Radial Lateral Type Polypropylene Hub Sch. 80 PVC Laterals" with "Refer to Specification Section 46 61 21 Paragraph 2.01.C(1)".

28. Plan Sheet S-001 General Notes, Note 2. Design Loading, 2A-1 Wind Load Criteria, **delete** the following line: "Basic Wind Pressure 138 MPH" and replace with the following:

"BASIC WIND SPEED:
STEEL BUILDING (RISK CATEGORY III): 135 MPH
CMU OFFICE/CHEMICAL BUILDING (RISK CATEGORY IV): 145 MPH"

29. Plan Sheets S-005 through S-010, **delete** all mentions of 2" L.W. Conc. at roof and **replace** with "22 gauge standing seam metal roof panels"

30. Plan Sheet A-007, Detail #2/A-007 Office 1 – Interior Elevation, Call-out "Chemical Room Viewing Window 1-Hour Rated Fixed Window Aluminum Frame" **replace** "1-Hour Rated" with the following:

    "3-hour fire resistance rated with W-180 fire resistance glazing meeting wall assembly criteria per ASTM test method E119 or UL 263"

31. Plan Sheet A-007, Detail #3/A-007 Office 1 – Interior Elevation, Call-out "Filter Room Viewing Window 1-Hour Rated Fixed Window Aluminum Frame" **replace** "1-Hour Rated" with "Not Fire Rated".

32. **Replace** Plan Sheet C-001 Detailed Site Plan with the attached revised Sheet C-001, revised to show adjusted location of Door #102B in Chemical Storage Room and Note 1 added to clarify required yard piping.

33. **Replace** Plan Sheet C-002 Overall Civil Site Plan with the attached revised Sheet C-002, revised to match the yard piping layout shown on Sheet C-001.

34. **Replace** Plan Sheet C-004 Filter Process Floor Plan with the attached revised Sheet C-004, revised to include the adjusted Door #102B location, to delete the Keynote No. 21, 12,000 BTU ductless mini-split a/c system, and to delete the entire Note at bottom right corner of sheet regarding A/C system.

35. **Replace** Plan Sheet C-008 Filter Building Process Cross Section with the attached revised Sheet C-008, showing the 12" magnetic flow meter at the filter effluent header pipe.

36. **Replace** Plan Sheet C-011 Chemical Facilities Plan and Elevation with the attached revised Sheet C-011, showing the revised location of Door #102B in the Chemical Feed Room, the addition of fiberglass floor grating on the chemical room floor, and the 12,000 BTU mini-split A/C system is deleted from the project.

37. **Replace** Plan Sheet S-002 Foundation Plan with the attached revised Sheet S-002, revised to include the adjusted Door #102B location.

38. **Replace** Plan Sheet S-012 Foundation Details with the attached revised Sheet S-012, showing revised Detail 9/S-012 Typical Concrete Containment Dike with additional notes.

39. **Replace** Plan Sheet S-014 CMU Wall North Elevation with the attached revised Sheet S-014, revised to include the adjusted Door #102B location.

40. **Replace** Plan Sheet A-002 Floor Plan with the attached revised Sheet A-002, revised to include Room Finish Schedule and adjusted location of Door #102B in Chemical Storage Room.

41. **Replace** Plan Sheet M-101 Mechanical Floor Plan with the attached revised Sheet M-101, showing the required installation of a backdraft gravity damper in the air duct line between the chemical storage room and office #1.

42. **Replace** Electrical Sheet E-002 Electrical Site Plan with the attached revised Sheet E-002.

43. **Replace** Electrical Sheet E-003 Existing Electrical Riser Diagram with the attached revised Sheet E-003.

44. **Replace** Electrical Sheet E-004 New Electrical Riser Diagram with the attached revised Sheet E-004.

45. **Replace** Electrical Sheet E-005 Existing Electrical One Line Diagram with the attached revised Sheet E-005.

46. **Replace** Electrical Sheet E-006 New Electrical Riser/One Line Diagram with the attached revised Sheet E-006.

47. **Replace** Electrical Sheet E-016 Conduit/Wire Schedule with the attached revised Sheet E-016.

48. **Add** the attached Electrical Sheet E-017 Generator Set and Pump Yard Enlarged Site Plan.

QUESTIONS & ANSWERS:

Question 1: Generator Specifications Section 26 32 13 Scope D 21 calls for a 1750 gal nominal subbase tank, generator is Natural Gas, is this a typo error?

Answer 1: This project will utilize a Natural Gas generator Set, and thus has no external diesel fuel storage tank. Please refer to revised Natural Gas Generator Set Specifications issued with this Addendum.

Question 2: Drawing E-004 bottom of page has 4 notes C401, C402, C501 and C601 for conduit and wire sizing however there are not referenced on E-016 Conduit and Wire Chart, please advise to sizing.

Answer 2: Revised Conduit and Wire sizes are indicated on revised electrical sheet E-016, issued with this Addendum.

Question 3: Drawing E-009 bottom of page indicates Circuit A-39 going to Generator pad Pole Light and references C501, there is nothing on pole lighting on C501 and it further states continued on electrical site plan (E-002) which only indicates wiring continuation. There is no Generator Pole Light referenced on Lighting Schedule shown on E-001, please advise.

Answer 3: Further details are included on new electrical sheet E-017, issued with this Addendum. Generator Pole Light, luminaire and circuitry are included on new electrical sheet E-017, issued with this Addendum. Contractor shall provide and install 75 KW Auxiliary Load Bank for generator set mounted on 8'x8'x6" concrete pad on grade with 6 x 12 – 0/1 highway mesh reinforcement as shown on new Sheet E-017.

Question 4: Drawing E-004 New One Line Riser from DP-1 circuit noted C111 is incorrect and should be C113, from Pump Control Panel to P2 circuit noted C113 should be C111. Please confirm.

Answer 4: Revised Conduit and Wire sizes are indicated on revised electrical sheet E-016, issued with this Addendum.

Question 5: Drawing E-004 bottom left notes above Pad Mounted Transformer calls for two 6" steel thimbles (sleeves through loft deck for 2-3-1/2" conduits for normal power and two 6" steel thimbles for 2-3-1/2 conduits for standby generator power, however the conduit sizing C103 and C105 respectively call for 4" conduits, is note in error?

Answer 5: Revised Conduit and Wire sizes are indicated on revised electrical sheet E-016, issued with this Addendum. Please note that a 3-1/2" conduit has a coupling which has a 5"(+/-) OD, which can pass through a 6" ID steel sleeve, if need be.

Question 6: Drawing E-004 indicates thimbles through loft floor for 4 additional conduits, not sized, coming from generator and going to ATS, need conduit and thimble sizing?

Answer 6: Revised Conduit and Wire sizes are indicated on revised electrical sheet E-016, issued with this Addendum. Please note that conduits have a coupling which has a larger OD than the stated conduit size, and the larger steel sleeves allow the couplings to pass through, if need be.

Question 7: Drawings E-003 and E-005 show existing Electrical One Line Drawing which appear to be the same just different views; is this service to remain active since there are no demolition of electrical equipment shown on any drawings?

Answer 7: Refer to the attached revised electrical drawings which show temporary electrical feeder to operate well pumps during construction of filter building.

Question 8: Drawing E-002 Electrical Site plan has a note at top center of page indicating the routing of primary conduits for power company use to extend to West property line; Overall Site Plan C-002 indicates two sets of existing Power Company Lines extending from the poles at West end of Property are we to

run to one of these existing poles and has service availability been verified? Are the existing power lines and the fiber line to stay active?

Answer 8: On the revised Electrical Siteplan sheet E-002 issued with this Addendum, the two new 6" schedule 80 PVC conduits for power company new primary conductors for the new padmount transformer are indicated to be run to the power company **south** wood primary pole (revision note on this sheet E-004). This proposed plan was discussed on-site with a CLECO engineer a year ago, BUT, has not been "revisited" yet for a final resolution. The existing power lines and fiber optic lines are to remain active, modified as needed to maintain services during construction. A clarification note will be issued separately as a part of this Addendum.

Question 9: Section 1.05.B, confirm if filter pressure rating is 100 psi, or if operating pressure is 100 psi. If operating pressure is 100 psi then rating should be 125 psi.

Answer 9: Refer to Specification Section 46 61 21 Vertical Pressure Filters. Filters shall be rated for 100 psi, ASME code compliant. Normal maximum working pressure is estimated to be 75 psi.

Question 10: Section 2.01.C, request to substitute PVC hub and straight laterals in lieu of curved laterals?

Answer 10: Refer to Specification Section 46 61 21 Vertical Pressure Filters. We have no problems with other types of underdrains as long as the underdrains have at least ten (10) successful installations and comply with the most current Louisiana Sanitary Code.

Question 11: 2.01.C.4, request to substitute pre-manufactured underdrain laterals and nozzles in lieu of custom-made underdrain equipment in the shop of the system manufacturer.

Answer 11: Refer to Specification Section 46 61 21 Vertical Pressure Filters. We have no problems with other types of underdrains as long as the underdrains have at least ten (10) successful installations and comply with the most current Louisiana Sanitary Code.

Question 12: Section 2.01.D, request to substitute a single layer of 1/4" x 1/8" gravel underbedding in lieu of the (5) layer gravel support bedding specified.

Answer 12: Refer to Specification Section 46 61 21, Paragraph 2.01.D for gravel support bedding requirements.

Question 13: Section 2.01.F.d, Air relief and pressure relief valves are different pieces of equipment. Clarify if both are to be provided and where (e.g. per vessel, on inlet header only, etc.)

Answer 13: Refer to Specification Section 46 61 21 Paragraph 201.F(1)(d), revised herein.

Question 14: Section 2.01.H, Suggest to use PT's instead of DP switch, as this information will be more detailed and useful on the HMI.

Answer 14: Refer to Specification Section 46 61 21 Paragraph 201.H(1)(a), revised herein.

Question 15: Section 2.01.J, Request to allow the filter tanks to be directly mounted to the floor in lieu of providing the filters on skids.

Answer 15: Refer to Specification Section 46 61 21 Paragraph 201.J(1), revised herein.

Question 16: Section 3.04.F, Request to substitute manual globe valves for installation in the waste line to control flows in lieu of electric actuators.

Answer 16: Refer to Specification Section 46 61 21 Paragraph 2.01.F(1)(a), revised herein.

Question 17: System piping: The specifications indicate flanged ductile iron piping for the filters, but the drawings (Sheets C-004, C-007, C-008, C-023) indicate PVC pipe and fittings for the units with Ductile Iron piping to and from the filters. The drawing mentions "Sample Filter System Shown", and it contains what appears to be PVC piping and fittings. Could you please request clarification on the desired piping material desired?

Answer 17: Filter face piping shall be as specified in Section 46 61 21, Section 2.01.G.

Question 18: Underdrain distributors: The specifications call out polypropylene hub/PVC curved radial lateral underdrains while the drawings indicate a header/lateral type underdrain with gravel underneath the laterals.

Answer 18: Refer to Specification Section 46 61 21 Paragraph 2.01.C(1), revised herein.

Question 19: Junction Boxes: The specification indicates that the junction boxes are remote mounted and drawings indicate that the boxes are 5'-6" A.F.F. We're assuming that the boxes would be mounted on the rear of the units at that 5'-6" elevation and will sit below the walkway. Please confirm.

Answer 19: Correct. The electrical junction boxes are shown on Sheet C-004 to be mounted below the walkway at 5'-6" above the finished floor.

Question 20: Can you please verify that Mark 102C is meant to be fire rated as in the door schedule? There are no information in the spec stating it should be fire rated.

Answer 20: Yes, overhead coiling metal door #102C in the chemical storage room shall be 3-hour fire rated.

Question 21: Please confirm that all Construction Testing is By the Contractor per Section 21.02 of the General Conditions and Section 01 45 29.

Answer 21: All construction testing shall be as specified in Specification Section 01 45 29.

Question 22: Per the Agreement 6.C, Force Majeure – What is the Remedy for an Act of God or Force Majeure, the paragraph states that neither party shall be liable for any delay or failure in performance beyond it's control. Please confirm that this means in the event something happens out of the control of the contractor, ie: Global Pandemic, Supply Shortages, etc. and delays the project, that there is no remedy whatsoever to the contractor? Does this include no additional days?

Answer 22: Contract time will be adjusted per the Parish's discretion due to Act of God or Force Majeure.

Question 23: Section 12 – Other ARPA Funded Projects we have seen only require Davis-Bacon if the project exceeds 10 Million dollars, we don't see that language in these documents. Typically if it is soley ARPA funded this applies. Please confirm the Note on Sheet 92 of the pdf that states no Davis-Bacon is required.

Answer 23: No Davis-Bacon Act is required as detailed in Section 12.

Question 24: Please confirm that a Pre-Engineered Metal Building, Signed and Sealed by a LA-PE to meet the requirements for wind, loading, etc., will be an acceptable alternative to the Structural Steel Building as-designed.

Answer 24: Pre-Engineered Metal Building with Louisiana Professional Engineer's Stamp is acceptable provided the design conforms to the general notes on Plan Sheet S-001.

Question 25: Will the Owner Waive the Building Permit Fees for this project?

Answer 25: No.

Question 26: Please confirm that Termite Treatment and Certification is required for this project.

Answer 26: Termite treatment, inspection and certification will be required by the building permit.

Question 27: Please confirm Canopy Materials – Specs and Drawings call for different Material one calls for Steel and one calls for Aluminum. Please Clarify.

Answer 27: Aluminum canopies are acceptable per Section 2.6 of Specification Section 10 73 26 as shown herein.

Question 28: Please issue a finish schedule for Rooms 101, 102, 103, 104 & 105.

Answer 28: Refer to Finish Schedule on revised Plan Sheet A-002, added by addendum herein.

Question 29: There is a huge discrepancy between the structural and architectural plans in regard to the building itself. The Structural Drawings are showing a structural framed building with lightweight concrete roof while the Architectural Drawings are showing a typical PEMB. Spec 13 34 19 is a Pre-Engineered Metal Building Spec. Please clarify whether we are to follow the Structural or Architectural drawings & Spec for the building itself.

Answer 29: Follow the Structural Drawings for all load requirements. A PEMB system is allowed as an alternate to the building shown in the Structural Drawings per Answer #24 above. The metal building roof system shall be 22 gauge standing seam metal roof with concealed fasteners.

Question 30: Clarify Backwash Water Source.

Answer 30: The backwash water source is the filtered effluent/elevated water tank on site.

Question 31: Please confirm the rebar sizing in the CMU Block, A/S-014 Shows No. 4 at 16" OC, Sheet S-015 – Detail B Shows No. 6 at 48" and the Bond Beam Detail Shows No. 5 at 16" OC.

Answer 31: Vertical Reinforcement for CMU Blocks shall be #4 bars at 16" O.C. Bond Beam reinforcement shall be two (2) #6 horizontal bars and #4 stirrups at 12" O.C.

Question 32: Can we get some design clarification on the PEMB Design Loads, there seems to be some major discrepancy between the PEMB Spec and the ASCE requirements: Please clarify the following:

Answer 32:

Building Code: ASCE 7-22 and IBC 2021.
Wind speed: Steel Building (Risk Category III): 135 mph
CMU office/chemical building (Risk Category IV): 145 mph
Seismic Loads:
Category III: $S_S = 0.12$, $S_1 = 0.066$, $S_{MS} = 0.16$, $S_{M1} = 0.14$, $S_{DS} = 0.11$, $S_{D1} = .095$
Category IV: $S_S = 0.12$, $S_1 = 0.066$, $S_{MS} = 0.16$, $S_{M1} = 0.14$, $S_{DS} = 0.11$, $S_{D1} = .095$
ASCE 7-22 Effective Seismic Weight 25% of 250 PSF Floor Load
Collateral load: 3 psf.
Roof load: 20 psf live load applied to horizontal roof projection. 28 psf total roof dead load.
Snow load: Included in the 10 psf miscellaneous roof dead load per Sheet S-001 Note 2. Design Loading
Deflections. Roof Deflection: L/240 where L is the effective length.

Question 33: Is deviation from the AML allowable as long as it is of equal quality or greater with regard to valves, instruments, etc.?

Answer 33: Equal products are acceptable in accordance with Section 08 General Conditions Paragraph 13.04.

Question 34: Section - 2.01 F.1.a. Automatic Valving, for the Automated Valves:
What is the S70 Electric Actuator's Voltage? 120v / 230v?

Answer 34: These are described in Paragraph 2.01 I(5) of the specification.

Question 35: Qty of each size 3W Butterfly Valve with S70 Electric Actuator?

Answer 35: Bidder is required to do their own material take offs as shown on the drawings or defined in the specifications.

Question 36: Qty of each size 3W Butterfly Valve with Manual Gear Operator?

Answer 36: Bidder is required to do their own material take offs as shown on the drawings or defined in the specifications.

Question 37: Would the client consider standard air actuated butterfly valves or Aquamatic type diaphragm valves in lieu?

Answer 37: No.

Question 38: Section - 2.01 G.1.a-c. Filter System Piping. Is threaded galvanized piping acceptable?

Answer 38: No. External filter piping shall be as defined in Paragraph 2.01 G.

Question 39: Section - 2.01 H System Accessories. States each filter inlet shall have a Rosemount 8750WA Magnetic Flowmeter.....Request for clarification: The P&ID indicates FIT on filtered water backwash inlet header. I don't see the FIT on the inlet piping of each vessel?

Answer 39: Refer to the P&ID on Plan Sheet C-006. There is a Magnetic Flowmeter on each filter discharge (total of 4), denoted as FE-12, FE-22, FE-32 and FE-42. Flow entering a filter tank is regulated by adjusting the inlet valves (CV-11, CV-21, CV-31 and CV-41). Since flow leaving the filter tank is equal to the flow entering the filter tank, the individual filter flow rate is monitored using FE-12, FE-22, FE-32 and FE-42.

Question 40: Section - 2.01 F.1.a Automatic Valving. Are these On/Off or Modulating Applications?

Answer 40: All electrical motorized valves are On/Off type valves (not modulating) with limit switches. The limit switches will be set to regulate flow.

Question 41: Can we get the reduction in pipe size on the layout drawing? There is an astronomical pipe sizes called out for the pipe coming into it but for some reason made the inlet and outlet headers different sizes.

They have the inlet header as 14"?? It's 800 gpm System flow which fits well within a 8 inch pipe size. Is this acceptable?

Answer 41: Filter Inlet Pipe shall be 14" diameter per the drawings.

Question 42: Can we clarify where the Backwash Water is coming from?

Answer 42: Refer to Answer #30 above.

Question 43: I have questions about this design/schedule and want to confirm before we go all in on a VRF/LEV split. The schedule has Daikin model RXYQ which is a VRV model / indoor blower coil. HOWEVER, the spec reads like a standard 6 ton heat pump CU. (SEE ATTACHED) And, the schedule says SCROLL compressor. Can we just verify what he actually wants? Also note that a zillion manufacturers are listed and some that don't even Do VRF. They also have a "Semi custom" AHU spec however the model scheduled is a Daikin blower coil like our BCHD. Just very confusing on what they want.

Answer 43: The design is based on the unique issues caused by the environment the unit is operating in. The outside air requirements are higher than a normal design and require a semi-custom AHU to meet the EAT / LAT, the latent capacity and total capacity. The condensing unit was selected to provide a higher efficiency which can be used in a VRF style unit or a traditional split system. Overall, the system would have to meet the capacities noted on the mechanical drawings and within the specifications.

Question 44: Specs calling IBC 2015. Drawings 2021 and the wind speed from 130 to 138. Also Risk Cat III which do I follow.

Answer 44: Refer to Answer #32 above.

Question 45: Specs are calling out 20 ga ribbed roof panels and the drawings are calling 22ga Standing seam. Which do I follow.

Answer 45: Roof panels shall be 22 gauge standing seam metal panels with concealed fasteners per Specification Section 07 41 13.

Question 46: Specs are calling 26ga wall panels and drawings are calling 22ga wall panels. Which do I follow.

Answer 46: Exterior wall panels and interior wall panels shall be per Specification Section 07 42 00.

Question 47: What will the roof collateral load be on the project?

Answer 47: Refer to Answer #32 above.

Question 48: Is the 20PSF roof live load reducible per code?

Answer 48: No live load reduction will be allowed for this project.

Question 49: Page 366 in division 13 of the spec calls out 20 ga roof panels and 26 ga wall panels in a special color. This differs from what is called for panels in division 7.

Answer 49: Refer to Specification Sections 07 41 13 and 07 42 00 for required roof and wall panels.

Question 50: Would MBCI Superlok panel be an approved equal to the Berridge Cee lok roof?

Answer 50: MBCI Superlok standing seam metal roof panels with concealed fasteners are acceptable provided all performance requirements are met.

Question 51: Would MBCI 7.2 panel be an acceptable equal to the Berridge M panel?

Answer 51: MBCI 7.2 wall panels are acceptable provided all performance requirements are met.

Question 52: Are roof and wall panels to be produced from aluminum or steel? Division 7 seems to call out both.

Answer 52: Roof and wall panels shall be steel construction.

Question 53: All members are sized including primary and secondary on the structural drawings. With PEMB being delegated design I can hold my framing to these depths shown but not exact members as the drawings show. It seems this might be more cost effective to provide a structural package from a fabricator than a PEMB since this has been designed fully.

Answer 53: Refer to Answer #29 above.

Question 54: Page S-005 of the drawings calls out 1.5 type B roof deck with 2" lightweight concrete but the architectural drawings make no reference to this. Will this be a standing seam roof or a B deck roof with concrete?

Answer 54: Refer to Answer #29 above.

Question 55: Page S-001 calls out IBC 2021 with a 138 wind speed but IBC 2015 is referenced multiple times in the division 13 specs with a 130MPH wind speed.

Answer 55: Refer to Answer #32 above.

Question 56: Page S-001 calls out IBC 2021 and ASCE 7-22. IBC 2021 would use ASCE 7-16 however and not ASCE-7-22.

Answer 56: Refer to Answer #32 above.

Question 57: S-003 shows HSS 5x4 Tubes running from purlin to purlin at 4'-0" O.C. This is something I have not seen before and I want to ask what the reason is for the Tubes?

Answer 57: The HSS members reinforce the purlins in the lateral direction to provide additional bracing.

Question 58: What is the risk category for the building?

Answer 58: The Filter Building is comprised of two (2) independent buildings, the 64'x14' CMU building and 64'x54' metal building, each with a different risk category. Refer to Answer #32 above.

Question 59: Door type C1 on A-001 shows no door lite. Detail 3 on A007 shows door lite in door C1. Do doors C1 need to have door lite, if so, do they need to be fire rated.

Answer 59: Door #103B in Office #1 shall include a door lite window and is not fire rated. All other type C1 doors will be solid with no door lite. Doors 102A, 102B, and 102C in the Chemical Storage Room shall be 3-hour fire rated. All other doors do not have a fire rating.

Question 60: Aluminum window specification does not call for fire rating. Detail 2 & 3 on A-007 calls for 1-hour rated. Is rating required?

Answer 60: Window between Chemical Storage Room and Office #1 (Rooms 102 and 103) shall be 180-minute (3-hour) fire resistance rated with W-180 fire resistance glazing meeting wall assembly criteria (ASTM test method E119 or UL 263) in accordance with NFPA 101 Chapter 8.3. Window in Office #1 between Office #1 and Filter Room is not fire rated.

PRIOR APPROVAL REQUESTS:

1. Request for prior approval of Generac Industrial Power Model SG250 for the 250 KW emergency generator set for the project.

   Response:

   "The Generac Generator Set and ASCO ATS w Bypass Switch are acceptable for bidding, as submitted with the Supplemental Info as provided by Generac on 08/28/24, provided the Engineer response answers in the attached Supplemental Info (pages 1-2) are acceptable to the Generac Vendor."

2. Please see our lighting prior approval request attached.

   Approved Products:

Type	Manufacturer	Model Number
F1	Day Brite	HCY2833L8CST-UN3-DIM
F2	Emergi Lite	CCC-2LED-R-#3
F3	Emergi Lite	NYLED-2-N
F4	Stonco	WP100-SCT-G2-10-BZ
F5	Day Brite	2SML45L840-2-FS-19F-UNV-DIM
F6	Day Brite	V2WAE70L840-8-UNV

ATTACHMENTS:

1. Pre-Bid Meeting Minutes and Sign-in Sheet
2. Revised Specification Section 26 05 00 Electrical General Provisions
3. Revised Specification Section 26 05 19 Conductors and Cables
4. Revised Specification Section 26 05 33 Raceways and Boxes
5. Revised Specification Section 26 27 26 Wiring Devices
6. Revised Specification Section 26 32 13 Standby Power System Natural Gas Generator Set
7. Revised Plan Sheet C-001 Detailed Site Plan
8. Revised Plan Sheet C-002 Overall Civil Site Plan
9. Revised Plan Sheet C-004 Filter Process Floor Plan
10. Revised Plan Sheet C-008 Filter Process Cross Section
11. Revised Plan Sheet C-011 Chemical Facilities Plan and Elevation
12. Revised Plan Sheet S-002 Foundation Plan
13. Revised Plan Sheet S-012 Foundation Details
14. Revised Plan Sheet S-014 CMU Wall North Elevation
15. Revised Plan Sheet A-002 Floor Plan
16. Revised Plan Sheet M-101 Mechanical Floor Plan
17. Revised Electrical Sheet E-002 Electrical Site Plan
18. Revised Electrical Sheet E-003 Existing Electrical Riser Diagram
19. Revised Electrical Sheet E-004 New Electrical Riser Diagram
20. Revised Electrical Sheet E-005 Existing Electrical One Line Diagram
21. Revised Electrical Sheet E-006 New Electrical Riser/One Line Diagram
22. Revised Electrical Sheet E-016 Conduit/Wire Schedule
23. **Added** Electrical Sheet E-017 Generator Set and Pump Yard Enlarged Site Plan
24. Generac Supplemental Info

<< End of Addendum #2>>

MEETING MINUTES
St. Tammany Parish
Diversified Water Well Pretreatment System
Project No. TU23000181
Bid No. 24-35-2
Pre-Bid Conference
Wednesday, August 7, 2024, 2:00 PM
St. Tammany Parish Government Office Complex, Building "B"
21454 Koop Drive, Mandeville, LA 70471

1. Project Description and Location

   - This is St. Tammany Parish Department of Utilities Project No. TU23000181, Bid No. 24-35-2. The project includes the following: Contractor to furnish and install potable water filtration system, piping, equipment, controls, and accessories. Furnish and install chemical feed equipment and pumps. Construction of steel and concrete masonry unit filter/chemical storage building. Replacement of existing water well pumps and piping.

   - Project Location: The work area is located at the Diversified Water Well Site, located at 329 Diversified Blvd. Madisonville, LA 70447 (next to the Diversified Foods Plant).

   - Project Classification: Municipal and Public Work Construction

   - Contract Time: 240 calendar days.

   - Construction Cost Estimate: $4,027,290.

2. Schedule of Events*

Inquiry Deadline:	August 19, 2024	2:00 PM (CT)
Addendum Deadline:	August 23, 2024	2:00 PM (CT)
Bid Opening:	August 28, 2024	2:00 PM (CT)

**Parish reserves the right to revise schedule by addendum*

3. Bid Documents

   - This bid package is available online at www.bidexpress.com or LaPAC https://wwwcfprd.doa.louisiana.gov/osp/lapac/pubmain.cfm. It is the Vendor's responsibility to check Bid Express, or LaPAC frequently for any possible addenda that may be issued. The Parish is not responsible for a Vendor's failure to download any addenda documents required to complete a submission.

   - Bids for this project will be received up to 2:00 PM on Wednesday, August 28, 2024. Any bids received after 2:00 PM will not be opened. Bids will be received at 21454 Koop Dr., Suite 2-F, Mandeville, LA 70471 from each bidder or his agent and given a written receipt, by certified mail with return receipt requested, or electronically at www.bidexpress.com.

- Bidder's Checklist: Sealed bids must contain all of the required attachments, with forms completed, and signatures where required.

4. Issuance of Addenda

- Although questions may be asked and spontaneous answers may be given at the meeting today, questions must still be submitted in writing to the Procurement department and the official responses will be given in writing via addendum. All previously submitted questions will also be answered via addendum.

- All technical questions or inquiries shall be made in writing to the St. Tammany Parish Department of Procurement via fax to 985-898-5227, or via email to Procurement@stpgov.org. The last day to submit questions and/or verification on comparable products will be no later than 2:00 pm CST, on August 19, 2024, seven (7) working days prior to the opening date of the bid/proposal due date. Any questions or inquiries received after the required deadline to submit questions or inquiries will not be given consideration.

5. Additional topics

- This project is federally grant funded and therefore requires the Contractor to have a Unique Entity Identification number (UEI). The Contractor should submit with their response their UEI number. If the Contractor does not have a UEI already, then they must register at the below link before an award can be made.

  https://sam.gov/content/entity-registration

6. Contractor Questions

St. Tammany Parish Government
Office Complex, 21454 Koop Dr.
Mandeville, LA 70471

Non-Mandatory Pre-Bid Sign-In Sheet

August 7, 2024; 2:00 PM

Diversified Water Well Pretreatment System; BID No.: 24-35-2

Page:

Name	Company	Email	Phone
Bob Moeinian	STP Gov.	BMoeinian@STPgov.org	985-893-1717
Sean Weick	Cycle Construction	estimating@cycleconstruction.com	504-467-1444
Trey Eppes	Culligan / Delta Angelica Inc.	teppes@yourculligan.com	830-237-9802
Matt Hahn	BBEC, LLC	mhahn@bbecllc.com	504-828-0030
Jeff Bonura	BBEC, LLC	jbonura@bbecllc.com	504-828-0030
Melissa Falley	Command Construction, LLC	Michelle@Commandindustries.com	504-232-3518
Hunter Wolford	Wolford Construction	wolfordconstruction@gmail.com	504-715-8615

REVISED

SECTION 26 05 00

ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: The general provisions of the Contract, including General and Supplementary Conditions, and Division 1 -General Sections included in DIVISION 26 Specifications are as follows:

SECTION 26 05 00 - ELECTRICAL GENERAL PROVISIONS
SECTION 26 05 01 - ELECTRICAL RELATED WORK
SECTION 26 05 19 - LOW VOLTAGE ELECTRICAL CONDUCTORS AND CABLES
SECTION 26 05 26 - GROUNDING
SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
SECTION 26 05 33 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
SECTION 26 05 53 - ELECTRICAL IDENTIFICATION
SECTION 26 05 83 - ELECTRICAL CONNECTIONS FOR EQUIPMENT
SECTION 26 22 13 - LOW-VOLTAGE TRANSFORMERS
SECTION 26 24 16 - PANELBOARDS
SECTION 26 27 26 - WIRING DEVICES
SECTION 26 28 13 - OVERCURRENT PROTECTIVE DEVICES
SECTION 26 28 16 - CIRCUIT DISCONNECTS
SECTION 26 29 15 - PUMP CONTROL PANEL
SECTION 26 32 13 - STANDBY POWER SYSTEM GAS GENERATOR SET
SECTION 26 51 00 - LIGHTING
SECTION 40 63 00 - SCADA EQUIPMENT

1.02 DESCRIPTION OF WORK:

A. This Section specifies several categories of provisions for electrical work, including: (1) Certain adaptive expansions of requirements specified in DIVISION 1, (2) General performance requirements within the electrical systems as a whole, and (3) General work to be performed as electrical work because of its close association.

B. These Specifications and accompanying Drawings are intended to describe complete workable systems of the various types. Items of materials, work, or equipment not mentioned but normally necessary for the proper execution of this work, shall be provided as if specifically called for, at no additional cost to the Owner.

1.03 SUMMARY OF ELECTRICAL WORK:

A. Drawings: Refer to the Electrical Drawings for graphic representations, schedules and notations showing electrical work.

1. The Drawings show approximate locations only of feeders, branch circuits, outlets, etc., except where specific routing or dimensions are indicated. The Engineer reserves the right to make reasonable changes in locations indicated before roughing in without additional cost to the Owner.

2. Because of the small scale of the Drawings, it is not possible to indicate all of the
offsets, fittings, and accessories required. The Contractor shall investigate the structural and finish conditions affecting his work and shall arrange such work accordingly, furnishing fittings, bends, junction boxes, pull boxes, access panels, and accessories required to meet such conditions.

B. Specifications:

1. Refer to the DIVISION 16 sections for the primary technical specifications of electrical work .

2. General Outline: This section of the specifications covers furnishing materials, equipment, constant competent supervision, special tools, test equipment, technicians, and labor necessary for installation of a complete working electrical system, all as indicated on the plans of in these Specifications.

C. Scope:

1. Under this part of the contact, electrical facilities will be constructed in association with THE DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM

2. The work shall include but not necessarily be limited to the following:

a. Electrical duct banks, cables, PULLBOXES, etc.
b. Power distribution systems - feeder & branch circuits, panels, wiring, transformers, devices, disconnect switches, etc.
c. Installation and / or wiring connections of integral part of equipment furnished under other Divisions.
d. Power wiring and connections of mechanical equipment and Instrumentation equipment.
e. Electrical Service Entrances.
f. Grounding systems.

g. Raceway systems.
h. Lighting systems-fixtures / lamps / auxiliaries wiring / connections / etc.
i. SCADA system raceways and auxiliary devices.
j. Installation and / or wiring connections of Owner supplied equipment (if any).
k. Temporary electrical services for construction.
l. All required sleeves, thimbles, anchors, hangers, bolts, miscellaneous structural steel, cutting, etc., for the complete installation of the electrical systems serving the building.
m. 250KW Natural Gas Generator Set, with ATS/BYPASS Switch, and Auxiliary Load bank
n. Temporary 480 volt bypass power to pumps before building construction begins

1.04 COORDINATION OF ELECTRICAL WORK:

A. General: Refer to the DIVISION 1 sections for general coordination requirements applicable to the entire work. It is recognized that the contract documents are diagrammatic in showing certain physical relationships which must be established within the electrical work, and in its interface with other work including utilities and mechanical work, and that such establishment is the exclusive responsibility of the Contractor.

B. Arrange electrical work in a neat, well organized manner with exposed conduit and similar services running parallel with primary lines of the building construction, and with a minimum of 8’-0” overhead clearance or as directed by the Engineer.

C Advise other trades of openings required in their work for the subsequent move-in of large units of electrical work (equipment).

D. Submit coordination drawings prior to purchase-fabrication-installation of any of the elements involved in the coordination.

E. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

F. Refer to equipment specifications in Divisions 2 through 15 for rough-in requirements.

G. Verify all dimensions by field measurements.

H. Arrange for sleeves, slots, and openings in other building components to allow for electrical installations.

I. Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed.

J. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing-in the building.

K. Coordinate the cutting and patching of building components to accommodate the installation of electrical equipment and materials.

L. Where mounting heights are not detailed or dimensioned, install electrical services and overhead equipment services and overhead equipment to provide the maximum headroom possible.

M. Install electrical equipment to facilitate maintenance and repair or replacement of equipment for ease of disconnecting, with minimum of interference with other installations.

N. Coordinate connection of electrical systems with exterior underground utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

O. Coordinate connection of electrical systems with exterior underground utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

1.05 TEMPORARY ELECTRICITY:

A. Furnish and install all necessary temporary power, metering, lighting or wiring that is required to insure quality workmanship everywhere.

B. Furnish and install area distribution boxes so located that the individual trades may use their own construction-type extension cords to obtain proper power and artificial lighting at all points where required by inspectors and for safety.

1.06 QUALITY ASSURANCE, STANDARDS:

A. General: In addition to standards specified in individual work sections, the following standards are imposed, as applicable to the work in each instance:

<u>NFPA 70, National Electrical Code</u>

The electrical installation shall conform to the requirements of the 2023 edition of the National Electrical Code (NEC-NFPA 70).

NEMA/ANSI/ASTM

Electrical material shall be built and tested in accordance with the applicable standards of the National Electrical Manufacturer's Association (NEMA); the American National Standards Institute (ANSI); and the American Society of Testing and Materials (ASTM).

Underwriters' Laboratories (UL)

Electrical materials shall be new and unused and shall be listed, inspected, approved and labeled by Underwriters' Laboratories, Inc., where such labeling service is available.

NFPA-101, Life Safety Code

OSHA Code of Federal Regulations (for construction practices)

Applicable state and local codes/ordinances.

B. Manufacturers: Only firms regularly engaged in manufacture of electrical products of types required, whose products have been in satisfactory use in similar service for not less than 3 years, shall be utilized.

C. Installers Qualifications: Only firms with at least 5 years of successful installation experience on projects with electrical work similar to that required for this project.

1.07 ELECTRICAL SUBMITTALS:

A. Refer to the Conditions of the Contract (General and Supplementary) and Division 1 Section: SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES for submittal definitions, requirements, and procedures.

B. Submittal of shop drawings, product data, and samples will be accepted only when submitted by the Contractor. Data submitted from subcontractors and material suppliers directly to the Engineer will not be processed.

C. ELECTRICAL SUBMITTALS: Submit to the Engineer for review, complete descriptive and dimensional data on the following materials which Contractor proposes to use. (Comply with Section 01340).

1. Panelboards
2. Lighting Fixtures

3. Fuses and circuit breakers
4. Transformers
5. Lamps
6. Safety Switches
7. Circuit Breakers
8. Wiring Devices
9. Motor Controls
10. Automatic Transfer Switche with Bypass
11. Conductors
12. Main Switchgear
13. Conduits
14. Pullboxes
15. SCADA Equipment: Enclosure, PLC with I/O, UPS, radio or cell modem as indicated, antenna, cables
16. Conduit Expansion Fittings and Bonding Straps, where indicated
17. Wood Pole for sitelight
18. Rough Sawn treated pole line timbers, if used, and associated hardware
19. Roof system over service equipment, where indicated
20. Grounding clamps and devices
21. NATURAL GAS generator set, with ATS/Bypass Switch, and auxiliary load bank
22. PUMP CONTROL PANEL with Soft Start Controllers
23. Start/Stop switches and Motor Winding Heater disconnects at two Well Pump Motors

D. Corrections or comments made on shop drawings during the review do not relieve the Contractor from compliance with requirements of the Contract Documents, Plans and Specifications. Shop Drawings will be checked for general conformance wit hthe design concept of the project and general compliance with information given in the contract documents. Review of Shop Drawings shall not relieve the Contractor from responsibility for confirming and correlating all quantities and dimensions, coordinating work with that of all other trades, and performing work in a safe and satisfactory manner. Review of shop drawings shall not permit any deviation from Plans and Specifications. Shop Drawings must be accompanied by signed statement from contractor, stating that he has reviewed the submittal and checked it for compliance.

E. See Section 01340 - Submittals, for number of copies of shop Drawings to be submitted.

1.08 PRODUCT OPTIONS AND SUBSTITUTIONS:

A. Refer to the Instructions to Bidders, Specification Section 00100, for requirements in selecting products and requesting substitutions.

B. Any item not specified herein but submitted for approval as a substitute for the specified item shall be accompanied by manufacturer's documentation stating/illustrating the following applicable information in addition to the specific information requested in other sections:

1. Dimensions/weight.

2. Electrical ratings-voltage, amperage, short circuit capability, etc.

3. Construction - gauge of steel/aluminum, paint finish/application method, color NEMA type, etc.

4. Warranty.

5. Local manufacturer's representative or nearest stocking distributor.

6. Length of time the product has been available to the public.

1.09 DELIVERY, STORAGE AND HANDLING:

A. Deliver products to project properly identified with names, model numbers, types,
grades, compliance labels, and similar information needed for distinct identifications, adequately packaged and protected to prevent during shipment, storage, and handling.

B. Store equipment and materials at the site, unless offsite storage is authorized in writing. Protect stored equipment and materials from damage.

C. Coordinate deliveries of electrical materials and equipment to minimize construction site congestion.

1.10 RECORD DOCUMENTS:

A. Refer to the Division 1 Section 01720 for requirements. The following paragraphs supplement the requirements of Division 1.

B. In addition to the information required by Division 1 for Maintenance Data, include the following information:

1. Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.

2. Manufacturer's printed operating procedures to include start-up, break-in, routing and normal operating instructions; regulation, control, stopping, shut-

down, and emergency instructions; and summer and winter operating instructions.

3. Maintenance procedures for routing preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.

4. Servicing instructions and lubrication charts and schedules.

1.11 WARRANTIES:

A. Refer to the General Conditions for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.

B. Compile and assemble the warranties specified in Division 26, into a separated set of vinyl covered, three ring binders, tabulated and indexed for easy reference.

C. Provide complete warranty information for each item to include product or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

1.12 CLEANING:

A. Refer to the Division 1 Section: PROJECT CLOSEOUT or FINAL CLEANING for general requirements for final cleaning.

B. Clean and restore to original finish all equipment prior to final acceptance.

1.13 GUARANTEE:

A. The work installed shall be kept in perfect working order for one year from date of final written acceptance of the project, said guarantee to be based upon defective materials and/or workmanship. Furnish free of cost to the Owner materials and labor necessary to comply with this guarantee.

1.14 WIRING FOR EQUIPMENT BY OTHERS:

A. Electrical service for all equipment furnished under this Specification shall be roughed-in and connected under this Section. It is the responsibility of the Contractor to obtain correct roughing-in dimensions and requirements for this equipment.

B. Owner supplied equipment, when furnished as part of the project, shall be connected electrically. Connection/interconnection of that equipment shall be part of DIVISION 26 00 00 and shall comply with other DIVISION 26 00 00 Basic Material and Methods Sections.

C. Under other DIVISIONS, unless otherwise noted, equipment will be furnished such as: Motors, flow meters, pressure switches, etc. Connection/interconnection of that equipment shall be part of DIVISION 26 00 00 and shall comply with other DIVISION 26 00 00 Basic Material and Methods Sections.

D. Apparatus required for pump or motor controls will be furnished as specified under DIVISION 15 - Mechanical Work, unless indicated otherwise. Control wiring shall be furnished and installed as work under DIVISION 26 Electrical.

1.15 INSTALLATION OF EQUIPMENT SUPPLIED BY OWNER:

A. Electrical service for all equipment furnished by Owner shall be rough-in and connected under this Section. It is the responsibility of the Contractor to obtain correct roughing-in dimensions and requirements for this equipment.

B. Contractor shall provide all conduit and wiring to interface the pumps/motors with the related control devices as required. It shall be the Contractors obligation to request and obtain all shop drawings and wiring requirement from the Owner for the Owner provided items.

1.16 TESTS AND BALANCING:

A. At such times as the Engineer directs, the contractor shall conduct operating tests to demonstrate that the electrical systems are installed and will operate properly and in accordance with the requirements of this Specification. Tests shall be performed in the presence of the Engineer’s representative. The Contractor shall furnish instruments and personnel required for such tests.

B. Contractor shall perform tests in the presence of the Engineer to show that the power and lighting loads are equally divided among phases of feeders serving each piece of equipment and each panelboard.

C. Any work and materials tested and found varying from the requirements of the Drawings and Specifications shall be replaced by the Contractor without additional cost to the Owner.

D. This requirement is in addition to specific tests such as high-potential tests, meggar test, phasing tests, generator testing, etc. which may be called for in other sections.

1.17 WORKMANSHIP:

A. Install all materials and electrical components of the work in accordance with instructions of manufacturer following the best modern construction practices and conforming with the Contract Documents. Workmanship shall be first class, in both function and appearance, whether finally concealed or exposed and shall be performed by experienced workmen skilled in the type of work. As practicable, the lines of all components of the system shall be perpendicular or parallel. In general, workmanship shall conform to guidelines set for the in N.E.C.A. manuals.

1.18 SAFETY:

A. It shall be the Contractor's responsibility to do all things necessary in the pursuit of the installation or testing to provide safe conditions in which to work.

1.19 MOUNTING HEIGHTS:

A. Unless otherwise noted on the Drawings or required by the Engineer, the following mounting heights shall apply.

B. Upon approval of the Engineer, mounting heights may be adjusted.

C. Heights of Outlets - all heights measured from finished floor to centerline of device.

1. Wall Switches	46"
2. Receptacle Outlet	48", unless indicated otherwise

D. Heights of Disconnect Switches, Protective Devices, Controllers, etc.

E. The mounting height of disconnect switches, circuit breakers, motor controllers, push button station, and other similar devices and equipment will vary depending upon location and whether individually or group mounted. For convenience and safety, operating levers, handles or buttons shall be mounted no more than 80 inches above the finished floor line. Mount specifically as indicated when mounting height dimensions are given.

F. Individual devices or pieces of equipment unless otherwise specified, shall be located so that the operating handle, lever or button is located approximately 5'-0" above the finished floor line.

G. Panelboards shall be located so that the highest overcurrent protective device is a maximum of 80" above the floor.

H. Push button stations shall be located 4'-6" above the floor.

1.20 SAFETY:

A. It shall be the Contractor’s responsibility to do all things necessary in the pursuit of the installation or testing to provide safe conditions in which to work.

END OF SECTION

REVISED

SECTION 26 05 19

LOW VOLTAGE ELECTRICAL CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

B. This section is a Division 16 Basic Materials and Methods section, and is part of each Division 16 section making reference to wires and cables specified herein.

C. Refer to Section 16055, “ELECTRICAL IDENTIFICATION,” for wire and cable color coding instructions.

1.02 DESCRIPTION OF WORK:

A. Extent of electrical wire and electrical cable work is indicated by drawings and schedules.

B. Types of wire, cable and connectors in this section include the following:

1. Control cable.
2. Fixture wires.
3. Ground wire.
4. Power cable.
5. Instrumentation

C. Applications for wire, cable and connectors required for project are as follows:

1. Power distribution circuitry.

2. Lighting circuitry.

3. Appliance and equipment circuitry.

4. Motor-branch circuitry.

5. Instrumentation.

1.03 QUALITY ASSURANCE:

A. Manufacturers: Firms regularly engaged in manufacturer of electrical wire and cable products of types, sizes, and ratings required, whose products have been in satisfactory use in similar service for not less than five (5) years.

B. Installer's Qualifications: Firm with at least five (5) years of successful installation experience with projects utilizing electrical wiring and cabling work similar to that required for this project.

C. UL Compliance: Comply with applicable requirements of UL Std. 83, "Thermoplastic-Insulated Wires and Cables," and Std. 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors."

D. UL Compliance: Provide wiring/cabling and connector products which are UL-listed and labeled.

E. ETL Compliance: Provide wiring/cabling and connector product which are ETL-listed and labeled.

F. NEMA/ICEA Compliance: Comply with NEMA/ICEA Std. Pub./No.'s WC 5, "Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy," and WC-30, "Color Coding of Wires and Cables," pertaining to electrical power type wires and cables.

G. IEEE Compliance: Comply with applicable requirements of IEEE Stds. 82, "Test Procedures for Impulse Voltage Tests on Insulated Conductors," and Std. 241, "IEEE Recommended Practice for Electrical Power Systems in Commercial Buildings" pertaining to wiring systems.

H. ASTM Compliance: Comply with applicable requirements of ASTM B1, 2, 3, 8 and D-753. Provide copper conductors with conductivity of not less than 98% at 20° C (68°F).

1.04 SUBMITTALS:

A. Product Data: Submit manufacturer's data on Medium Voltage Cable and connectors.

1.05 DELIVERY, STORAGE, AND HANDLING:

A. Deliver wire and cable properly packaged in factory-fabricated type containers, or wound on NEMA-specified type wire and cable reels.

B. Store wire and cable in clean dry space in original container. Protect products from weather, damaging fumes, construction debris and traffic.

C. Handle wire and cable carefully to avoid abrading, puncturing, tearing wire and cable insulation and sheathing. Ensure dielectric resistance integrity of wires/cables is maintained.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following (for each type of wire and cable):

1. Wire and Cable (Under 600V)
   a. American Insulate Wire and Cable.
   b. Cerro Wire and Cable Co.
   c. Phelps Dodge Wire & Cable.
   d. Rome Cable Corp.
   e. Cablec.
   f. Tamaqua
   g. Instrumentation - Belden

2.02 WIRE AND CABLE:

A. General: Except as otherwise indicated, provide wire, cable and connectors of manufacturer's standard materials, as indicated by published product information, designed and constructed as recommended by manufacturer, and as required for the installation.

2.03 CONDUCTORS UNDER 600V:

A. Provide factory-fabricated wire of sizes, ratings, materials and types indicated for each service. Where not indicated, provide proper selection as determined by Installer to comply with project's installation requirements and NEC standards. Select from the following types, materials, conductor configuration, insulation and coverings:

1. UL Type: THHN.
2. UL Type: THWN.
3. UL Type: XHHW.
4. Material: Copper.
5. Conductors: Concentric-lay-stranded (standard flexibility).

2.04 CONNECTORS:

A. General: Provide UL-type factory-fabricated, metal connectors of sizes, ampacity ratings, materials, types and classes for applications and for services indicated. Where not indicated, provide proper selection as determined by Installer to comply with project's installation requirements, NEC and NEMA standards. Select from the following, those types, classes, kinds and styles of connectors to fulfull project requirements.

B. Under 600V

1. Type: Pressure.
2. Type: Crimp.
3. Type: Threaded.
4. Class: Insulated.
5. Kind: Copper, or aluminum alloy bar, factory insulated.
6. Style: Butt connection.
7. Style: Elbow connection.
8. Style: Combined "T" and straight connection.
9. Style: "T" connection.
10. Style: Two-bolt or four-bolt parallel connection.
11. Style: Tap connection.
12. Style: Pigtail connection.
13. Style: Wirenut connection.
14. Style-NO Split-Bolt type connectors
15. Factory pre-insulated connector blocks, Polaris or Burndy

PART 3 - EXECUTION

3.01 INSPECTION:

A. General: Install electrical cables and wires as indicated, in compliance with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation," and in accordance with recognized industry practices.

B. Coordinate cable and wire installation work with electrical raceway and equipment installation work, as necessary for proper interface.

C. Do not pull conductors into raceways until raceway system (including all outlets, cabinets, bushings and fittings) is completed. Verify that all work of other trades which may cause conductor damage is completed. Use only approved cable lubricants when necessary.

D. Pull conductors together where more than one is being installed in a raceway.

E. Use pulling compound or lubricant, where necessary; compound must not deteriorate conductor or insulation.

F. Use pulling means, including fish tape, cable or rope which cannot damage raceway.

G. Install exposed cable, parallel and perpendicular to surfaces or exposed structural members and follow surface contours, where possible.

H. Keep conductor splices to minimum.

I. Use splice and tap connectors which are compatible with conductor material.

J. The system shall be properly grounded and continuously polarized throughout.

K. In general, conductors shall be of the same size from the last protective device to the load.

L. On termination at branch circuit outlets leave a minimum of eight inches (8”) free conductor for installation of devices and fixtures.

M. Cover uninsulated splices, joints and free ends of conductor with rubber and friction tape or PVC electrical tape. Plastic insulating caps may serve as insulation.

N. Do not use mechanical means to pull wire No. 8 or smaller.

O. Use only U.L. listed lubricants.

P. Branch circuit conductors shall not be smaller than #12 AWG and shall be sized as required by the load served and for specific N.E.C. requirements.

Q. Branch circuit wires which come within 3” of a ballast within a light fixture, e.g., wires running through end-to-end connected fluorescent fixtures, must be rated for 90°C.

R. Control circuit conductors shall be #14 AWG.

S. All single conductor cables shall be installed in conduit.

T. Ground conductors shall have green insulation.

U. Use anti-short insulating bushings to protect wires at the ends of the armor on Type AC cable.

V. Wiring, Emergency System: Wiring from emergency source or emergency source distribution overcurrent protection to emergency loads shall be kept entirely independent of other wiring and equipment and shall not enter the same raceway, cable, box or cables with other wiring.

3.02 FIELD QUALITY CONTROL:

A. Below 600 Volts:

1. General Branch Circuit Wiring:
2. Prior to energization, test cable and wire for continuity of circuitry, and also for short circuits.
3. Subsequent to wire and cable hook-ups, energize circuitry and demonstrate functioning in accordance with requirements.
4. Feeder Circuit Wiring:
5. Megger test and record results on all feeder conductors illustrated on the one line diagram. The Engineer will supply the form for readings and test results. Submit results to Engineer for record purposes. The megger used for testing shall be line powered, and the Manufacturer's User Manual shall be with the instrument used.

END OF SECTION

REVISED

SECTION 26 05 33

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications sections, apply to work of this section.

B. This section is a Division 26 Basic Materials and Methods section, and is part of each Division 26 section making reference to electrical raceways, wiring boxes and fittings specified herein.

1.02 DESCRIPTION OF WORK:

A. Extent of raceways is indicated by drawings and schedules.

B. Types of raceways in this section include the following:

1. Rigid metal conduit, galvanized, or aluminum, as indicated.

2. Rigid nonmetallic conduit, schedule 80 PVC. There is NO schedule 40 PVC on this project.

3. Flexible metal conduit.

4. Liquid-tight flexible metal conduit.

C. Application of DUXSEAL putty, or equivalent UL Listed product, to seal all conduit entries to preclude moisture entry. This does not replace the “poured” conduit seal required to meet NEC hazardous location areas.

D. Extent of electrical box and electrical fitting work is indicated by drawings and schedules.

E. Types of electrical boxes and fittings in this section include the following:

1. Outlet boxes.

2. Junction boxes.
3. Pull boxes.
4. Conduit bodies.
5. Bushings.
6. Locknuts.
7. Knockout closures.
8. Precast Concrete Pullboxes

1.03 QUALITY ASSURANCE:

A. UL Compliance: Comply with applicable requirements of UL 50, UL 514-Series, and UL 886 pertaining to electrical boxes and fittings. Provide electrical boxes and fittings which are UL-listed and labeled.

B. NEMA Compliance: Comply with applicable requirements of NEMA Stds/Pub No.'s OS1, OS2, and Pub 250 pertaining to outlet and device boxes, covers and box supports.

PART 2 – PRODUCTS

2.01 METAL CONDUIT AND TUBING:

A. General: Provide metal conduit, tubing and fittings of types, grades, sizes and weights (wall thicknesses) for each service indicated. Where types and grades are not indicated, provide proper selection determined by Installer to fulfill wiring requirements, and comply with applicable portions of NEC for raceways.

B. Rigid THREADED ALUMINUM Conduit: Provide rigid aluminum, threaded type conforming to ANSI C80.5 and UL 6A. A UL LABEL or UL IMPRINT shall be present on each 10' length of aluminum conduit. 10' lengths of aluminum conduit without the UL Label or Imprint will be rejected.

C. Provide matching fittings of "copper free" aluminum.

D. Flexible Metal Conduit: UL 1. Formed from continuous length of spirally wound, interlocked zinc-coated strip steel.

E. Liquid-Tight Flexible Metal Conduit: Provide liquid-tight flexible metal conduit; construct a single strip, flexible, continuous, interlocked, and double-wrapped steel; galvanized inside and outside; coat with liquid-tight jacket of flexible polyvinyl chloride (PVC).

F. Rigid Aluminum Conduit Fittings: Cast aluminum.

G. Conduit Bodies: Provide aluminum conduit bodies of types, shapes, and sizes as required to fulfill job requirements and NEC requirements. Construct conduit bodies with threaded-conduit-entrance ends, removable metal covers, and corrosion-resistant screws. Myers entrance hubs shall be GROUNDING TYPE.

2.02 NONMETALLIC CONDUIT AND DUCTS:

A. General: Provide Schedule 80 nonmetallic conduit, ducts, and fittings of types, sizes and weights wall thicknesses for each service indicated. Where types and grades are not indicated, provide Schedule 80 PVC. There is NO Schedule 40 PVC conduit used on this project.

B. Electrical Plastic Conduit:

1. Extra Heavy Wall Conduit: Schedule 80, 90 degree C, UL-rated, constructed of polyvinyl chloride and conforming to NEMA TC-2, for direct burial, or encased use, UL-listed and in conformity with NEC Article 352.

2. PVC Conduit and Tubing Fittings: NEMA Studs. Pub No. TC-3, matched to conduit/tubing type and material.

3. PVC Utilities Duct Fittings: ANSI NEMA TC-9, match to duct type and material.

4. Conduit, Tubing, and Duct Accessories: Provide conduit, tubing and duct accessories of types, sizes and materials, complying with manufacturer's published product information, which mate and match conduit and tubing.

5. There is NO Schedule 40 PVC conduit used on this project.

2.03 BOXES AND FITTINGS: FABRICATED MATERIALS

A. Interior Outlet Boxes: Provide galvanized flat rolled sheet steel interior masonry wiring boxes, single gang/double gang as required, 1-1/2 inches deep, as a minimum size. All boxes shall be constructed with stamped knockouts in back and sides, and with threaded screw holes with corrosion-resistant screws for securing box covers and wiring devices.

B. Manufacturer: Subject to compliance with requirements, provide interior outlet boxes and accessories of one of the following:

1. Appleton Electric Co.
2. RACO, Inc.
3. Steel City/Midland-Ross Corp.

C. Weatherproof Outlet Boxes: Provide corrosion-resistant cast-metal weatherproof outlet wiring boxes, of types, shapes and sizes, including depth of boxes to suit each respective location and installation; construct with threaded conduit ends and with threaded screw holes for securing box covers and wiring devices.

D. Manufacturer: Subject to compliance with requirements, provide weatherproof outlet boxes of one of the following:

1. Adalet-PLM, Div. of Scott & Fetzer Co.
2. Appleton Electric Co.
3. Bell Electric/Square
4. Crouse-Hinds

E. Junction and Pull Boxes: Provide galvanized code-gage sheet steel boxes in enclosed interior locations, and cast metal boxes, unless indicated otherwise, in exterior locations, with screw-on covers; of types, shapes and sizes to suit each respective location and installation; with welded seams and equipped with stainless steel nuts, bolts, screws and washers.

F. Manufacturer: Subject to compliance with requirements, provide junction and pull boxes of one of the following:

1. Appleton Electric Co.
2. O/Z Gedney Co.

G. Bushings, Knockout Closures and Locknuts: Provide corrosion-resistant box knockout closures, conduit locknuts and malleable iron conduit bushings, offset connectors, of types and sizes, to suit respective installation requirements and applications.

H. Manufacturer: Subject to compliance with requirements, provide bushings, knockout closures, locknuts and connectors of one of the following:

1. Adalet-PLM Div; Scott Fetzer Co.
2. AMP, Inc.

3. Arrow-Hart Div; Crouse-Hinds Co.
4. Appleton Electric Co.; Emerson Electric Co.
5. Bell Electric; Square D Co.
6. Midland-Ross Corp.
7. Midwest Electric; Cooper Industries, Inc.
8. OZ/Gedney Co.; General Signal Co.
9. RACO Div.; Harvey Hubbell, Inc.
10. Thomas & Betts Co., Inc.

I. Conduit Bodies: Provide galvanized cast-metal conduit bodies, of types, shapes and sizes, to suit respective locations and installation; construct with threaded-conduit-entrance ends, removable covers, cover gaskets and corrosion-resistant screws.

J. Manufacturer: Subject to compliance with requirements, provide conduit bodies of one of the following:

1. Adalte-PLM, Div. of Scott & Fetzer Co.
2. Appleton Electric Co.
3. Crouse-Hinds Co.
4. Killark Electric Mfg. Co.
5. OZ/Gedney Co.
6. Pyle-National Co.
7. Spring City Electrical Co.

PART 3 – EXECUTION

3.01 INSPECTION:

A. Examine areas and conditions under which raceways are to be installed, and substrate which will support raceways. Notify Engineer in writing of conditions detrimental to proper completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION OF RACEWAYS:

A. General: Install raceways as indicated; in accordance with manufacturer's written installation instructions, and in compliance with NEC and NECA's "Standards of Installation". Install units plumb and level, and maintain manufacturer's recommended clearances.

B. Coordinate with other work including wires/cables, boxes and panel work, as necessary to interface installation of electrical raceways and components with other work.

3.03 INSTALLATION OF CONDUITS:

A. General: Install conduits in a “neat and workmanlike” manner, parallel to structure components. The governing standard and defining document for “neat and workmanlike” manner shall be NECA 1 – 2006, “Standard Practices for Good Workmanship in Electrical Contracting” (ANSI), and the Local Electrical Inspector, whichever is more stringent.

B. Mechanically fasten together metal conduits, enclosures, and raceways for conductors to form continuous electrical conductor. Connect to electrical boxes, fittings and cabinets to provide electrical continuity and firm mechanical assembly.

C. Avoid use of dissimilar metals throughout system to eliminate possibility of electrolysis. Where dissimilar metals are in contact, coat surfaces with corrosion inhibiting compound before assembling.

D. Install miscellaneous fillings such as reducers, chase nipples, 3-piece unions, split couplings, and plugs that have been specifically designed and manufactured for their particular application. Install expansion fittings in raceways every 200’ linear run or wherever structural expansion joints are crossed.

E. Use roughing-in dimensions of electrically operated unit furnished by manufacturer. Set conduit and boxes for connection to units only after review of dimensions and after checking location with other trades.

F. Provide nylon pull cord in empty conduits. Test conduits required to be installed, but left empty, with ball mandrel. Clear any conduit which rejects ball mandrel. Pat costs involved for restoration of conduit and surrounding surfaces to original conditions.

G. Conduit Installation:

1. Provide rigid threaded aluminum conduit, with matching material threaded couplings for service entrance, for all outdoor applications, *unless indicated otherwise.* Nipples for joining service entrance enclosures shall use grounding type aluminum myers hubs. Locknuts and sealing locknuts are not acceptable substitutes.
2. Use Schedule 80 PVC conduit underground for all power and lighting, unless indicated otherwise.

3. Conduit entrances into disconnect and other electrical gear and enclosures shall be made by transitioning the PCV using a F/M PVC adapter, to an aluminum grounding type myers hub for enclosure entrance.
4. Grounding type myers hubs might not be supplied with a lug for grounding in some instances. In those cases, provide an aluminum alloy lug to attach to the myers hub. Bond all myers hubs to the grounding bar or bus in that enclosure, using individual or looped grounding wires sized as per NEC Table 250-122, for the largest circuit OCP in that grounding wire loop.
5. Make all grounding connections using liberal coatings of oxidation inhibiting compound, applied to the connection before the wire is landed. Do not apply oxidation inhibiting compound “after the fact”.

H. Use flexible conduit from outdoor outlet boxes to lighting fixtures, if there are any in the project.

I. Use liquid-tight flexible conduit where subjected to one or more of the following conditions:

1. Final 24” of connection to outdoor motors and equipment.
2. Moist or humid atmosphere where condensation can be expected to accumulate.
3. Corrosive atmosphere.
4. Subjected to water spray or dripping oil, water or grease.
5. But do NOT use it in “Hazardous” locations.
6. For conduit-to-conduit interconnections where rigid conduit connections are not feasible (at the top of the Down Tube, for example)

J. Cut conduits straight, properly ream and cut threads for heavy wall conduit deep and clean.

K. Field-bend conduit with benders designed for purpose so as not to distort nor vary internal diameter.

L. Size conduits to meet NEC, unless indicated specifically otherwise, except no conduit smaller than 3/4 inch shall be embedded in concrete or masonry.

M. Fasten conduit terminations in indoor sheet metal enclosures by use of grounding type myers hubs, only where specifically indicated. Otherwise, use double locknuts. All conduits entering outdoor enclosures shall use only grounding type myers hubs. Bond the grounding terminals to the ground bar, using green ground wire sized the same as the grounding conductor run with the circuit contained in the specific conduit.

N. Conduits are not to cross under drain lines or under sewerage lines. Notify the Engineer in case of conflicts, for resolution.

O. Conduits are not to cross under water lines. Notify the Engineer in case of conflicts, for resolution.

P. Use of running threads at conduit joints and terminations is prohibited. Where required, use 3-piece union or split coupling.

Q. Complete installation of electrical raceways before starting installation of cables/wires within raceways.

R. Support vertical conduit of any size at a maximum of every 10 feet, unless indicated otherwise, with clamp hangers.

S. Support conduit within 18” of every box or enclosure.

T. In addition to other conduit support requirements, conduits shall be securely fastened within eighteen (18) inches of each box, cabinet or other conduit termination.

U. Conduits Underground and Below Slabs:

1. Raceways installed underground shall be rigid Schedule 80 PVC, unless indicated otherwise. Note that type 304 or type316 stainless steel conduits and fittings may be specifically indicated for certain locations.

2. Under concrete slabs install conduits larger than 1”. All conduit under slabs shall be hung from slab utilizing stainless steel 1/4” rod every four (4) feet (minimum), if hanging is required due to soil conditions on site.

V. Conduits in Concrete Slabs:

1. Place conduits between bottom reinforcing steel and top reinforcing steel.

2. Conduits may run at angles through the slab.

3. Separate conduits by not less than diameter of larger conduit to ensure proper concrete bond.

4. Conduits crossing in slab must be reviewed for proper cover by Engineer.

5. Embedded conduit diameter is not to exceed 1/3 of slab thickness.

6. Conduits run in slabs must have a minimum of 3” concrete cover.

7. Install conduits so as not to damage or run through structural members. Avoid horizontal or cross runs in building partitions or side walls.

W. Exposed Conduits:

1. Install exposed conduits and extensions from concealed conduit systems neatly, parallel with, or at right angles to walls of the structure.

2. Install exposed conduit work so as not to interfere with other trades. Coordinate to avoid conflicts.

3. Support exposed conduits by use of hangers, clamps, or clips. Support conduits on each side of bends and on spacing not to exceed the following:

    a. Conduit up to 1": support every 6'-0"
    b. 1-1/4" and over: support every 8'0", unless specifically indicated otherwise

4. Install PVC conduits in accordance with NEC and in compliance with local utility practices.

X. Non-Metallic Conduits:

1. Non-metallic conduit as hereinafter specified shall be used where indicated.

2. Non-metallic conduit installed underground shall be installed in a concrete envelope, ONLY WHERE SPECIFICALLY INDICATED. Otherwise, do NOT provide concrete encasement. Ninety degree elbows turning upward shall be PVC, unless indicated otherwise. Concrete envelope, where used, shall extend to 6" above grade with edges chamfered 1" at 45 degrees where conduit rises out of the ground, all unless indicated otherwise.

3. Make solvent cemented joints for PVC conduit in accordance with recommendations of manufacturer. This includes the use of PVC Cleaner, and PVC Primer on all conduit joints and fittings, BEFORE applying the PVC Cement.

4. Install PVC conduits in accordance with NEC and in compliance with local utility practices.

Y. Non-Metallic Conduit Fittings:
1. Schedule 80 PVC

Z. Conduits shall utilize grounding type myers hubs for entrances into all outdoor enclosures, unless specifically indicated otherwise. Myer hubs shall match

the adjoining conduit material, except myers hubs for PVC conduits shall be aluminum.

AA. Bushings for terminating conduits smaller than 1-1/4" shall have flared bottom and ribbed sides, with smooth upper edges to prevent injury to cable installations.

BB. Install insulated type bushing for terminating conduits 1-1/4" and larger. Bushings shall have flared bottom and ribbed sides. Upper edge to have phenolic insulating ring molded into bushing.

CC. Bushing of standard or insulated type shall have screw type grounding terminal.

DD. Miscellaneous fittings such as reducers, chase nipples, 3-piece unions, split couplings and plugs shall be specifically designed for their particular application. Fittings shall match the adjacent conduit, except myer hubs for PVC shall be aluminum, grounding type, unless Type 316 Stainless Steel is specifically called out. Bond all myers hubs to the grounding bar or bus in that enclosure, using individual or looped grounding wires sized as per NEC Table 250-122, for the largest circuit OCP in that grounding wire loop.

EE. Provide "DUXSEAL" putty, or an equivalent UL Listed, pliable conduit sealant in the ends of all conduits where they enter enclosures, to preclude moisture entry. The sealant shall effectively adhere to all conductors at the end of the conduit, to form a moisture-stop barrier. This means every conduit terminating into an outdoor enclosure, and every indoor enclosure. This does not apply to branch circuit conduits entering 4" and 6" junction boxes. NOTE that this "putty" does NOT take the place of a "sealing conduit body" (EYS, for example) as required by the NEC for "hazardous" locations. Such "sealing conduit bodies" (conduit seals, poured conduit seals) shall be installed where specifically indicated on the drawings.

3.04 INSTALLATION OF ELECTRICAL BOXES AND FITTINGS:

A. General: Install electrical boxes and fittings where indicated, complying with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation," and in compliance with recognized industry practices to ensure that products fulfill requirements.

B. Coordinate installation of electrical boxes and fittings with wire/cable and raceway installation work.

C. Provide weatherproof outlet boxes for interior and exterior locations exposed to weather or moisture.

D. Provide knockout closures to cap unused knockout holes where blanks have been removed.

E. Install boxes and conduit bodies in those locations which ensure ready accessibility of electric wires.

F. Use pulling means, including fish tape, cable or rope which cannot damage raceway.

G. Mounting heights are specified on the drawing and in Section 16010.

H. DO NOT install aluminum products in concrete.

I. Provide electrical connections for installed boxes.

J. Subsequent to installation of boxes, protect boxes from construction debris and damage.

3.05 GROUNDING:

A. Upon completion of installation work properly ground electrical boxes and demonstrate compliance with requirements.

END OF SECTION

REVISED

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

B. This section is a Division 26 Basic Materials and Methods section, and is part of each Division 26 section making reference to wiring devices specified herein.

1.02 DESCRIPTION OF WORK:

A. The extent of wiring device is indicated by drawings and schedules. Wiring devices are defined as single discrete units of electrical distribution systems which are intended to carry but not utilize electric energy.

B. Types of electrical wiring devices in this section include the following:

1. Receptacles.
2. Switches.
3. Wall Plates.
4. Start/Stop switches and Motor Winding Heater disconnect switches at Well Pump Motors

PART 2 - PRODUCTS

2.01 FABRICATED WIRING DEVICES:

A. Manufacturers: Subject to compliance with requirements, provide receptacles, plugs and switches of the following (for each type of wiring device):

1. DEVICES & PLATES:
   a. Harvey Hubbell, Inc.
   b. Pass and Seymour
   c. General Electric
   d. Local Motor Control Stations, Allen Bradley Bulletin 800 Type T

2. DIMMERS:

a. Lutron
b. Prescolite

B. General: Provide factory-fabricated wiring devices, in types, colors, and electrical ratings for applications indicated and complying with NEMA Stds. Pub. No. WD 1. Where types and grades are not indicated, provide proper selection as determined by Installer to fulfill wiring requirements, and complying with NEC and NEMA standards for wiring devices. Provide ivory color devices and wallplates except as otherwise selected. Color selection of devices and wallplates be verified by Contractor with Architect. All devices of similar types shall be by the same manufacturer.

C. Receptacles:

1. Duplex: Provide duplex "specification grade" receptacles, 2-pole, 3-wire grounding, with green hexagonal equipment ground screw, ground terminals and poles internally connected to mounting yoke and mounting yoke provided with automatic grounding feature between mounting screws and yoke, 15 ampere or 20 ampere as indicated, 125-volts, with metal plaster ears, back and side wiring, yoke shall be one piece brass construction, receptacle face shall be heavy duty high impact nylon. NEMA configuration 5-15R or 5-20R as indicated.

2. Simplex: Provide single "specification grade" receptacles, 2-pole, 3-wire grounding, with green hexagonal equipment ground screw, ground terminals and poles internally connected to mounting yoke and mounting yoke provided with automatic grounding feature between mounting screws and yoke, 20 amperes, 125 volts, with metal plate ears, (back and) side wiring, NEMA configuration 5-20R unless otherwise indicated.

3. Ground-Fault Interrupter: Provide "specification grade" duplex receptacles, ground-fault circuit interrupters (GFCI), and feed-thru type, capable of protecting connected downstream receptacles on single circuit, grounding type UL-rated Class A, 20-amperes rating, 120-volts, 60 Hz, with solid-state ground-fault sensing and signaling, with 5 milliamperes ground-fault trip level; equip with 20-ampere plug configuration, NEMA 5-20R and with local test/reset buttons.

2.02 SWITCHES:

A. General: All switches shall be provided with automatic grounding clip on mounting yoke; silver cadmium oxide contacts; neoprene bumper pads to cushion handle; one piece rivetless spring contact arm and terminal plate.

1. Single Pole Toggle: Provide "specification grade" flush, quiet, AC-type, single-pole toggle switches, 20-amperes, 120-volts AC, with mounting yoke

insulated from mechanism; equip with plaster ears, switch handle, side-wired screw terminals (and backwiring with clamp type terminals).

2. Double-Pole Toggle: Provide “specification grade” flush, quiet, double-pole toggle switches, 20-amperes, 120-volts AC, with mounting yoke insulated from mechanism; equip with plaster ears, switch handle, side-wired screw terminals (and backwiring with clamp type terminals).

3. Three-Way Toggle: Provide “specification grade” flush, quiet, AC-type, three-way switches, 20-amperes, 120-volts AC, with mounting yoke insulated from mechanism; equip with plaster ears, switch handle, side-wired screw terminals (and backwiring with clamp type terminals).

4. **Devices for local Start/Stop and Motor Winding Heater Disconnects at Well Pump Motors** shall be Allen Bradley Bulletin 800 T type, 30 mm, NEMA 4X rated.

   Start Stop Stations at well pump motors shall be a pre-assembled station for surface mounting, with red and green pushbuttons, and with a RED LED “RUN” pilot light.

   Motor Winding Heater Disconnects at well pump motors shall be a pre-assembled 2 position ON/OFF station for surface mounting, AB cat. # 800T-R2TC.

2.03 WIRING DEVICE ACCESSORIES:

A. Wall Plates: Provide wall plates for wiring devices, of types, sizes, and with ganging and cutouts as indicated on drawings (or schedules). Construct with metal screws for securing plates to devices, provide wall plates possessing the following additional construction features:

   1. Material and Finish: 0.04” thick, type 302 satin finished stainless.

   2. Material and Finish: Nylon, color ot be selected, ONLY in enclosed finished spaces.

B. Weatherproof Covers: Provide die cast aluminum, or plastic "bubble cover" wet location, cover closed where indicated. Covers shall be UL LISTED "WEATHERPROOF WHILE IN USE".

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Install wiring devices as indicated, in compliance with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation," and in accordance with recognized industry practices to fulfill project requirements.

B. Coordinate with other work, including painting, electrical box and wiring work, as necessary to interface installation of wiring devices with other work, furniture locations, and door swings.

C. Verify location of all devices with Architect/Engineer before beginning construction.

D. Install wiring devices only in electrical boxes which are clean, free from excess building materials, dirt and debris.

E. Install stainless steel wallplates in interior areas where device boxes are flush (concealed).

F. Install stainless steel wallplates in unfinished spaces.

G. Install weatherproof "While In Use" covers at all damp or exposed locations, as indicated on drawings.

H. Delay installation of wiring devices until wiring work is completed.

I. Delay installation of wall plates until after painting work is completed.

J. Protect wiring devices during painting.

K. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for wiring devices. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Stds. 486A and B. Use properly scaled torque indicating hand tool.

3.02 PROTECTION OF WALL PLATES AND RECEPTACLES:

A. Upon installation of wall plates and receptacles, advise Contractor regarding proper and cautious use of convenience outlets. At time of Substantial Completion, replace those items which have been damaged, including those burned and scored by faulty plugs.

3.03 GROUNDING:

A. Provide electrically continuous, tight grounding connections for wiring devices, unless otherwise indicated.

3.04 TESTING:

A. Prior to energizing circuitry, test wiring devices for electrical continuity and proper polarity connections. After energizing circuitry, test wiring devices to demonstrate compliance with requirements.

END OF SECTION

REVISED

SECTION 26 32 13

STANDBY POWER SYSTEM NATURAL GAS GENERATOR SET

PART 1. - GENERAL

1.01 SCOPE

FOREWORD: REQUIRED CONTRACTOR INTERACTION WITH NATURAL GAS SUPPLY COMPANY PRIOR TO BIDDING: **It is the responsibility of the contractor to contact the local gas company and inform them of the actual size of the unit to be provided and installed. Costs associated with installing the gas service piping from the gas main to the generator unit, testing, and paying for all fees and permits, etc. shall be by the Contractor.**

A. Provide complete factory assembled generator set equipment with digital (microprocessor-based) electronic generator set controls, digital governor, and digital voltage regulator.

B. Provide factory testing, and on-site startup by a supplier authorized by the manufacturer.

C. The generator set manufacturer shall warrant all equipment provided under this section, whether or not it is manufactured by the generator set manufacturer, so that there is one source for warranty and product service. Technicians specifically trained and certified by the manufacturer to support the product and employed by the generator set supplier shall service the generator set.

D. **Certain parameters of the natural generator set requirements are indicated below, for quick referral. These items have been excerpted from locations indicated by (****) in the main body of these Specifications, which are still binding.** Refer to the remainder of these Specifications for detailed requirements.

1. Standby KW rating: 250
2. Standby KVA rating: 312
3. Power Factor: 0.8
4. **Set mounted radiator rating: 122 degrees "F", 50 degrees "C" ambient**
5. Voltage: 277/480, 3Ph 4W Wye with Neutral
6. Voltage system: 60 cycle, 3 Phase, 4 wire
7. Voltage Selector Switch: None
8. RPM: 1800
9. Alternator minimum KVA motor starting capability at instantaneous 30% voltage dip: 920+/- at 480v.

10. Alternator minimum KVA motor starting capability at 90% of sustained rated voltage: 1210
11. **Alternator maximum temp. rise at rated load, above ambient, Degrees "C": 105 (ONE HUNDRED FIVE), Alternator frame size shall be HCI434E.**
12. Alternator excitation: PMG
13. Alternator wiring type: 12 lead, reconnectible
14. Engine minimum cubic inch displacement: 855 cid (14.9 L)
15. Engine minimum rated nameplate horsepower: 383 Standby
16. Number of cylinders: 6, turbocharged
17. Cycles: 4
18. EPA Emissions rating: EPA certified for stationary emergency and non-emergency applications
19. Starting voltage and control voltage: 24 VDC
20. Set mounted, 100% rated, 600 volt, 3 pole, main electronic circuit breaker, amps: 500 (five hundred)
21. SECOND AUXILIARY CB for AUXILIARY RESISTIVE LOAD BANK: set mounted, 100% rated, 600 volt, 3 pole electronic circuit breaker, 125 amps, for 75 KW resistive load bank, set on concrete pad next to generator set.
22. Muffler: Critical grade, enclosed inside the radiator exhaust plenum
23. Weatherproof Housing: Aluminum Weatherproof Outdoor Housing, rated for 150mph wind
24. Natural gas consumption shall be between 90 – 100 cubic meters / hour at full load, and shall utilize natural gas pressures between 14 to 20 inches of water. Coordinate gas service with Natural Gas Supplier.
25. **Automatic Transfer Switch (ATS) with Manual Bypass: 600 amps** (Utility Service is rated 600 amps)
    a. Volts - 277/480
    b. Poles - four (4)
    c. Amps - 600, fully rated
    d. Time Delay Neutral-Yes
    e. Enclosure: Nema 12 gasketed, factory-color painted steel
    f. Neither the main ATS section nor the Manual Bypass Section of the switch shall utilize any circuit breaker components as the switching contact means.
    g. The Manual Bypass Section shall be built into the same enclosure as the main ATS, and shall be installed on the bottom of the ATS switch.
26. Warranty: 5 years on all Parts and Labor, (including travel and lodging), except for rattling sheet metal. **Include** water jacket heater replacement(s). Do not include belts or consumables. In case of radiator repairs, include new antifreeze. No exclusions, exceptions, or conditions.

1.02 CODES AND STANDARDS

A. The generator set and its installation and on-site testing shall conform to the requirements of the following codes and standards:

1. CSA C22.2, No. 14 – M91 Industrial Control Equipment.
2. IEC8528 part 4. Control Systems for Generator Sets
3. IEEE587 for voltage surge resistance.
4. NEMA ICS10-1993 – AC Generator sets.
5. NFPA70 – National Electrical Code. Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
6. UL508. The entire control system of the generator set shall be UL508 listed and labeled.
7. UL2200. The genset shall be listed to UL2200 or submit to an independent third party certification process to verify compliance as installed.

B. The generator set and supplied accessories shall meet the requirements of the following standards:

1. NEMA MG1-1998 part 32. Alternator shall comply with the requirements of this standard.
2. UL1236 – Battery Chargers
3. UL2200. The generator set shall be listed to UL2200 or submit to an independent third party certification process to verify compliance as installed.

C. The control system for the generator set shall comply with the following requirements.

1. CSA C22.2, No. 14 – M91 Industrial Control Equipment.
2. EN50082-2, Electromagnetic Compatibility – Generic Immunity Requirements, Part 2: Industrial.
3. EN55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
4. FCC Part 15, Subpart B.
5. IEC8528 part 4. Control Systems for Generator Sets
6. IEC Std 801.2, 801.3, and 801.5 for susceptibility, conducted, and radiated electromagnetic emissions.

D. The generator set manufacturer shall be certified to ISO 9001 International Quality Standard and shall have third party certification verifying quality assurance in design/development, production, installation, and service, in accordance with ISO 9001.

1.03 ACCEPTABLE MANUFACTURERS

Only approved bidders shall supply equipment provided under this contract. Equipment specifications for this project are based on microprocessor-based generator sets manufactured by Cummins Onan. Equipment by other suppliers that meets the requirement of this specification are acceptable, if approved not less than **10 days** before scheduled bid date. Proposals must include a line by line compliance statement based on this specification.

PART 2. – PRODUCTS

2.01 GENERATOR SET

A. Ratings **(REFER to PARAGRAPH 1. D** in this specification for ratings indicated herein as (****).

1. The generator set shall operate at (****) RPM and at a voltage of: (****) Volts AC, (****) phase, (****)-wire, 60 hertz.
2. The generator set shall be rated at (****) KW, (****) KVA at 0.8 PF, standby rating, based on the following site conditions: Altitude 500ft., ambient temperatures up to (****) degrees F ((****) degrees C). The genset shall have a set mounted radiator rated for (****) degrees C at full rated load.
3. The generator set rating shall be based on emergency/standby service.

B. Performance

1. Voltage regulation shall be plus or minus 0.5 percent for any constant load between no load and rated load for both parallel and non-parallel applications. Random voltage variation with any steady load from no load to full load shall not exceed plus or minus 0.5 percent.
2. Frequency regulation shall be isochronous from steady state no load to steady state rated load. Random frequency variation with any steady load from no load to full load shall not exceed plus or minus 0.25%.
3. The natural gas engine-generator set shall be capable of single step load pick up of 100% nameplate KW and power factor, less applicable derating factors, with the engine-generator set at operating temperature.
4. Motor starting capability shall be a minimum of (****) KVA at 90 % sustained rated voltage, and minimum (****) KVA at a 30% voltage dip. The generator set shall be capable of sustaining a minimum of 90% of rated no load voltage with the specified KVA load at near zero power factor applied to the generator set.
5. The alternator shall produce a clean AC voltage waveform, with not more than 5% total harmonic distortion at full linear load, when measured from line to neutral, and with not more than 3% in any single harmonic. Telephone influence factor shall be less than 40.

C. Construction

1. The engine-generator set shall be mounted on a heavy-duty steel base to maintain alignment between components. The base shall incorporate a battery tray with hold-down clamps within the rails.

2. All switches, lamps, and meters in the control system shall be oil-tight and dust-tight, and the enclosure door shall be gasketed. There shall be no exposed points in the control (with the door open) that operate in excess of 50 volts.

D. Connections

1. The generator set load connections shall be composed of silver or tin plated copper bus bars, drilled to accept mechanical or compression terminations, which shall be factory wired to the set mounted main output circuit breaker.
2. Power connections to auxiliary devices shall be made at the devices, with required protection located at a remote electrical source. I.E., the water jacket heater and other heaters shall be connected to a 120 volt, or 240 volt source, supplied from factory installed / wired electrical panel located within the generator set enclosure. External power for that electrical panel is supplied via circuit from the Main Building electrical room.

2.02 Engine and Engine Equipment

E. The engine shall be natural gas, 4 cycle, radiator and fan cooled. Minimum displacement shall be (****) cubic inches, with (****) cylinders, rated minimum (****) HP at the standby rating. The horsepower rating of the engine at its minimum tolerance level shall be sufficient to drive the alternator and all connected accessories. Two cycle engines are not acceptable. This Generator Set engine shall meet EPA emissions requirements for gaseous engines in this application. Engine accessories and features shall include:

1. An electronic governor system shall provide automatic isochronous frequency regulation. The governing system dynamic capabilities shall be controlled as a function of engine coolant temperature to provide fast, stable operation at varying engine operating temperature conditions. The control system shall actively control the fuel rate and excitation as appropriate to the state of the generator set. Fuel rate shall be regulated as a function of starting, accelerating to start disconnect speed, accelerating to rated speed, and operating in various isochronous or parallel states.
2. Skid-mounted radiator and cooling system rated for full load operation in (****) degrees F ((****) degrees C) ambient as measured at the generator air inlet, based on 0.5 in H_2O external static head. Radiator shall be sized based on a core temperature which is 20F higher than the rated operation temperature, or prototype tested to verify cooling performance of the engine/radiator/fan operation in a controlled environment. Radiator shall be provided with a duct adapter flange. The cooling system shall be filled with a 50/50-ethylene glycol/water mixture by the equipment manufacturer. Rotating parts shall be guarded against accidental contact.

3. Electric starter(s) capable of three complete cranking cycles without overheating.
4. Positive displacement, mechanical, full pressure, lubrication oil pump.
5. Full flow lubrication oil filters with replaceable spin-on canister elements and dipstick oil level indicator.
6. Flexible natural gas supply fuel lines.
7. Engine mounted battery charging alternator, 100 ampere minimum, and solid-state voltage regulator.
8. Coolant Heater

    1. Engine mounted, thermostatically controlled, coolant heater(s) for the engine. Heater voltage shall be 120 or 208 volts. The coolant heater shall be UL499 listed and labeled.
    2. The coolant heater shall be installed on the engine with silicone hose connections. Steel tubing shall be used for connections into the engine coolant system wherever the length of pipe run exceeds 12 inches. The coolant heater installation shall be specifically designed to provide proper venting of the system. The coolant heaters shall be installed using quick disconnect couplers to isolate the heater for replacement of the heater element. The quick disconnect/automatic sealing couplers shall allow the heater element to be replaced without draining the engine cooling system or significant coolant loss.
    3. The coolant heater shall be provided with a 24VDC thermostat, installed at the engine thermostat housing. An AC power connection box shall be provided for a single AC power connection to the coolant heater system. Heater(s) shall be rated for 120 volts, or 240 volts, input.
    4. The coolant heater(s) shall be sized as recommended by the engine manufacturer to warm the engine to a minimum of 100F (40C) in a 40F ambient, in compliance with NFPA110 requirements, or the temperature required for starting and load pickup requirements of this specification.

F. Provide vibration isolators, spring/pad type, quantity as recommended by the generator set manufacturer.

G. Starting and Control Batteries shall be calcium/lead antimony type, (****) volt DC, sized as recommended by the engine manufacturer, complete with battery cables and connectors.

H. Provide exhaust silencer(s) for each engine of size and type as recommended by the generator set manufacturer and approved by the engine manufacturer. The muffler(s) shall be (****) grade. Exhaust system shall be installed according to the engine manufacturer's recommendations and applicable codes and standards. The muffler shall be mounted INSIDE the radiator exhaust plenum enclosure. Internal exhaust pipe and fittings and

shall be insulated with mineral fiber jackets, secured with stainless hooks, eyelets, and stainless steel wire. The exhaust outlet pipe shall turn vertically upward out of the top of the generator set radiator exhaust plenum, and shall be topped with a **FABRICATED 90 DEGREE "TEE" EXHAUST OUTLET** with 45 degree undercut ends (re: "Oilfield Construction"). The "TEE" shall be schedule 40 black iron pipe of the same diameter as the engine exhaust outlet pipe. The pipe shall be threaded to fit onto the engine exhaust outlet using a black iron coupling, with 2000deg. "Never Seize" compound applied liberally to all threads to prevent seizing due to rust or corrosion. The vertical section of exhaust pipe shall extend to a height 24" above the weatherproof enclosure. The vertical section shall be coped to fit centered and welded onto a single piece of full diameter horizontal schedule 40 black iron pipe 36" long, with an inlet opening cut to match the coped vertical section. The horizontal run shall have a 45 degree undercut on each end. The end result shall be a one-piece welded fabrication, which can be screwed onto the engine vertical exhaust outlet pipe. The top of the fabricated TEE shall be 24" +/- above the top of the generator set enclosure. The finished orientation of the exhaust openings is not critical, but **should** line up 90 degrees to either axis of the generator enclosure, for aesthetics. Threaded tees and pipe nipples **are not** an acceptable alternative to the one-piece welded tee. It is expected that the factory bracing for support of the exhaust piping and muffler will be sufficient to secure this fabricated exhaust TEE against 150 mph winds. If not, provide additional structural supports to accomplish this bracing. Provide written substantive confirmation either way.

P. Provide an oil drain extension line from the oil pan drain to the outside of the engine skid frame, with "outside" shutoff valve and cap. Provide a second "inside" shutoff valve at the oil pan before the extension hose. The outside valve shall have an adjacent label reading "Oil Drain". The drain and fittings shall be a minimum of 3/4" diameter.

2.03 AC GENERATOR

A. The AC generator shall be: synchronous, four pole, 2/3 pitch, revolving field, drip-proof construction, single prelubricated sealed bearing, air cooled by a direct drive centrifugal blower fan, and directly connected to the engine with flexible drive disc. All insulation system components shall meet NEMA MG1 temperature limits for Class H insulation system. Actual temperature rise measured by resistance method at full load shall not exceed (****) (****-words) degrees Centigrade.

B. The generator shall be capable of delivering rated output (kVA) at rated frequency and power factor, at any voltage not more than 5 percent above or below rated voltage.

C. A permanent magnet generator (PMG) shall be included to provide a reliable source of excitation power for optimum motor starting and short circuit

performance. The PMG and controls shall be capable of sustaining and regulating current supplied to a single phase or three phase fault at approximately 300% of rated current for not more than 10 seconds.

D. The subtransient reactance of the alternator shall not exceed 12 percent, based on the standby rating of the generator set.

E. Provide anti-condensation heater for the alternator, rated 120 volts, wired onto a labeled terminal strip in the main circuit breaker compartment.

F. Provide a set-mounted, 3-pole main output electronic circuit breaker, 100 percent rated, (****) amps, 600 volts, wired to the generator set output. Provide set mounted, pre-wired voltage selector switch, where indicated in Par. 1.01D, rated for multiple operating voltages).

G. Provide a second set-mounted, pre wired, electronic 3-pole circuit breaker to power a resistive auxiliary load bank, to be mounted on a concrete pad next to the generator set. This second circuit breaker shall be rated 600 volts, 125 amps, 100% rated.

2.04 GENERATOR SET CONTROL

The generator set shall be provided with a microprocessor-based control system that is designed to provide automatic starting, monitoring, and control functions for the generator set. The control system shall also be designed to allow local monitoring and control of the generator set, and remote monitoring and control as described in this specification.

The control shall be mounted on the generator set. The control shall be vibration isolated and prototype tested to verify the durability of all components in the system under the vibration conditions encountered.

The generator set mounted control shall include the following features and functions:

I. Control Switches

1. Mode Select Switch. The mode select switch shall initiate the following control modes. When in the RUN or Manual position the generator set shall start, and accelerate to rated speed and voltage as directed by the operator. In the OFF position the generator set shall immediately stop, bypassing all time delays. In the AUTO position the generator set shall be ready to accept a signal from a remote device to start and accelerate to rated speed and voltage. The "Remote Device" shall be a dry contact closure.
2. EMERGENCY STOP switch. Switch shall be Red "mushroom-head" push-button. Depressing the emergency stop switch shall cause the

generator set to immediately shut down, and be locked out from automatic restarting.

3. RESET switch. The RESET switch shall be used to clear a fault and allow restarting the generator set after it has shut down for any fault condition.
4. PANEL LAMP switch. Depressing the panel lamp switch shall cause the entire panel to be lighted with DC control power. The panel lamps shall automatically be switched off 10 minutes after the switch is depressed, or after the switch is depressed a second time.

J. Generator Set AC Output Metering. The generator set shall be provided with a metering set including the following features and functions:

1. Digital metering set, 0.5% accuracy, to indicate generator RMS voltage and current, frequency, output current, output KW, KW-hours, and power factor. Generator output voltage shall be available in line-to-line and line-to-neutral voltages, and shall display all three phase voltages (line to neutral or line to line) simultaneously.
2. The digital metering equipment shall be driven by a single microprocessor, to provide consistent readings and performance.

K. Generator Set Alarm and Status Display.

1. The generator set shall be provided with alarm and status indicating lamps to indicate non-automatic generator status, and existing warning and shutdown conditions. The lamps shall be high-intensity LED type. The lamp condition shall be clearly apparent under bright lighting conditions. The generator set control shall indicate the existence of the following alarm and shutdown conditions on an alphanumeric digital display panel:

   low oil pressure (alarm)
   low oil pressure (shutdown)
   oil pressure sender failure (alarm)
   low coolant temperature (alarm)
   high coolant temperature (alarm)
   high coolant temperature (shutdown)
   engine temperature sender failure (alarm)
   low coolant level (alarm or shutdown--selectable)
   fail to crank (shutdown)
   fail to start/overcrank (shutdown)
   overspeed (shutdown)
   low DC voltage (alarm)
   high DC voltage (alarm)
   weak battery (alarm)
   low fuel-pressure (alarm)
   high AC voltage (shutdown)

low AC voltage (shutdown)
under frequency (shutdown)
over current (warning)
over current (shutdown)
short circuit (shutdown)
over load (alarm)
emergency stop (shutdown)

2. Provisions shall be made for indication of four customer-specified alarm or shutdown conditions. Labeling of the customer-specified alarm or shutdown conditions shall be of the same type and quality as the above specified conditions. The non-automatic indicating lamp shall be red, and shall flash to indicate that the generator set is not able to automatically respond to a command to start from a remote location.

L. Engine Status Monitoring.

1. The following information shall be available from a digital status panel on the generator set control:

engine oil pressure (psi or kPA)
engine coolant temperature (degrees F or C)
engine oil temperature (degrees F or C)
engine speed (rpm)
number of hours of operation (hours)
number of start attempts
battery voltage (DC volts)

2. The control system shall also incorporate a data logging and display provision to allow logging of the last 10 warning or shutdown indications on the generator set, as well as total time of operation at various loads, as a percent of the standby rating of the generator set.

E. Engine Control Functions.

1. The control system provided shall include a cycle cranking system, which allows for user selected crank time, rest time, and # of cycles. Initial settings shall be for 3 cranking periods of 15 seconds each, with 15-second rest period between cranking periods.
2. The control system shall include an idle mode control, which allows the engine to run in idle mode in the RUN position only. In this mode, the alternator excitation system shall be disabled.
3. The control system shall include an engine governor control, which functions to provide steady state frequency regulation as noted elsewhere in this specification. The governor control shall include adjustments for gain, damping, and a ramping function to control engine speed and limit exhaust smoke while the unit is starting. The governor control shall be suitable for use in paralleling applications without component changes.
4. The control system shall include time delay start (adjustable 0-300 seconds) and time delay stop (adjustable 0-600 seconds) functions.

5. The control system shall include sender failure monitoring logic for speed sensing, oil pressure, and engine temperature which is capable of discriminating between failed sender or wiring components, and actual failure conditions.

F. Alternator Control Functions:

1. The generator set shall include an automatic digital voltage regulation system that is matched and prototype tested by the engine manufacturer with the governing system provided. It shall be immune from misoperation due to load-induced voltage waveform distortion and provide a pulse width modulated output to the alternator exciter. The voltage regulation system shall be equipped with three-phase RMS sensing and shall control buildup of AC generator voltage to provide a linear rise and limit overshoot. The system shall include a torque-matching characteristic, which shall reduce output voltage in proportion to frequency below a threshold of [58-59] HZ. The voltage regulator shall include adjustments for gain, damping, and frequency roll-off. Adjustments shall be broad range, and made via digital raise-lower switches, with an alphanumeric LED readout to indicate setting level. Rotary potentiometers for system adjustments are not acceptable.
2. Controls shall be provided to monitor the output current of the generator set and initiate an alarm (over current warning) when load current exceeds 110% of the rated current of the generator set on any phase for more than 60 seconds. The controls shall shut down and lock out the generator set when output current level approaches the thermal damage point of the alternator (over current shutdown). The protective functions provided shall be in compliance to the requirements of NFPA70 article 445.
3. Controls shall be provided to individually monitor all three phases of the output current for short circuit conditions. The control/protection system shall monitor the current level and voltage. The controls shall shut down and lock out the generator set when output current level approaches the thermal damage point of the alternator (short circuit shutdown). The protective functions provided shall be in compliance to the requirements of NFPA70 article 445.
4. Controls shall be provided to monitor the KW load on the generator set, and initiate an alarm condition (over load) when total load on the generator set exceeds the generator set rating for in excess of 5 seconds. Controls shall include a load shed control, to operate a set of dry contacts (for use in shedding customer load devices) when the generator set is overloaded.
5. An AC over/under voltage monitoring system that responds only to true RMS voltage conditions shall be provided. The system shall initiate shutdown of the generator set when alternator output voltage exceeds 110% of the operator-set voltage level for more than 10 seconds, or with no intentional delay when voltage exceeds 130%. Under voltage shutdown shall occur when the output voltage of the alternator is less than 85% for more than 10 seconds.

6. A battery monitoring system shall be provided which initiates alarms when the DC control and starting voltage is less than 25VDC or more than 32 VDC (if system is 24 volts), or 12.5/16VDC (if system is 12 VDC). During engine cranking (starter engaged), the low voltage limit shall be disabled, and if DC voltage drops to less than 14.4 volts (if system is 24 volts), or 7.2 volts (if system is 12 volts), for more than two seconds a "weak battery" alarm shall be initiated.

G. The generator set shall be provided with a mounted main line circuit breaker, sized to carry the rated output current of the generator set on a continuous basis. The circuit breaker shall incorporate an electronic trip unit that operates to protect the alternator under all overcurrent conditions. The Main Circuit Breaker shall be rated 600 volts, (****) amps. Provide a set mounted secondary circuitr breaker to power an auxiliary resistive load bank. REFER to paragraphs 3 F and 3 G above.

2.05 BATTERY CHARGER

A. Provide a 10 amp equalizing / 2 amp battery trickle charger, rated 120 volts input, with output to match the engine start battery(s).

B. The battery charger shall be auto-adjusting for amperage output, depending on battery charge state.

C. Connect the battery charger output leads to the battery(s) terminals.

D. The battery charger shall be located within the generator set enclosure.

2.06 AUTOMATIC TRANSFER SWITCH

A. Also refer to previous paragraph in this specification Section 1.01 (D)(25).

B. Transfer Switch Mechanism

• Transfer switch mechanism is electrically operated and mechanically held in the Source 1 and Source 2 positions. The transfer switch incorporates electrical and mechanical interlocks to prevent inadvertent interconnection of the sources.

• Independent break-before-make action is used for both 3-pole and 4-pole/ switched neutral switches. This design allows use of sync check operation when required, or control of the operating speed of the transfer switch for proper transfer of motor and rectifier-based loads (programmed transition feature).

• True 4-pole switching allows for proper ground (earth) fault sensing and consistent, reliable operation for the life of the transfer switch. The neutral poles of the transfer

switch have the same ratings as the phase poles and are operated by a common crossbar mechanism, eliminating the possibility of incorrect neutral operation at any point in the operating cycle, or due to failure of a neutral operator.
• High pressure silver alloy contacts resist burning and pitting. Separate arcing surfaces further protect the main contacts. Contact wear is reduced by multiple leaf arc chutes that cool and quench the arcs. Barriers separate the phases to prevent interphase flashover. A transparent protective cover allows visual inspection while inhibiting inadvertent contact with energized components.
• Switch mechanism, including contact assemblies, is third party certified to verify suitability for applications requiring high endurance switching capability for the life of the transfer switch. Withstand and closing ratings are validated using the same set of contacts, further demonstrating the robust nature of the design.

C. Bypass Mechanism
• Manual bypass switch mechanism allows the operator to select either the normal or emergency source by closing the bypass contacts. Visual indicators show bypass “source selected”, bypass "closed" or "open" to either source, and automatic transfer switch isolation or "disable." Bypass of the automatic switch is accomplished with permanently mounted, mechanically operated devices without disturbing the power supply to system loads, and without opening enclosure door.
• Isolation contacts allow the automatic transfer switch and the bypass switch to be separated electrically and mechanically. The automatic transfer switch is isolated by a draw out mechanism similar to that used on power circuit breakers on transfer switches rated 1200 amps and less. On 1600-4000 amp models the draw out carriage is wheel-mounted.
• Protective safety shutters, provided on switches up to and including 1200 amps, cover the stationary power terminals on the bypass switch when the automatic transfer switch is isolated and removed.
• The draw out mechanism can be latched in one of three positions: “connected”, “test”, and “isolated”. In the connected position the mechanism is locked. In the test position, the automatic switch is isolated but the controls receive power. In the isolated position, the automatic switch is completely isolated.
• The bypass switch mechanism is identical to the automatic switch except it is mechanically operated

rather than electrically operated. Mechanical interlocks prevent operation of the bypass or automatic switches in any mode that would result in the interconnection of the sources.

D. OPEN TRANSITION/PROGRAMMED OPERATION

1. The ATS Section shall operate as an open transition switch, i.e., not parallel operation with the power company.

2.07 AUXILIARY RESISTIVE LOAD BANK

A. Provide an auxiliary resistive load bank rated 75 KW at 480 volts 3 phase, 60 Hz, U L LISTED, NEMA 3R enclosure, with rain hoods painted with high temperature resistive paint.

B. The load bank shall have an onboard PLC, with local color digital HMI touchpad control panel, 4” x 4”.

C. The load bank shall have 5 steps of loading, which shall be **manually** controlled from the local control panel, when it is desired to add the auxiliary loading. There is no remote control required.

D. The resistive load elements shall be made of Nickel Chromium wire.

E. The load bank shall be enclosed in a painted steel sheet metal enclosure, designed to withstand 150 mph wind loading, as is the generator set enclosure.

F. The load bank enclosure shall include rain shields at all heat outlet openings, to preclude rain entry.

G. Power shall be supplied from a secondary 125/3 CB built into the generator set output compartment.

H. The load bank shell be placed on a concrete pad, separate, but adjacent to, the generator set main concrete pad. The load bank shell be securely bolted to the concrete pad, to stay in place during a 150 mph wind.

I. **Load Elements:** Simplex Powr-Web, UL recognized, chromium alloy, open wire, ceramic supported.

J. **Load Control:** Electromagnetic contactors.

K. **Element Short Circuit Protection:** Branch circuit fuses.

L. **Cooling:** Forced-air, shrouded aluminum fan blade direct driven by TEFC motor. Fan motor starter with external disconnect.

M. **Power Connection:** Power distribution block.

N. **Control Power:** Internal, from load bus, with isolation transformer (120v control). PLC powered via 24vDC conditioned power supply.

O. **System Protection:** Fan failure, high exhaust temperature, high intake temperature, lockout and alarm. Alarm message display on touchpanel.

P. **Controller**

PLC based control with local or remote 4-inch TFT color HMI.

1. 4” Color Touch HMI – Provides all functionality previously accomplished by physical lights/switches

a. Control Power
On/Off Switch

b. Numeric Load
Application Mode: direct entry to keypad, apply and remove function. Allows successive block loading

c. Master Load Switch function

d. Load Step Switches function

e. Fan Failure Indication

f. High Exhaust Temperature Indication

g. Load Dump Active Indication

h. Load Dump Bypassed Indication

i. Setup Functions

j. Various other functions depending on chosen options

2. Cooling Failure Load Lockout – Disables all load in the event of an exhaust over-temperature or fan failure

3. Remote Load Dump input – Allows user to connect normally closed contacts to permit remote load dump (close to run, open to dump)

4. Load Dump Bypass– Provides means to defeat load dump function above

5. Discrete Power Available Lamp – Indicates control power available to load bank. LED indicator on load bank.

6. Summary Alarm Lamp – Indicates that there has been a cooling failure, load dump activation or other failure. LED indicator on load bank.
7. BMS Monitoring (Dry Contacts) – Relay dry contacts for BMS monitoring of “normal operation”, “summary alarm”.
8. BMS Monitoring (Modbus RTU RS-485) – Allows all load bank conditions to be monitored via Modbus RTU RS-485
9. Cooling (to 25KW)
    a. 1/3HP TEFC Cooling Fan Motor, 4000 cfm
10. Cooling (50+KW)
    a. 3/4HP TEFC Cooling Fan Motor, 6000 cfm

PART 3. - OPERATION

3.01 Sequence of Operation

A. Generator set shall start on receipt of a start signal from remote equipment. The start signal shall be via hardwired connection to the generator set.

B. The generator set shall complete a time delay start period as programmed into the control.

C. The generator set control shall initiate the starting sequence for the generator set. The starting sequence shall include the following functions:

1. The control system shall verify that the engine is rotating when the starter is signaled to operate. If the engine does not rotate after two attempts, the control system shall shut down and lock out the generator set, and indicate “fail to crank” shutdown.
2. The engine shall fire and accelerate as quickly as practical to start disconnect speed. If the engine does not start, it shall complete a cycle cranking process as described elsewhere in this specification. If the engine has not started by the completion of the cycle cranking sequence, it shall be shut down and locked out, and the control system shall indicate “fail to start”.
3. The engine shall accelerate to rated speed and the alternator to rated voltage. Excitation shall be disabled until the engine has exceeded programmed idle speed, and regulated to prevent over voltage conditions and oscillation as the engine accelerates and the alternator builds to rated voltage.

D. On reaching rated speed and voltage, the generator set shall operate as dictated by the control system in isochronous, synchronize, load share, load demand, or load govern state.

E. When all start signals have been removed from the generator set, it shall complete a time delay stop sequence. The duration of the time delay stop period shall be adjustable by the operator.

F. On completion of the time delay stop period, the generator set control shall switch off the excitation system and shall shut down.

1. Any start signal received after the time stop sequence has begun shall immediately terminate the stopping sequence and return the generator set to isochronous operation.

G. The Generator Set shall also be able to be started locally from the Control Panel.

H. **In accordance with the 2020 (and 2023) NEC, Par. 700.10(D)(1) through (D)(3), the emergency start wiring circuit between the Generator Set and the ATS shall be continuously monitored** for short circuits, open circuits, or any other malfunction which would disable normal operation of the start circuit. Loss of the integrity of the remote start circuit(s) shall initiate visual and audible annunciation of generator malfunction at the generator local and remote annunciator(s) and shall start the generator.
Proper operation of this condition shall be demonstrated on site by temporarily disconnecting any portion of the start circuit wiring.

PART 4. - OTHER REQUIREMENTS

4.01 Submittals. Within 10 days after award of contract, provide six sets of the following information for review:

- Manufacturer’s product literature and performance data, sufficient to verify compliance to specification requirements.
- A paragraph by paragraph specification compliance statement, describing the differences between the specified and the proposed equipment.
- Manufacturer's certification of prototype testing.
- Manufacturer's published warranty documents.
- Shop drawings showing plan and elevation views with certified overall dimensions, as well as wiring interconnection details.
- Interconnection wiring diagrams showing all external connections required; with field wiring terminals marked in a consistent point-to-point manner.
- Manufacturer's installation instructions.
- ATS/MANUAL BYPASS SWITCH submittal
- AUXILIARY RESISTIVE LOAD BANK submittal
- DRAWINGS for FABRICATED EXHAUST TEE

4.02 Factory Testing.

A. The generator set manufacturer shall perform a complete operational test on the generator set prior to shipping from the factory. A certified test report shall be provided. Equipment supplied shall be fully tested at the factory for function and performance.

B. Factory testing may be witnessed by the owner and consulting engineer. Costs for travel expenses will be the responsibility of the owner and consulting engineer. Supplier is responsible to notify the owner/engineer two weeks notice prior to testing.

C. Generator set factory tests on the equipment shall be performed at rated load and rated power factor (0.8 PF). Generator sets that have not been factory tested at rated power factor will not be acceptable. Tests shall include: run at full load, maximum power, voltage regulation, transient and steady-state governing, single step load pickup, and function of safety shutdowns.

4.03 On-Site Acceptance Test:

A. Provide startup and programming assistance to the Owner when the Owner is ready to commission the unit. Startup services shall include a half-day (four hours) of on-site instruction by a factory trained mechanic.

B. Provide any and all fluids required to start the generator set.

C. This generator set is fueled by Natural Gas, which will be provided by the Owner for startup and testing.

D. On-Site Generator Set Load Test:
1. In addition to the factory tests, an on-site load test shall be performed to verify the integrity of the generator set operation, and load handling capabilities (after shipment and setup on this jobsite).
2. The generator set is a backup power system for potable water well pumps. The generator set shall be tested to demonstrate powering the pumps according to the controls design. If the controls allow multiple pumps to start or operate simultaneously, then the generator set load test shall include those conditions. Run the generator set in this mode for two hours, starting and letting the pumps cycle on pressure or level controls, as water is needed, to simulate operation in an actual power outage.
3. Additionally, test the auxiliary 75KW resistive load bank while running one of the well pumps, set as a step load (75 KW 100% full load as a single step), and run that well pump and load bank load on the generator set for two full hours. During that run time, all digitally-available engine and alternator parameters from control panel displays shall be recorded on a pre-printed 8-1/2” x 11” form, at 10 minute intervals during those two hours. The form shall be turned over to the Engineer at the end of the test.

4. The generator set and ATS start circuitry shall be tested for proper operation by turning off the source of normal commercial power, to simulate a normal power outage.
5. Provide all personnel, equipment, tools, connection cables and terminals as required to perform the load bank test. Make all required connections to perform the test. When the test has been successfully completed, disconnect all testing equipment, cables and connections, and restore the generator set to the ready-to-run state.

4.04 Training

Provide 4 complete bound, “HARD COPY” Operation, Maintenance and Parts Manuals for the Generator Set, to the Owner. In addition, provide electronic copies of all generator publications, brochures, wiring diagrams, full size generator and ATS factory drawings, and full size drawings of any and all generator accessories provided on this project, in PDF format.

4.05 Service and support

A. The manufacturer of the generator set shall maintain service parts inventory at a central location which is accessible to the service location 24 hours per day, 365 days per year.

B. The generator set shall be serviced by a local service organization that is trained and factory certified in generator set service for this make and model of generator set. The supplier shall maintain an inventory of critical replacement parts at the local service organization, and in service vehicles. The service organization shall be on call 24 hours per day, 365 days per year.

C. The manufacturer shall maintain model and serial number records of each generator set provided for at least 20 years.

4.06 Warranty

A. The generator set and associated equipment (including the Automatic Transfer Switch with Manual Bypass specified in another specification Paragraph) shall be warranted for a period of not less than 5 years from the date of commissioning against defects in materials and workmanship.

B. The warranty shall be comprehensive. No deductibles or additional compensation shall be allowed for travel time, service hours, repair parts cost, etc. The warranty does not include vibrating sheet metal, nor replaceable items such as belts, hoses and fluids, but does include ALL other items, including water jacket heaters. If loss of antifreeze is due to radiator repairs or replacement, the warranty shall include replacement of the antifreeze.

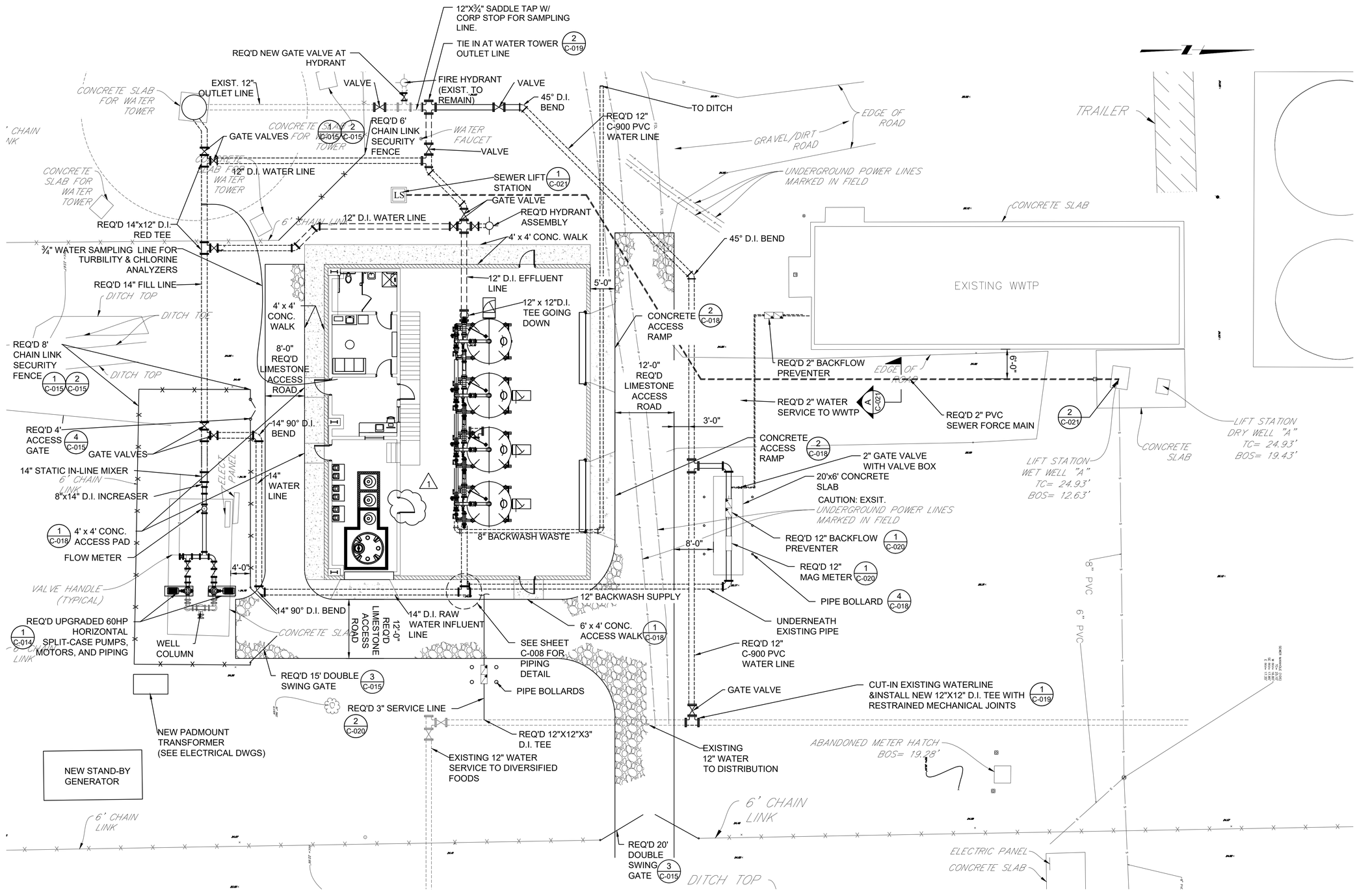
C. In case of need for warranty work, the local service organization shall have a representative on site within 24 hours of written notification of the need. The “representative” shall be a bonafide service person capable of

performing the needed repairs, and shall have the needed tools and NEW repair parts present, provided enough information detailing the problem is made available to the service organization before the service person is dispatched to the jobsite. Repairs shall be carried out and completed in a timely manner.

D. The contents of this warranty shall stand as written. There shall be NO deviations, exclusions, exceptions, modifications, nor conditions “attached” to the warranty provided to the Owner, unless the Owner agrees to same in writing. Provide a typed Warranty to this effect to the Owner. Do not substitute nor propose, pre-written factory warranties.

END OF SECTION

REVISED



DETAILED SITE PLAN

SCALE: 1"=10'

10 0 5 10 20 40

SCALE: 1" = 10'-0" HORIZ.

1 NOTE: ALL PIPING, VALVES, AND FITTINGS SHOWN SHALL BE REQUIRED NEW UNLESS NOTED AS EXISTING OR OTHERWISE

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

No.	DESCRIPTION OF REVISION	DATE:
1	ADDENDUM 02	8/26/24

DESIGNED BY:	MH
DRAWN BY:	PW
CHECKED BY:	JAB
SUBMITTED BY:	BBEC, LLC
PROJECT No.:	TU23000181
ISSUE DATE:	04/15/2024
APPROVED BY:	JAB
SHEET SIZE:	ANSI D
SCALE:	AS NOTED

STATE OF LOUISIANA
MATTHEW P. HAHN
License No. 44796
PROFESSIONAL ENGINEER
7/15/24
CIVIL ENGINEERING

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

DETAILED SITE PLAN

SHEET NO.
C-001
SHEET 12 OF 92

DWG FILE: \\bbec-fs1.bbecllc.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\C-001 - Diversified_Site Plan.dwg - 8/29/2024 5:01 PM User: Phil Plot Date: Thu Aug-29-2024 - 05:03PM

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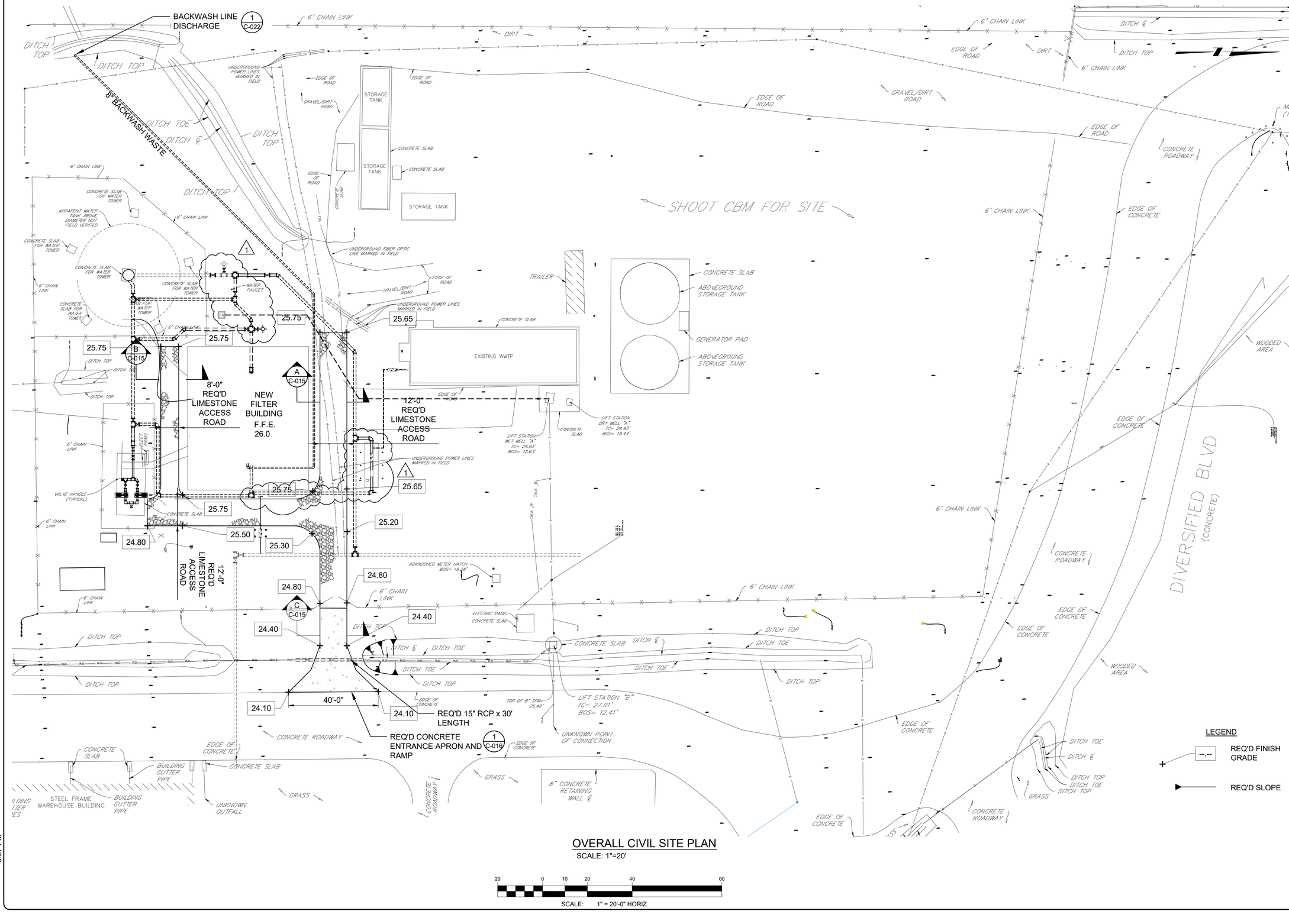

OVERALL CIVIL SITE PLAN

SCALE: 1"=20'

20 0 10 20 40 60

SCALE: 1" = 20'-0" HORIZ.

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

No.	DESCRIPTION OF REVISION	DATE:
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SUBMITTED BY:	BBEC, LLC
PROJECT No.:	TU23000181
ISSUE DATE:	04/15/2024
APPROVED BY:	JAB
SHEET SIZE:	ANSI D
SCALE:	AS NOTED

STATE OF LOUISIANA
MATTHEW P. HAIN
License No. 44798
PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/15/24

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

OVERALL CIVIL SITE PLAN

SHEET NO.
C-002
SHEET 13 OF 92

Plot Date: Fri Aug-23-2024 - 04:06PM
User: Phil
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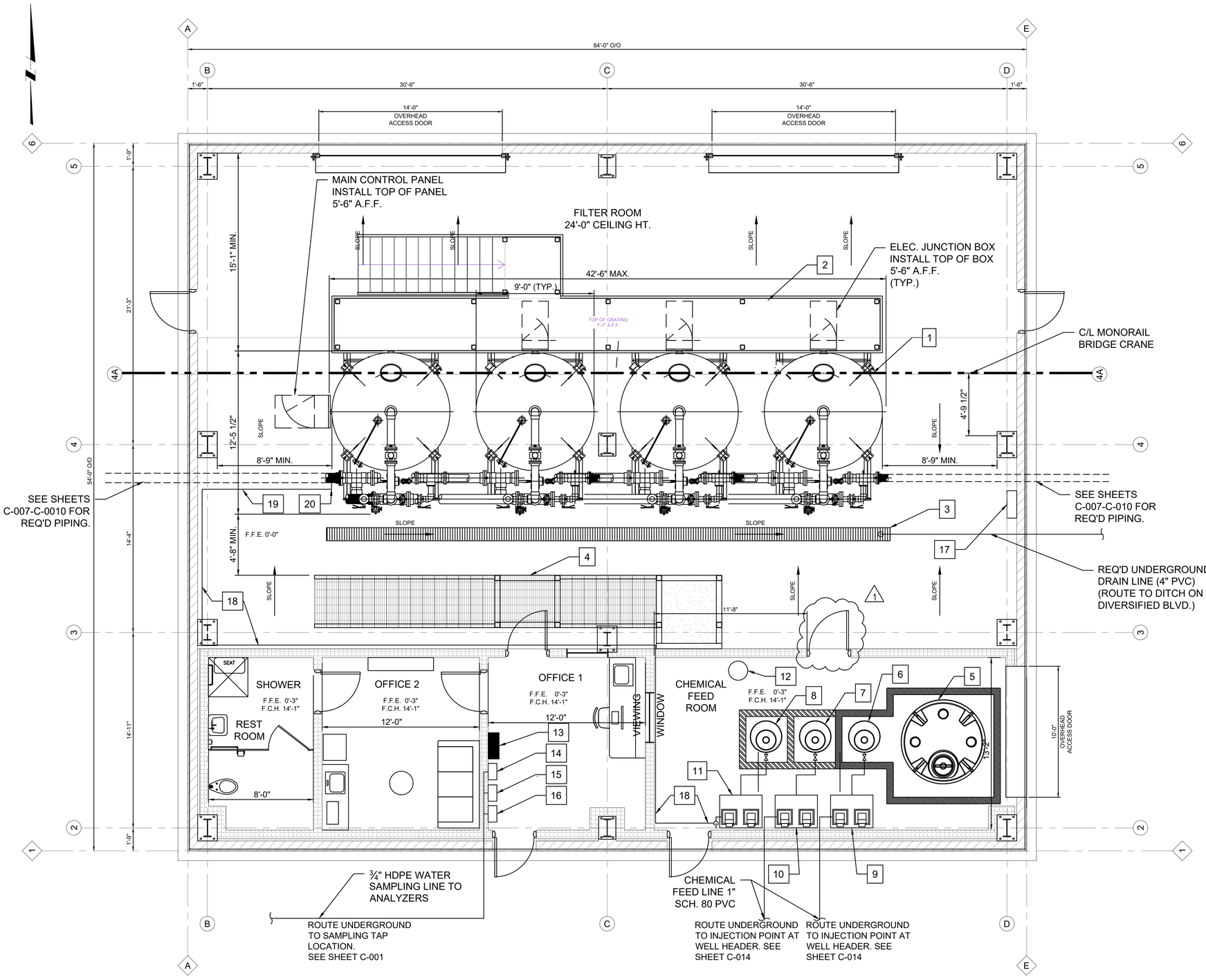

KEY NOTES

NO.	DESCRIPTION
1	FILTRATION SYSTEM ASSEMBLY WITH FACE PIPNG, VALVES AND CONTROLS. RE: SPEC SECTION 46 61 21
2	MAINTENANCE ACCESS AND ELEVATED WALKING PLATORM. RE STRUCT.
3	FLOOR TRENCH DRAIN. RE: MECH.
4	MEZZANINE STAIRS RE: STRUCT.
5	1000 GALLON SODIUM HYPOCHLORITE BULK STORAGE TANK.
6	65 GALLON SODIUM HYPOCHLORITE DAY TANK.
7	65 GALLON POTASSIUM PERMANGANATE DAY TANK.
8	65 GALLON POLYMER SOLUTION DAY TANK.
9	SODIUM HYPOCHLORITE DUPLEX FEED PUMPS
10	POTASSIUM PERMANGANATE DUPLEX FEED PUMPS
11	POLYMER SOLUTION DUPLEX FEED PUMPS
12	COMBINATION SHOWER AND EYE WASH SAFETY STATION. RE: PLUMB.
13	SCADA PANEL
14	TURBIDITY MONITOR. RE: SHEET C-013.
15	FREE CHLORINE MONITOR. RE: SHEET C-013.
16	TOTAL CHLORINE MONITOR. RE: SHEET C-013.
17	DISPLAY UNIT FOR MAG FLOW METER AT BACKWASH SUPPLY LINE.
18	1" SCH. 80 PVC POLYMER FEED LINE INSTALLED 14'-0" AFF USING GALVANIZED STEEL SUPPORT CLIPS ANCHORED TO CMU WALL/STEEL GIRTS @ 6'-0" O,C, MINIMUM
19	1" SCH. 80 PVC POLYMER FEED LINE INSTALLED 20'-0" AFF USING GALVANIZED STEEL CLEVIS HANGERS @ 6'-0" O,C, MINIMUM
20	1" SCH. 80 PVC POLYMER INJECTION INTO 12" FILTER EFFLUENT LINE AT FILTER SKID. SEE DETAIL 3/C-019

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No.	DESCRIPTION OF REVISION	DATE:
2	ADDENDUM 02	8/26/24

DESIGNED BY:	MH
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SUBMITTED BY:	BBEC, LLC
PROJECT No.:	TU23000181
ISSUE DATE:	04/15/2024
APPROVED BY:	JAB
SHEET SIZE:	ANSI D
SCALE:	AS NOTED

STATE OF LOUISIANA
MATTHEW P. RAHN
License No. 44796
PROFESSIONAL ENGINEER
7/15/24
CIVIL ENGINEERING

DIVERSIFIED WATER WELL PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

FILTER PROCESS FLOOR PLAN

SHEET NO.
C-004
SHEET 15 OF 92

DIVERSIFIED WATER WELL PRETREATMENT SYSTEM
FILTER PROCESS FLOOR PLAN
SCALE: 1/4" = 1'0"

DWG FILE: \\bbec-fs1.bbecllc.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\C-004 - Diversified_ Filter Process Floor Plan.dwg - Plot Date: Wed Aug.28-2024 - 05:26PM User: Phil
8/28/2024 5:24 PM

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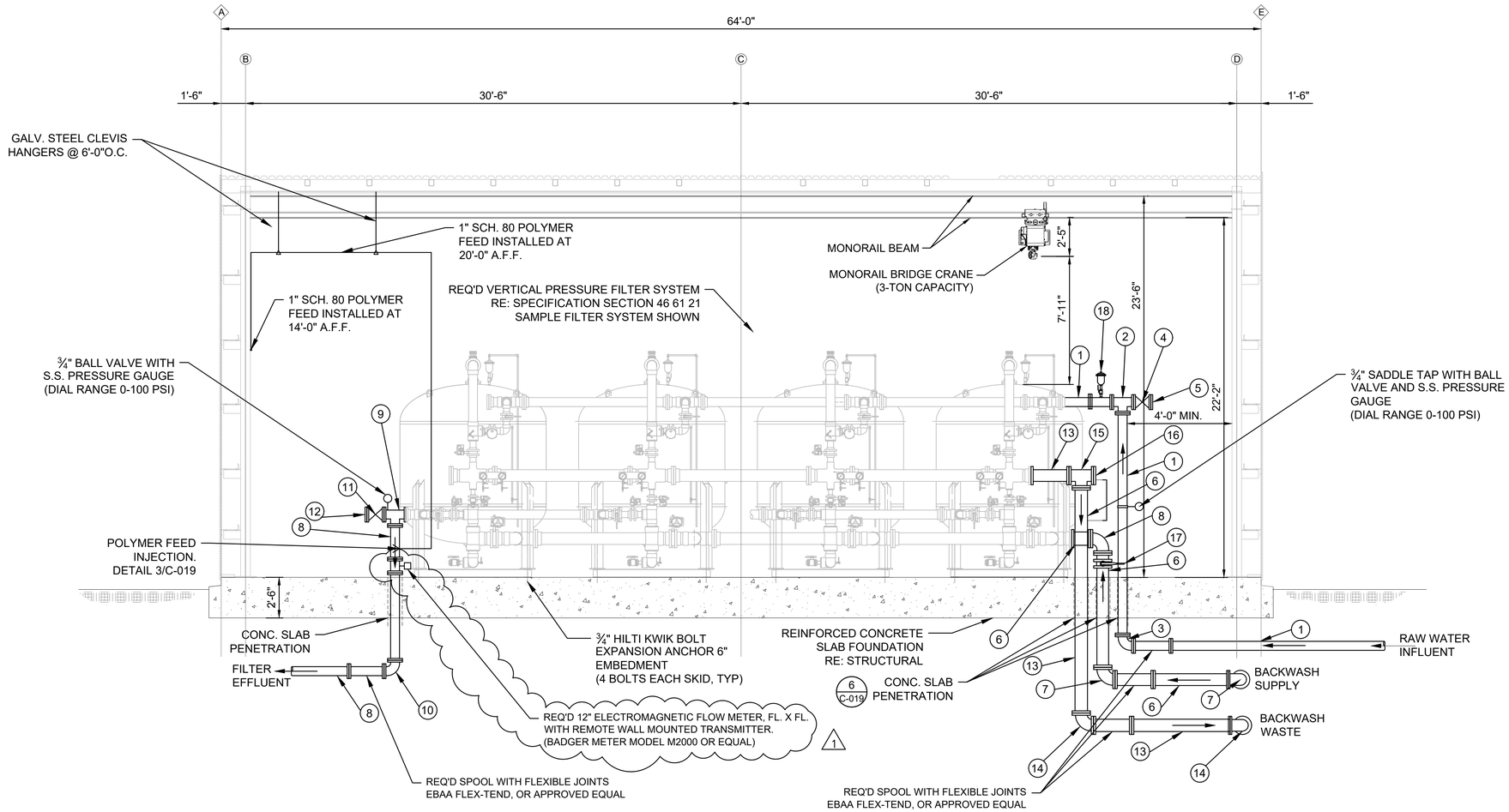

FILTER BUILDING PROCESS CROSS SECTION LOOKING NORTH

SCALE: 1/4"=1'-0"

GENERAL SHEET NOTES

1. RESERVED
2. RESERVED

KEY NOTES

NO.	DESCRIPTION	SYSTEM TYPE
1	14" D.I. PIPE	INFLUENT
2	14" x 14" TEE	INFLUENT
3	14" 90° D.I. BEND	INFLUENT
4	14" GATE VALVE	INFLUENT
5	14" BLIND FL	INFLUENT
6	12" D.I. PIPE	BACKWASH SUPPLY
7	12" 90° D.I. BEND	BACKWASH SUPPLY
8	12" D.I. PIPE	EFFLUENT
9	12" x 12" D.I. TEE	EFFLUENT
10	12" 90° D.I. BEND	EFFLUENT
11	12" GATE VALVE	EFFLUENT
12	12" FLANGE BL	EFFLUENT
13	8" D.I. PIPE	BACKWASH WASTE
14	8" 90° D.I. BEND	BACKWASH WASTE
15	8" x 8" D.I. TEE	BACKWASH WASTE
16	8" FLANGE BL	BACKWASH WASTE
17	12" BUTTERFLY VALVE	BACKWASH SUPPLY
18	AIR RELEASE VALVE	INFLUENT

ST. TAMMANY PARISH GOVERNMENT

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

No.	DESCRIPTION OF REVISION	DATE:
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DESIGNED BY: MH
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CHECKED BY: JAB
SUBMITTED BY: BBEC, LLC
PROJECT No.: TU23000181
ISSUE DATE: 04/15/2024
APPROVED BY: JAB
SHEET SIZE: ANSI D
SCALE:

STATE OF LOUISIANA
MATTHEW P. RAHN
License No. 44796
PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/15/24

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

FILTER LAYOUT CROSS SECTION

SHEET NO.
C-008
SHEET 19 OF 92

Plot Date: Fri Aug-23-2024 - 04:29PM
User: Phil
DWG FILE: \\bbec-fs1.bbecllc.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\C-007-C-010 - Diversifed_Filter Layout Cross Sections.dwg - 8/23/2024 4:28 PM

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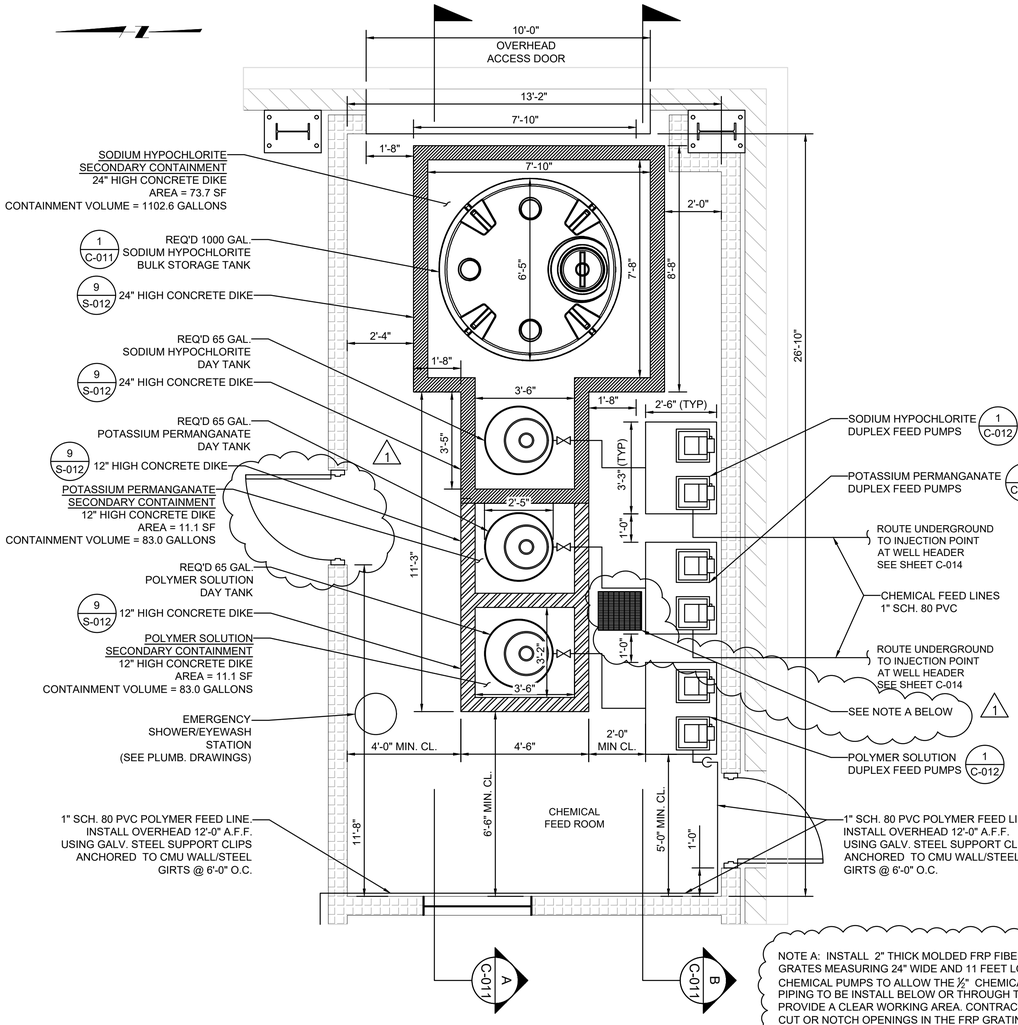
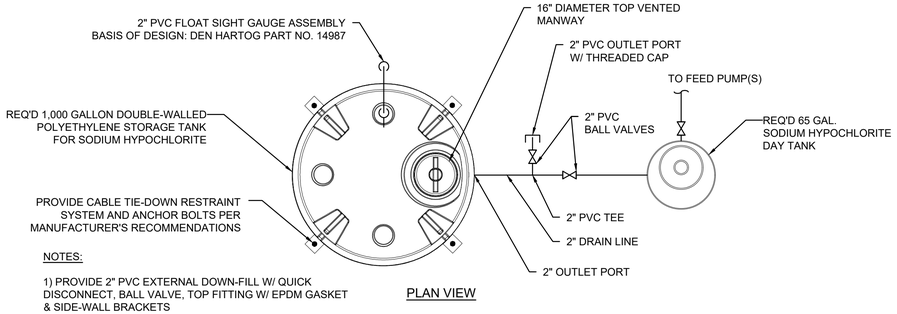


PLAN - CHEMICAL FEED ROOM

SCALE: 3/8" = 1'-0"

NOTE A: INSTALL 2" THICK MOLDED FRP FIBERGLASS FLOOR GRATES MEASURING 24" WIDE AND 11 FEET LONG IN FRONT OF CHEMICAL PUMPS TO ALLOW THE ½" CHEMICAL PUMP SUCTION PIPING TO BE INSTALL BELOW OR THROUGH THE GRATES AND PROVIDE A CLEAR WORKING AREA. CONTRACTOR SHALL FIELD CUT OR NOTCH OPENINGS IN THE FRP GRATING TO PASS CONDUITS BELOW THE FINISH WALKING SURFACE. 1



NOTES:

1) PROVIDE 2" PVC EXTERNAL DOWN-FILL W/ QUICK DISCONNECT, BALL VALVE, TOP FITTING W/ EPDM GASKET & SIDE-WALL BRACKETS

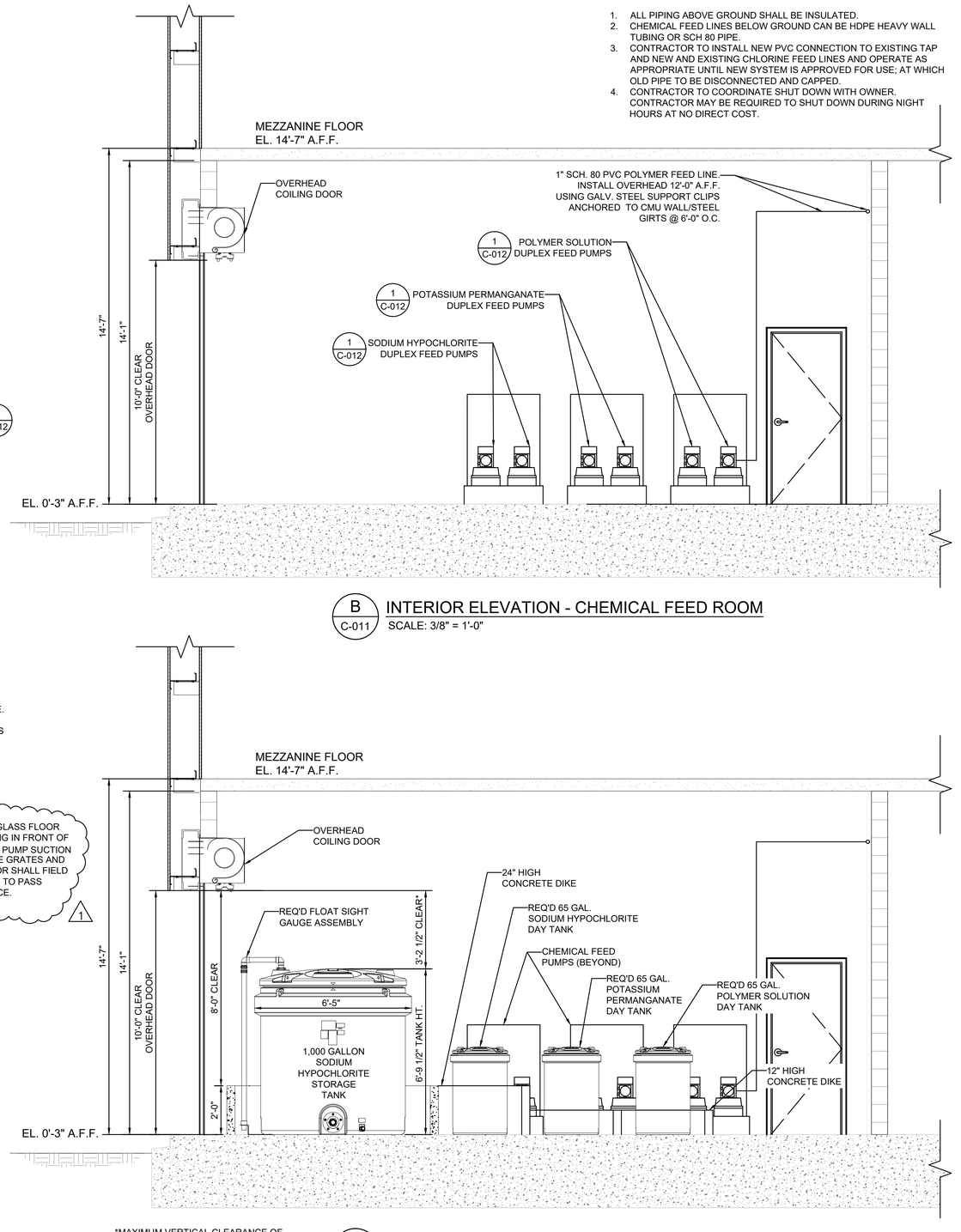
PLAN VIEW

1 C-011 DETAIL - 1,000 GALLON SODIUM HYPOCHLORIDE STORAGE TANK

SCALE: 3/8" = 1'-0"

NOTES:

1. ALL PIPING ABOVE GROUND SHALL BE INSULATED.
2. CHEMICAL FEED LINES BELOW GROUND CAN BE HDPE HEAVY WALL TUBING OR SCH 80 PIPE.
3. CONTRACTOR TO INSTALL NEW PVC CONNECTION TO EXISTING TAP AND NEW AND EXISTING CHLORINE FEED LINES AND OPERATE AS APPROPRIATE UNTIL NEW SYSTEM IS APPROVED FOR USE; AT WHICH OLD PIPE TO BE DISCONNECTED AND CAPPED.
4. CONTRACTOR TO COORDINATE SHUT DOWN WITH OWNER. CONTRACTOR MAY BE REQUIRED TO SHUT DOWN DURING NIGHT HOURS AT NO DIRECT COST.



B C-011 INTERIOR ELEVATION - CHEMICAL FEED ROOM

SCALE: 3/8" = 1'-0"

*MAXIMUM VERTICAL CLEARANCE OF 1'-2 1/2" AVAILABLE FOR 1000 GAL. TANK REMOVAL/REPLACEMENT WHEN LIFTING OVER 24" CONCRETE DIKE.

A C-011 INTERIOR ELEVATION - CHEMICAL FEED ROOM

SCALE: 3/8" = 1'-0"

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

No.	DESCRIPTION OF REVISION	DATE:
1	ADDENDUM 02	8/26/24

DESIGNED BY:	MH
DRAWN BY:	PW
CHECKED BY:	MH
SUBMITTED BY:	BBEC, LLC
PROJECT No.:	TU23000181
ISSUE DATE:	04/15/2024
APPROVED BY:	JAB
SHEET SIZE:	ANSI D
SCALE:	3/8"=1'-0"

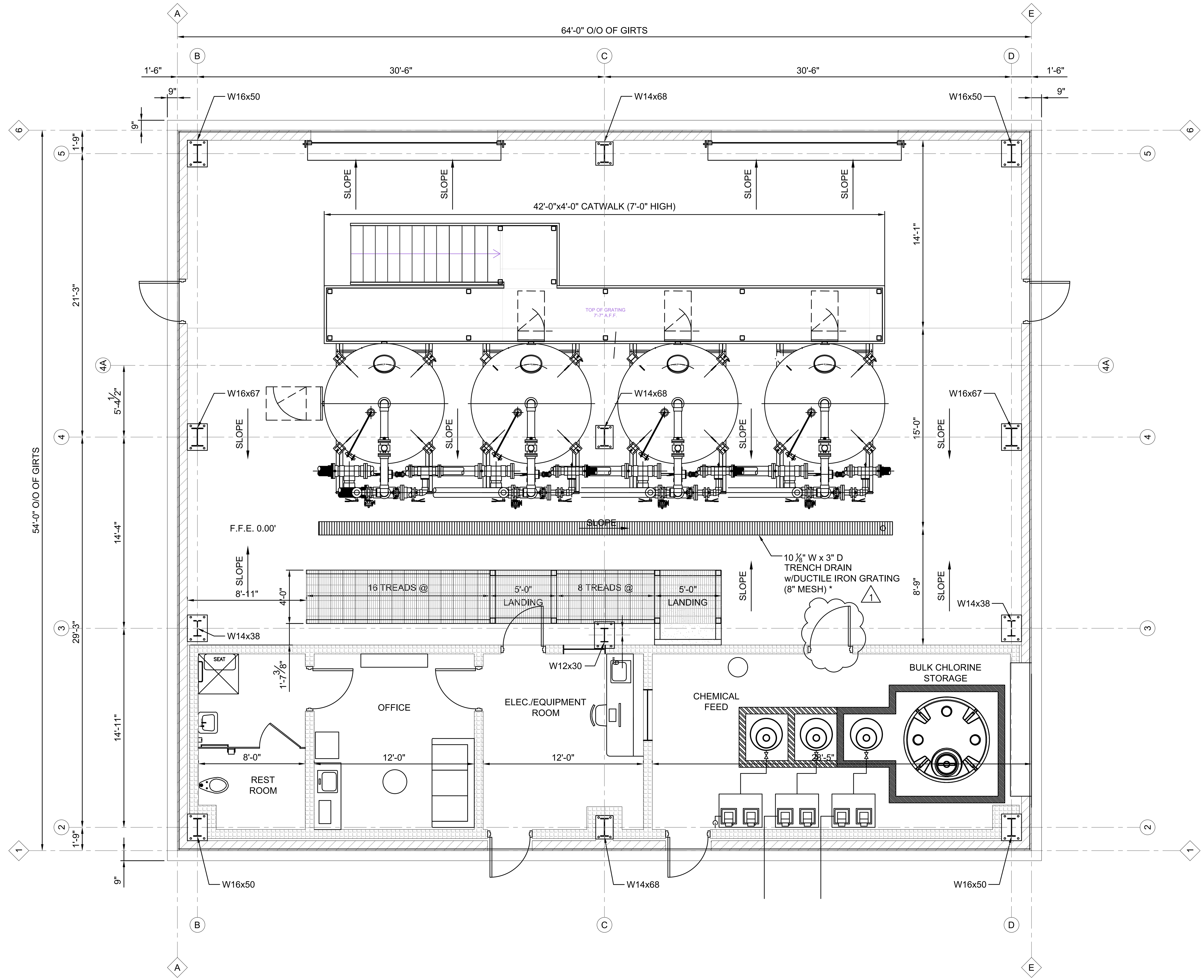
STATE OF LOUISIANA
MATTHEW P. RAHN
License No. 44796
PROFESSIONAL ENGINEER
7/15/24
CIVIL ENGINEERING

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

CHEMICAL FACILITIES PLAN AND ELEVATION

SHEET NO.
C-011
SHEET 22 OF 92

REVISED



FOUNDATION PLAN

SCALE: 1/4"=1'-0"

* VODALAND OR APPROVED EQUAL

DWG FILE: \\bbec-fs1.bbecllc.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\S-002 - Diversified_Foundation Plan.dwg - 8/28/2024 1:57 PM

User: Phil

Plot Date: Wed Aug-28-2024 - 01:59PM

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

No.	DESCRIPTION OF REVISION	DATE:
1	ADDENDUM 02	8/26/24

DESIGNED BY: MK
DRAWN BY: PF
CHECKED BY: MH
SUBMITTED BY: BBEC, LLC
PROJECT No.: TU23000181
ISSUE DATE: 04/15/2024
APPROVED BY: JAB
SHEET SIZE: ANSI D
SCALE:

MATTHEW P. HAHN
License No. 44796
PROFESSIONAL ENGINEER

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

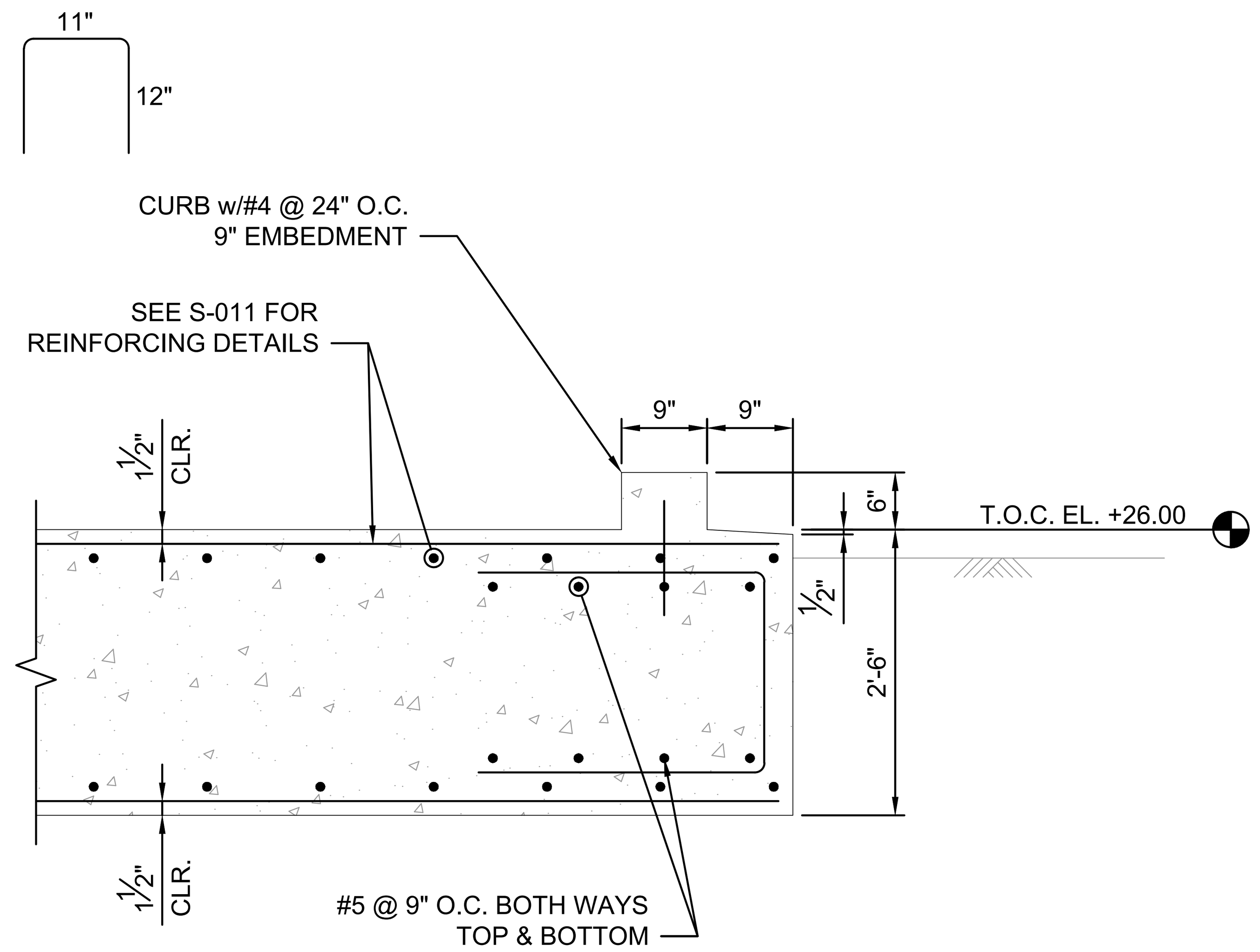
FOUNDATION PLAN

SHEET NO.

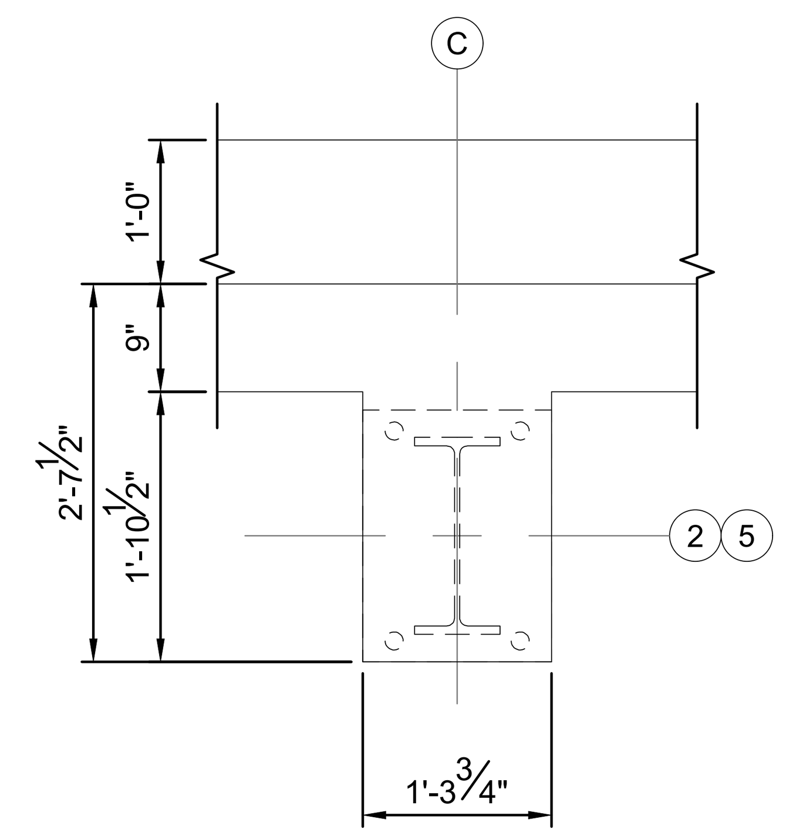
S-002

SHEET 38 OF 92

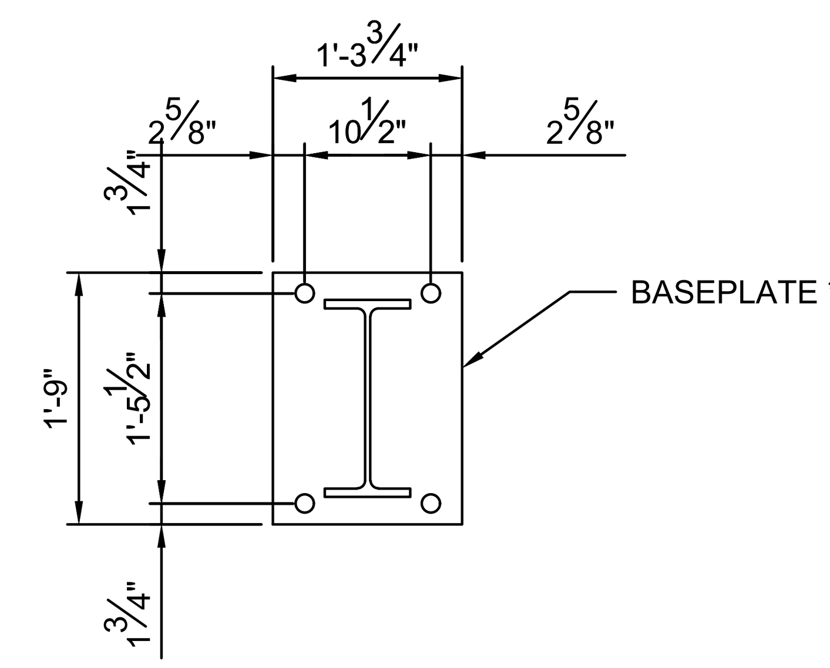
REVISED



1 S-012 TYPICAL BEAM AT CONCRETE MAT
SCALE: 3/4"=1'-0"

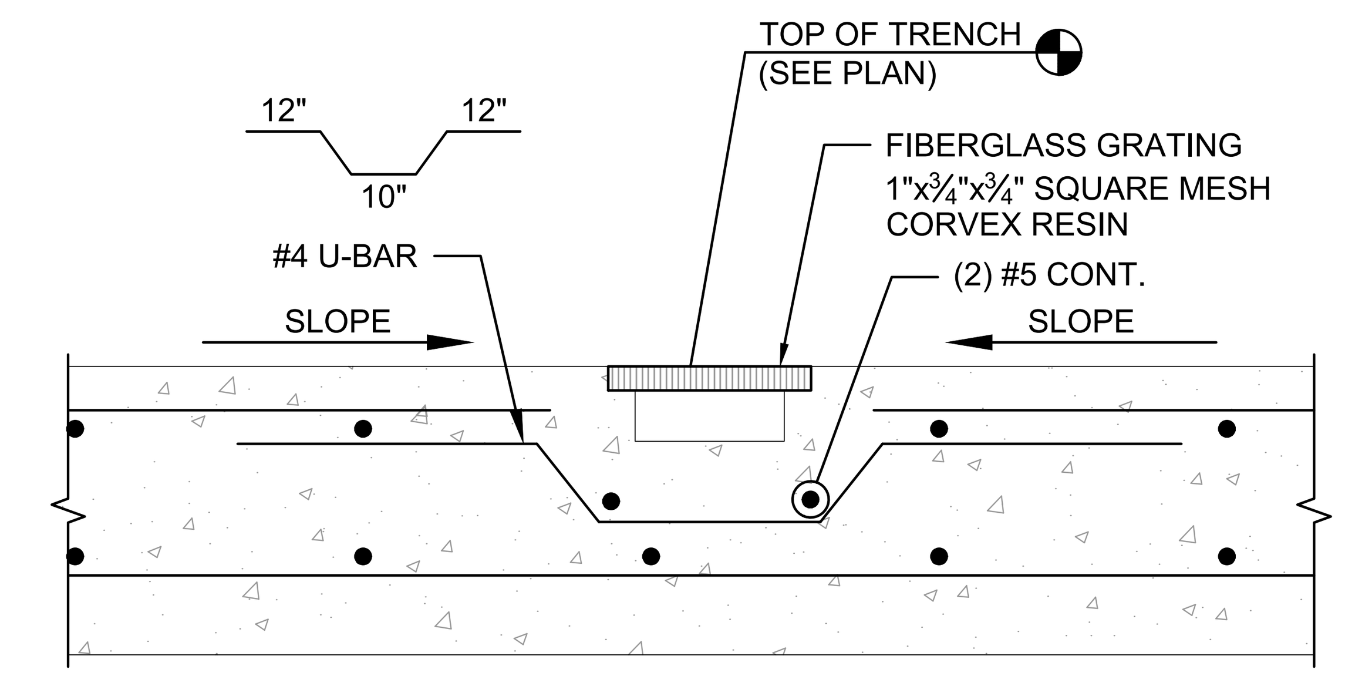


3 S-012 W14x68 PEDESTAL
SCALE: 3/4"=1'-0"

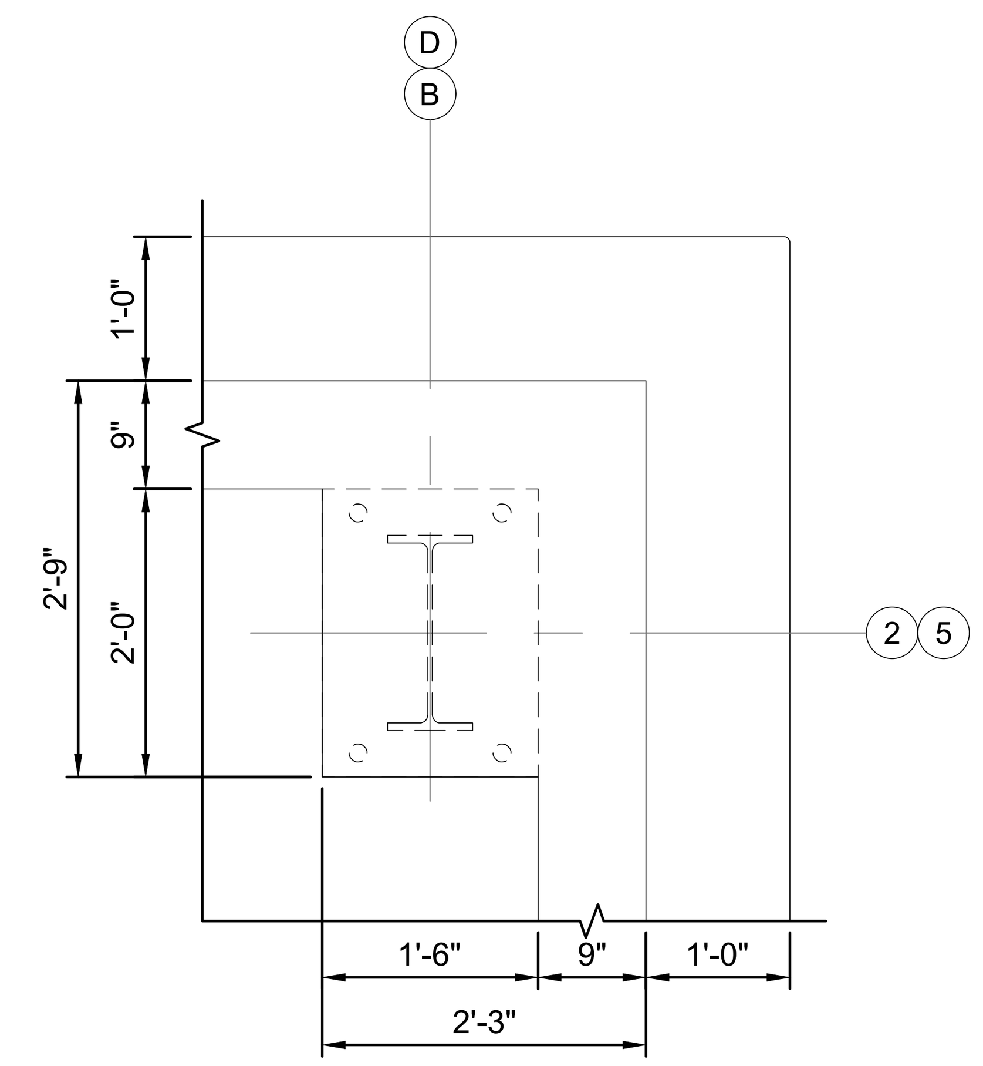


4 S-012 W14x68 BASEPLATE DETAIL *
SCALE: 3/4"=1'-0"

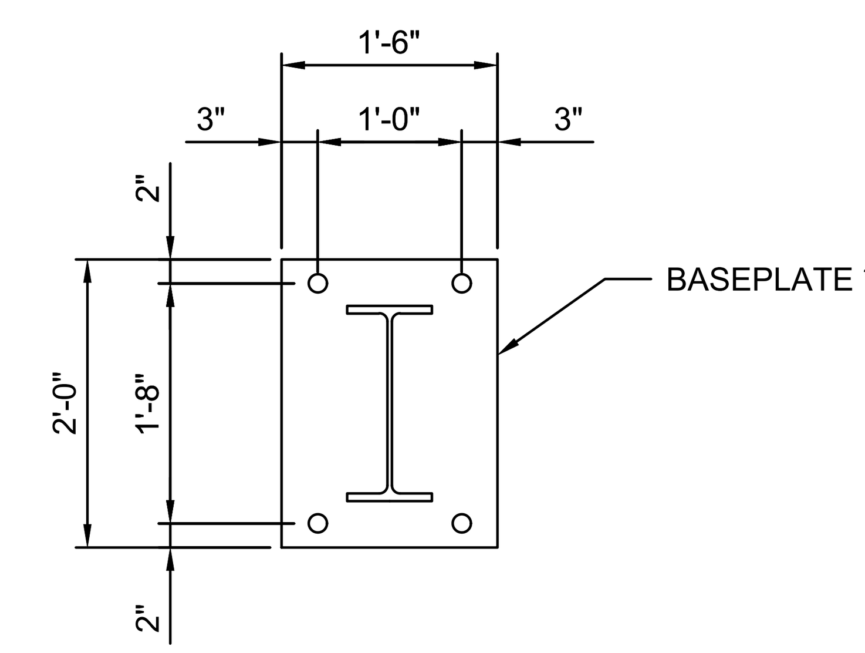
* ALL BASE PLATES 1" - GRADE FY: 50 KSI



7 S-012 TRENCH DETAIL
SCALE: 1 1/2"=1'-0"

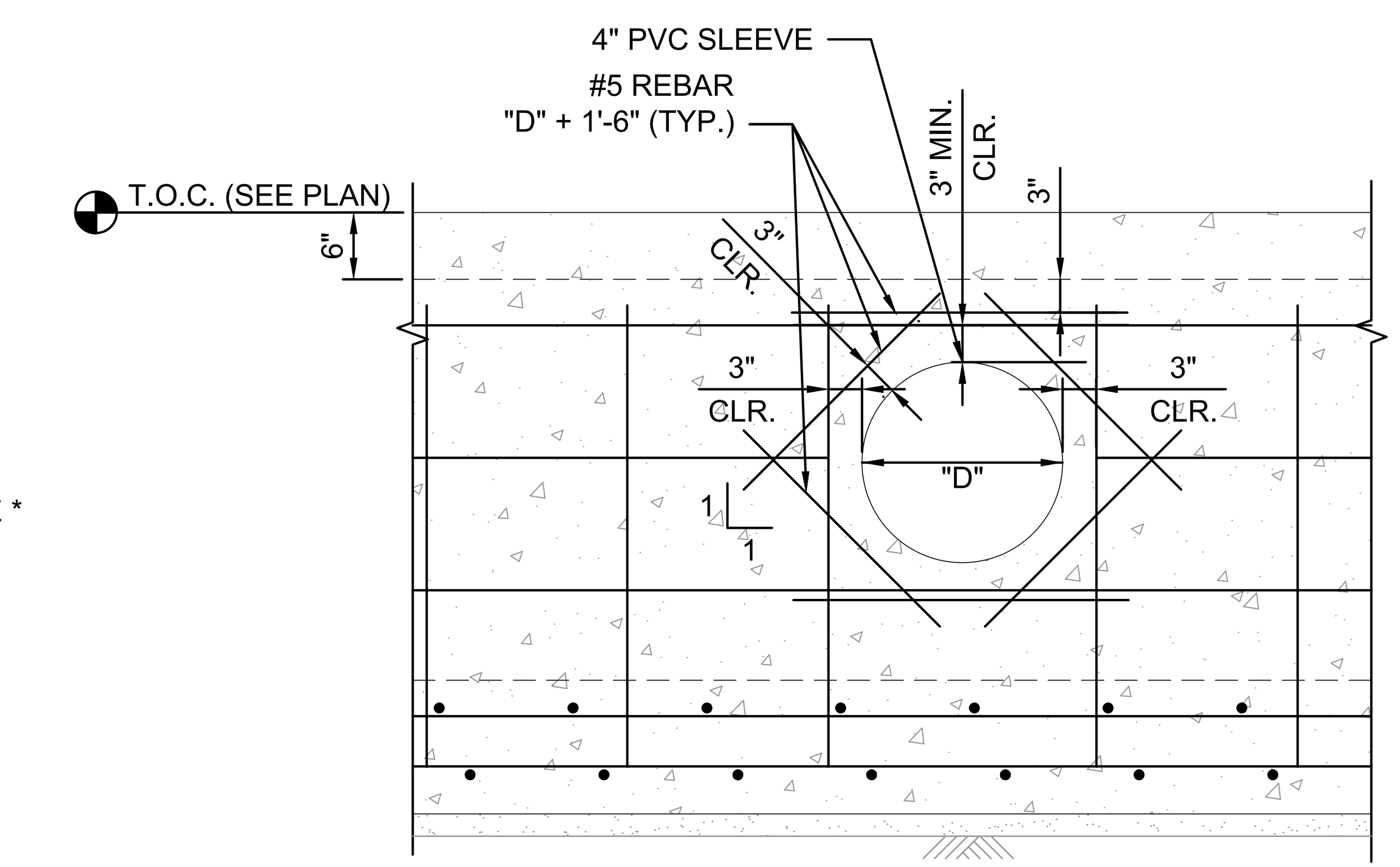


5 S-012 W16x50 CORNER PEDESTAL
SCALE: 3/4"=1'-0"

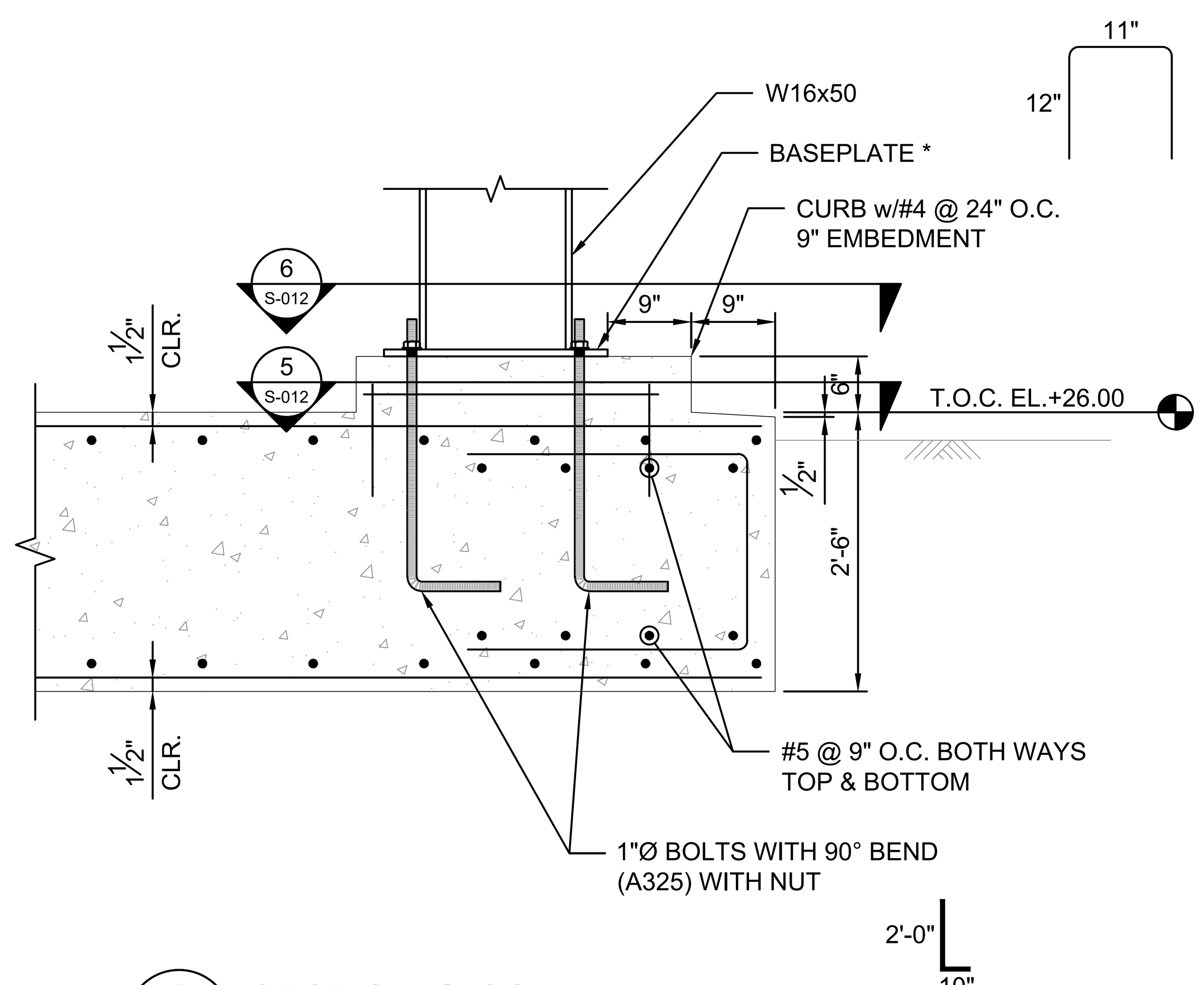


6 S-012 W16x50 BASEPLATE DETAIL *
SCALE: 3/4"=1'-0"

* ALL BASE PLATES 1" - GRADE FY: 50 KSI



8 S-012 TYPICAL GRADE BEAM PIPE SLEEVE (WHERE REQ'D)
SCALE: 3/4"=1'-0"



2 S-012 SECTION @ COLUMN
SCALE: 3/4"=1'-0"

NOTE 1 - PVC WATERSTOP:

PROVIDE WATERSTOP AT CONCRETE CONSTRUCTION JOINT TO PROVIDE LIQUID-TIGHT SEAL AROUND ENTIRE CONTAINMENT CURB PERIMETER. WATERSTOPS SHALL BE 6" WIDTH TAPERED RIBBED PATTERN OR DUMBBELL PATTERN. PROVIDE FLEXIBLE PVC (POLYVINYL CHLORIDE) WATERSTOP AS MANUFACTURED BY SIKA, GREEN STREAK PVC #748 OR EQUAL.

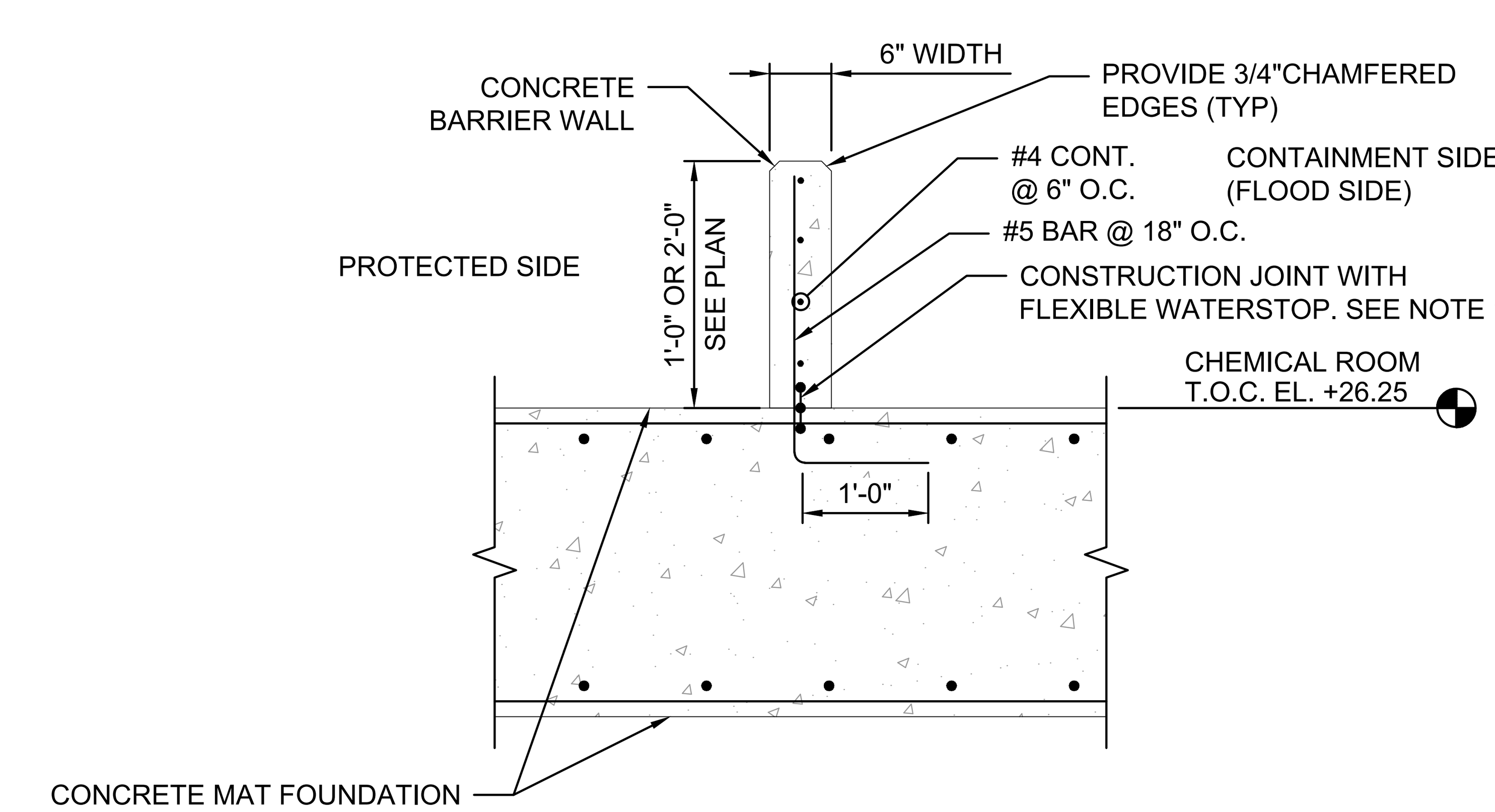
a. THE PVC WATERSTOP SHALL BE EXTRUDED FROM AN ELASTOMERIC PLASTIC MATERIAL OF WHICH THE BASIC RESIN IS PRIME VIRGIN POLYVINYL CHLORIDE MEETING THE REQUIREMENTS OF CRD-C-572. THE PVC COMPOUND SHALL NOT CONTAIN ANY SCRAPPED OR RECLAIMED MATERIAL OR PIGMENT.

b. THE VERTICAL WATERSTOP SHALL BE PLACED AND SUPPORTED SO THAT THE BOTTOM OF THE CENTER BULB IS AT THE ELEVATION OF THE TOP OF THE FOOTING.

c. SPLICES SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS. FIELD BUTT SPLICES SHALL BE HEAT FUSED WELDED USING A TEFLON COATED THERMOSTATICALLY CONTROLLED WATERSTOP WELDING IRON AT APPROXIMATELY 380 DEGREES F. EACH SPLICE SHALL BE ELECTRONICALLY SPARK TESTED PRIOR TO CONCRETE ENCASEMENT AND ANY DEFECTS SHALL BE REPAIRED PRIOR TO INSTALLATION. **LAPPING OF WATERSTOP, NON-WELDED BUTT JOINTS, USE OF ADHESIVES, OR SOLVENTS SHALL NOT BE ALLOWED.**

d. CENTER WATERSTOP IN JOINT AND SECURE WATERSTOP IN CORRECT POSITION USING GROMMETS, PRE-PUNCHED HOLES, OR HOG RINGS SPACED AT 12 INCHES ON CENTER ALONG THE LENGTH OF THE WATERSTOP AND WIRE TIE TO ADJACENT REINFORCING STEEL.

e. PROVIDE FACTORY MADE WATERSTOP FABRICATIONS FOR ALL CHANGES OF DIRECTION, INTERSECTIONS, AND TRANSITIONS LEAVING ONLY STRAIGHT BUTT JOINT SPLICES FOR THE FIELD.



9 S-012 SECTION - TYPICAL CONCRETE CONTAINMENT DIKE
SCALE: 1/2"=1'-0"

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

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1	ADDENDUM 02	8/26/24

DESIGNED BY:	MK
DRAWN BY:	PF
CHECKED BY:	MH
SUBMITTED BY:	BBEC, LLC
PROJECT No.:	TU23000181
ISSUE DATE:	04/15/2024
APPROVED BY:	JAB
SHEET SIZE:	ANSI D
SCALE:	

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

FOUNDATION DETAILS

SHEET NO.
S-012
SHEET 47 OF 92

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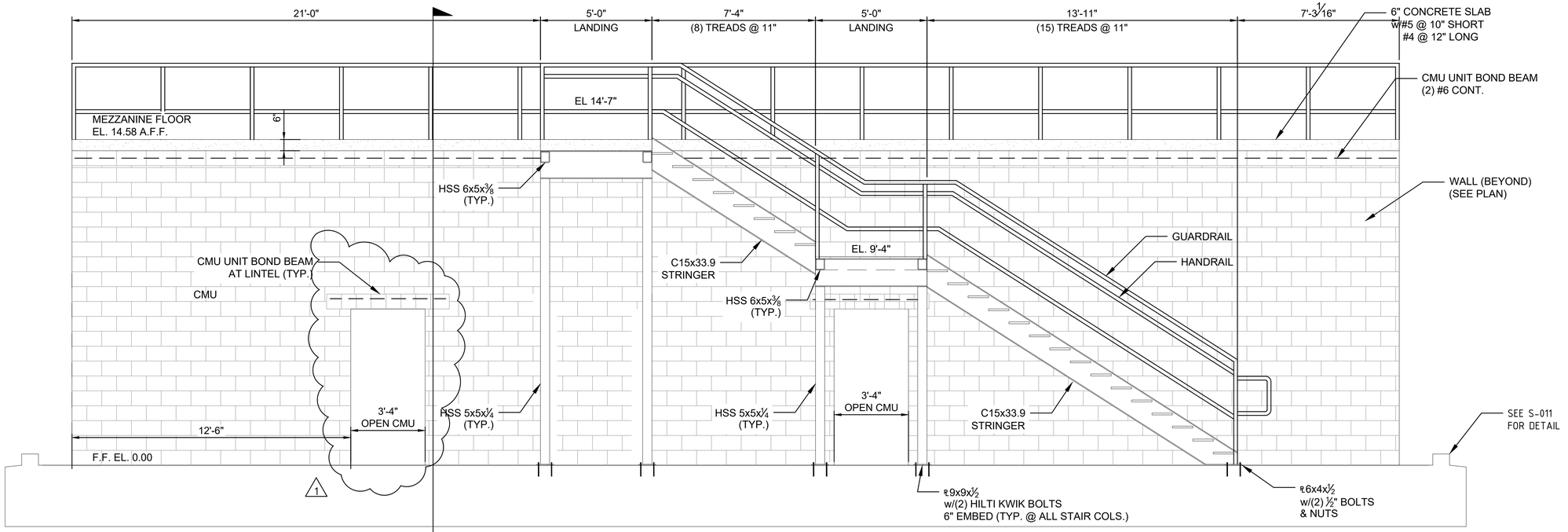
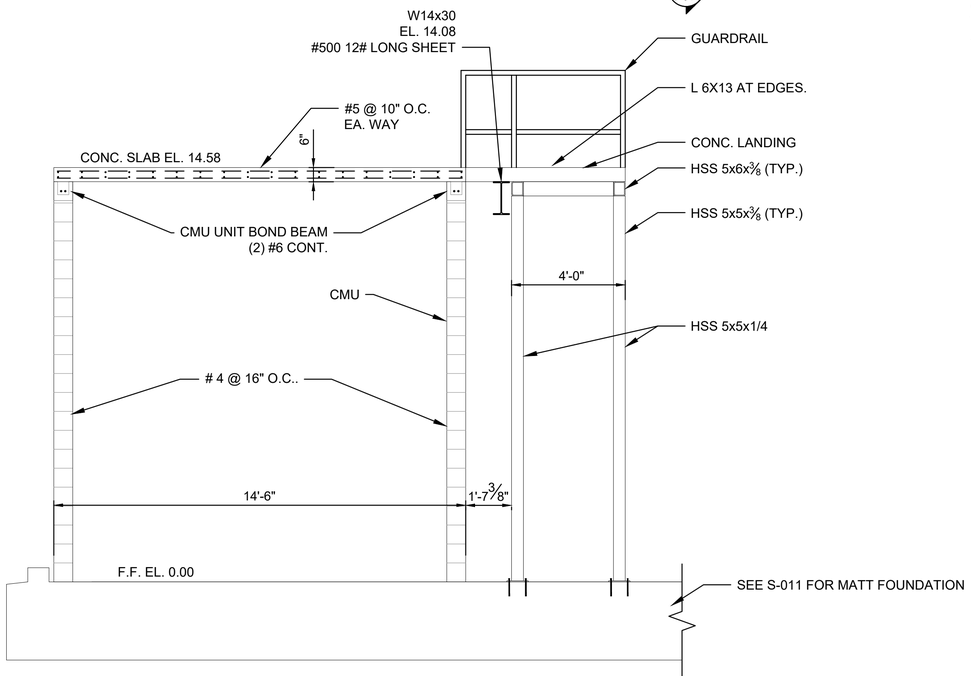


CMU NORTH WALL ELEVATION (LOOKING SOUTH) AND STAIR DETAIL

SCALE: 3/8" = 1'-0"



A S-014

TYPICAL SECTION TITLE

SCALE: 3/8"=1'-0"

* ONE ON EACH SIDE OF STAIRS.

8" CMU

NOTES:
1. ALL CMU BLOCKS TO BE GROUT FILLED (THIS AREA), FOR CHEMICAL FEED & BULK CONCRETE CHAMBERS.

2. ALTERNATE BLOCK FILLED IN REST OF OFFICE/EQUIPMENTS ROOM AREAS.

ST. TAMMANY PARISH GOVERNMENT

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

No.	DESCRIPTION OF REVISION	DATE:
2	ADDENDUM 02	8/26/24

DESIGNED BY:	MK
DRAWN BY:	PF
CHECKED BY:	MH
SUBMITTED BY:	BBEC, LLC
PROJECT No.:	TU23000181
ISSUE DATE:	04/15/2024
APPROVED BY:	JAB
SHEET SIZE:	ANSI D
SCALE:	

STATE OF LOUISIANA
MATTHEW P. HAHN
License No. 44796
PROFESSIONAL ENGINEER
7/15/24
CIVIL ENGINEERING

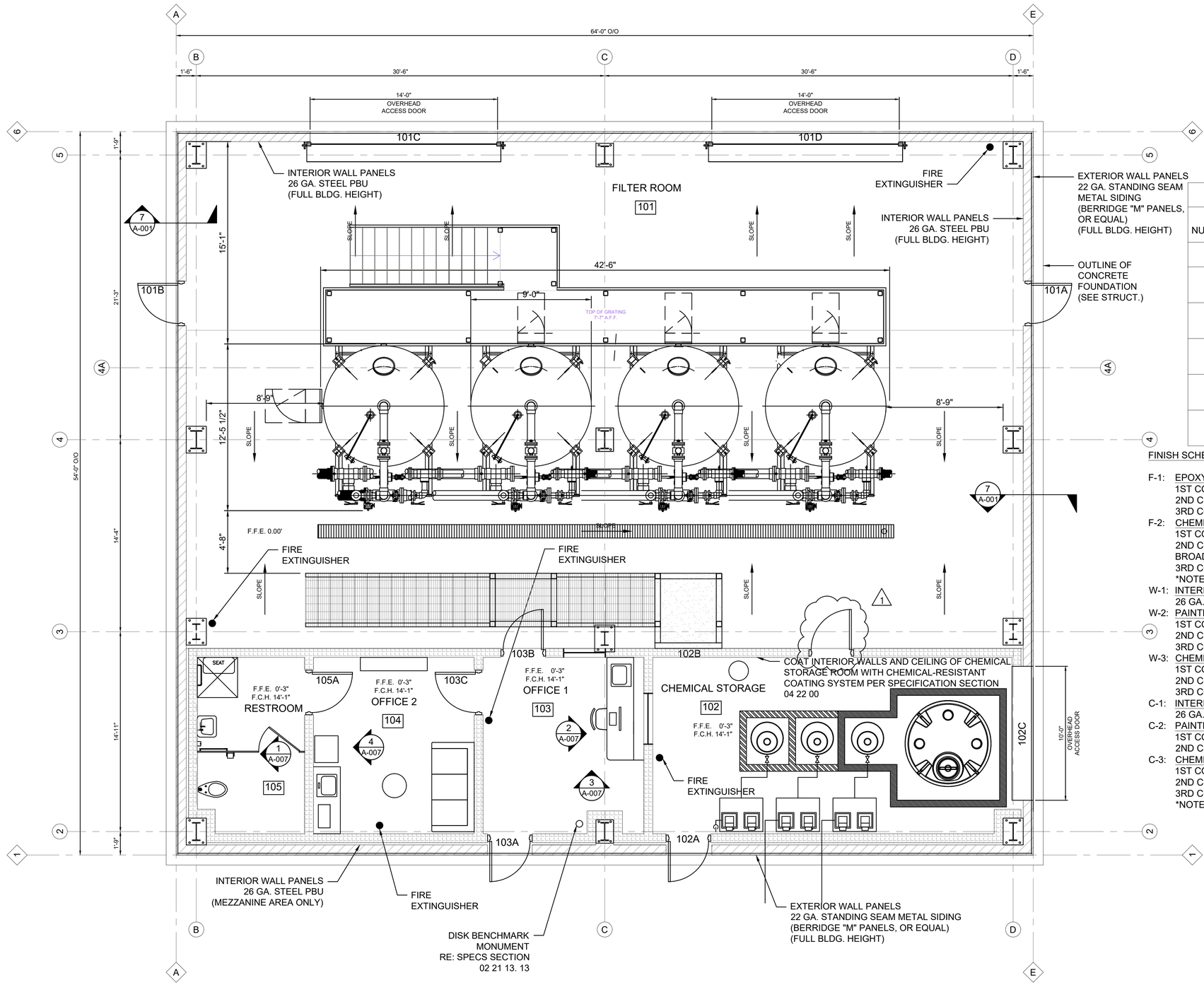
DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

CMU WALL NORTH ELEVATION

SHEET NO.
S-014
SHEET 49 OF 90

Plot Date: Wed Aug-28-2024 - 11:54AM
User: Phil
DWG FILE: \\bbec-fs1.bbecllc.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\S-014-S-015 - Diversified_CMU Bulding Details And Elevation.dwg - 8/28/2024 11:52 AM

REVISED



DIVERSIFIED WATER WELL PRETREATMENT SYSTEM
FLOOR PLAN
SCALE: 1/4" = 1'-0"

ROOM FINISH SCHEDULE

RM. NUMBER	RM. NAME	FLOOR	BASE	WALLS	CEILING	CEILING HGT.
101	FILTER ROOM	F-1	NONE	W-1	C-1	VARIES
102	CHEMICAL STORAGE	F-2	NONE	W-3	C-3	14'-1"
103	OFFICE 1	F-1	NONE	W-2	C-2	14'-1"
104	OFFICE 2	F-1	NONE	W-2	C-2	14'-1"
105	RESTROOM	F-1	NONE	W-2	C-2	14'-1"
	MEZZANINE	F-1	NONE	W-1	C-1	VARIES

FINISH SCHEDULE LEGEND:

F-1: EPOXY FLOORING
1ST COAT: TNEMEC SERIES 201 EPOXOPRIME, 8 MILS DFT.
2ND COAT: TNEMEC SERIES 280 TNEME-GLAZE, 10 MILS DFT.
3RD COAT: TNEMEC SERIES 290 CRU, 3 MILS DFT.

F-2: CHEMICAL RESISTANT EPOXY FLOORING
1ST COAT: TNEMEC SERIES 201 EXPOXOPRIME, 8 MILS DFT.
2ND COAT: TNEMEC SERIES 282 TNEME-GLAZE, 10 MILS DFT.
BROADCAST SAND FOR A NON-SKID FINISH
3RD COAT: TNEMEC SERIES 282 TNEME-GLAZE, 10 MILS DFT.
*NOTE: CONCRETE CONTAINMENT CURBS ALSO RECIEVE F-2 FINISH.

W-1: INTERIOR WALL PANEL
26 GA. STEEL PBU PANEL. COLOR TBD BY OWNER.

W-2: PAINTED CMU BLOCK
1ST COAT: TNEMEC SERIES 130 ENVIROFILL, 60-80 SQ. FT/GAL.
2ND COAT: TNEMEC SERIES 66/66HS HI-BUILD EPOXOLINE, 3 MILS DFT.
3RD COAT: TNEMEC SERIES 66/66HS HI BUILD EPOXOLINE, 3 MILS DFT.

W-3: CHEMICAL RESISTANT EPOXY CMU WALL COATING
1ST COAT: TNEMEC SERIES 215 SURFACING EPOXY, 5 MILS DFT.
2ND COAT: TNEMEC SERIES 61 TNEME-LINER, 12 MILS DFT.
3RD COAT: TNEMEC SERIES 61 TNEME-LINER, 12 MILS DFT.

C-1: INTERIOR CEILING PANEL
26 GA. STEEL PBU PANEL. COLOR TBD BY OWNER

C-2: PAINTED CONCRETE CEILING
1ST COAT: TNEMEC SERIES 66/66HS HI-BUILD EPOXOLINE, 6 MILS DFT.
2ND COAT: TNEMEC SERIES 66/66HS HI-BUILD EPOXOLINE, 6 MILS DFT.

C-3: CHEMICAL RESISTANT EPOXY CONCRETE CEILING COATING
1ST COAT: TNEMEC SERIES 215 SURFACING EPOXY, 5 MILS DFT.
2ND COAT: TNEMEC SERIES 61 TNEME-LINER, 12 MILS DFT.
3RD COAT: TNEMEC SERIES 61 TNEME-LINER, 12 MILS DFT.
*NOTE: ALL FINISH PAINT COLORS TO BE SELECTED BY OWNER.

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

No.	DESCRIPTION OF REVISION	DATE:
2	ADDENDUM 02	8/26/24

DESIGNED BY:	JAB
DRAWN BY:	PW
CHECKED BY:	MH
SUBMITTED BY:	BBEC, LLC
PROJECT No.:	TU23000181
ISSUE DATE:	04/15/2024
APPROVED BY:	JAB
SHEET SIZE:	ANSI D
SCALE:	AS NOTED

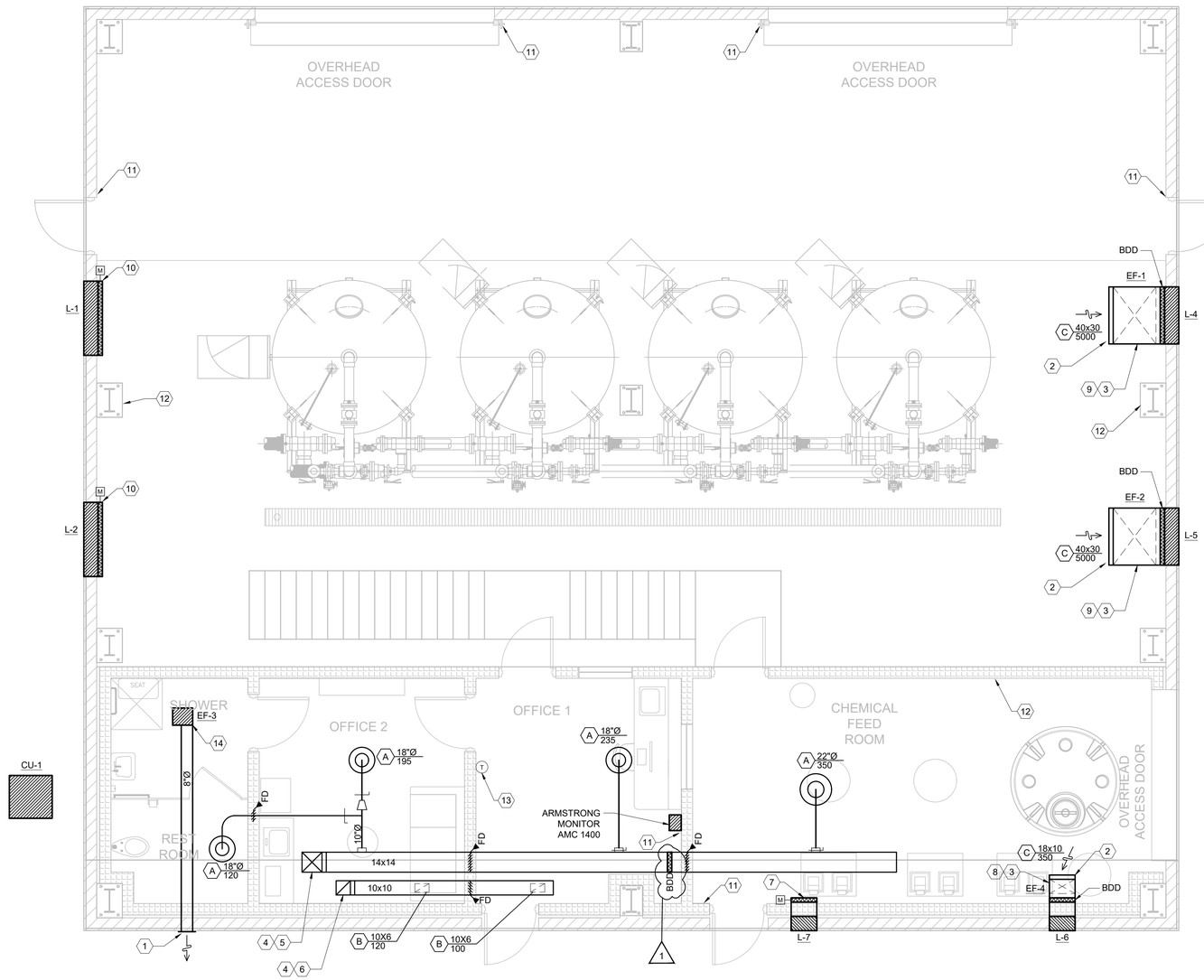
STATE OF LOUISIANA
MATTHEW P. HAHN
License No. 44796
PROFESSIONAL ENGINEER
7/15/24
CIVIL ENGINEERING

DIVERSIFIED WATER WELL PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

FLOOR PLAN

SHEET NO.
A-002
SHEET 59 OF 92

REVISED



1 MECHANICAL FLOOR PLAN
SCALE: 1/4" = 1'-0"

0' 1' 2' 3' 4' 5'

KEY NOTES:

1. INSTALL ALUMINUM WALL CAP WITH BUILT-IN BACKDRAFT DAMPER, BIRD SCREEN AND WEATHER HOOD. WALL CAP SHALL MATCH CONNECTING DUCT SIZE.
2. THE BOTTOM OF THE AIR DEVICE SHALL BE LOCATED NO MORE THAN 12 INCHES ABOVE THE FLOOR.
3. EXHAUST FAN LOCATED IN THE VERTICAL PORTION OF THE DUCTWORK SECTION.
4. FIRE DAMPER LOCATED IN VERTICAL DUCTWORK AT THE SLAB.
5. 14x14 SA DUCT UP TO LOFT FLOOR
6. 10x10 RA DUCT UP TO LOFT FLOOR.
7. INTERLOCK MOTORIZED DAMPER FOR L-7 TO THE AMC-1400 GAS MONITOR. WHEN GAS IS DETECTED WITHIN THE CHEMICAL FEED ROOM THE DAMPER SHALL BE IN THE OPEN POSITION AND IN THE CLOSED POSITION DURING NORMAL OPERATION.
8. INTERLOCK EF-4 TO THE AMC-1400 GAS MONITOR. WHEN GAS IS DETECTED WITHIN THE CHEMICAL FEED ROOM EF-4 SHALL RAMP UP TO 820 CFM.
9. INTERLOCK EF-1 AND EF-2 TO THE AMC-1400 GAS MONITOR. WHEN GAS IS DETECTED WITHIN THE FILTER ROOM EF-1 AND EF-2 SHALL ENGAGE. EF-1 AND EF-2 SHALL BE MANUALLY TURNED ON AND OFF BY A HOA MOTOR STARTER LOCATED BELOW EACH EACH EXHAUST FAN DURING NORMAL OPERATION.
10. INTERLOCK MOTORIZED DAMPERS L-1 AND L-2 TO EF-1 AND EF-2. WHEN THE EF-1 AND EF-2 ARE OPERATING, DAMPERS L-1 AND L-2 SHALL BE IN THE OPEN POSITION AND WHEN EF-1 AND EF-2 ARE OFF, DAMPERS L-1 AND L-2 SHALL BE CLOSED.
11. PROVIDE A REMOTE ALARM MODULES EQUAL TO AMC-RAM-3 NEAR THE DOOR ENTRANCE AND NEXT TO AMC-1400 PANEL.
12. PROVIDE AN ELECTROCHEMICAL CHLORINE (Cl_2) SENSOR / TRANSMITTER EQUAL TO AMC-297-A AT THE SHOWN LOCATIONS.
13. PROGRAMMABLE THERMOSTAT TO CONTROL AHU-1 / CU-1.
14. INTERLOCK EF-3 TO AHU-1. EF-3 SHALL OPERATE WHILE AHU-1 IS ON AND EF-3 IS OFF WHEN AHU-1 IS OFF. PROVIDE AN ON/OFF SWITCH TO MANUALLY TURN ON EXHAUST FAN.

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No.	DESCRIPTION OF REVISION	DATE:
1	ADDENDUM 1	08/20/24
0	100% CONSTRUCTION DOCUMENTS	08/21/23

DESIGNED BY:	DLK
DRAWN BY:	KPW
CHECKED BY:	BTM
SUBMITTED BY:	BBECC, LLC
PROJECT No.:	PPSL-VSF
	23-10-6
ISSUE DATE:	08/21/2023
APPROVED BY:	BTM
SHEET SIZE:	ANSI D
SCALE:	

STATE OF LOUISIANA
BRIAN T. MILLER
License No. 26080
PROFESSIONAL ENGINEER IN MECHANICAL ENGINEERING
8-20-24

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: PPSL-VSF 23-10-6

MECHANICAL FLOOR PLAN

MCA Engineering & Construction
BATON ROUGE - NEW ORLEANS

JOB NO: STP23006
BG: 801
PROJECT MANAGER: BRIAN MILLER

SHEET NO.
M-101
SHEET XX OF XX

REVISED

C110 TEMPORARY FEED TO PCP DURING FILTER BUILDING CONSTRUCTION: 4" SCH 80 PVC. CONDUCTORS ARE PROVIDED/INSTALLED BY POWER CO. TO EXISTING 200/3 DISC. SWITCH. PROVIDE 500# RATED PULL STRING. REFER TO NOTE C101 REGARDING TWO OPTIONS TO INSTALL NEW CONDUIT.

NEW 3'x3'x3' PRECAST CONCRETE PULLBOX PPB300 (IDENTICAL TO PPB200) TO CAPTURE EXISTING 480V, 4" C FEEDING PCP

C101 STUB (2) 6" SCH 80 PVC CONDUITS 30' UP AT EXISTING POWER CO. SOUTH WOOD POLE AT WEST PROPERTY LINE. INSTALL NYLON PULL ROPES RATED AT 500# MINIMUM.

EXIST. UNDERGROUND 480V FEED FROM CLECO AT WEST POLE LINE, TO NON-FUSED MAIN DISCONNECT SWITCH AT EXIST. PUMP CONTROL PANEL. EXACT LOCATION, DEPTH AND ORIENTATION IS NOT KNOWN. EXCAVATE FOR DISCOVERY AT NO DIRECT PAY.

THIS CONDUIT RUN UNDER NEW FILTER BUILDING PERIMETER TO BE ABANDONED AFTER TEMPORARY 480V FEED IS IN PLACE; BYPASSING THE FILTER BUILDING.

C101 6' DEEP (VERIFY REQ'D DEPTH TO GO MINIMUM 18" BELOW EXISTING POWER CO. PRIMARY DUCTBANK)

EXISTING TOWER PRESSURE SWITCH ENCLOSURE
DISCONNECT EXISTING 480V FEED, CONNECT NEW TEMPORARY 480V FEED
EXISTING 200/3 NON FUSED UTILITIES MAIN DISC. SWITCH
EXISTING 480V PLUG IN METER
EXISTING PUMP CONTROL PANEL

UNDERGROUND POWER LINES (DUCT BANK) MARKED IN FIELD.
TO DIVERSIFIED FOODS TRANSFORMERS ACROSS THE STREET. DEPTH UNKNOWN.

PRIMARY PULLBOX PPB100 3'Wx4'Lx3' DEEP PRECAST CONCRETE SET FLUSH WITH H-20 RATED TRAFFIC COVER. SET ON 6'x6'x18" COMPACTED LIMESTONE SUB BASE. TURN CONDUITS UP IN TO BOTTOM OF BOX.

C112 TO PUMP CONTROL PANEL, SECT 1
C113 TO PUMP CONTROL PANEL, SECT 2
LED SITE LIGHT ON WOOD POLE
POWER CO. PADMOUNT TRANSFORMER
C102
C104
AUX. LOAD BANK
PULLBOX PPB200

4 AUXILIARY CONDUITS TO GEN SET:
C201 FROM PNL A.
C401 FROM ATS.
C501 FROM PNL A.
C601 FROM ATS .

REFER TO SHEET E-017 FOR ENLARGED VIEW AND DETAILS OF THIS AREA

NOTE 101:
THE CONTRACTOR IS HEREBY PROVIDED WITH TWO OPTIONS FOR INSTALLING THE 277/480 VOLT, 200 AMP TEMPORARY ELECTRICAL SERVICE FROM NEW PULLBOX PPB300, TO THE EXISTING PUMP CONTROL PANEL.
CAPTURE THE EXISTING 480 VOLT FEED RUNNING IN 4" PVC CONDUIT FROM THE WEST POLE LINE TO THE EXISTING PUMP CONTROL PANEL. THE EXACT LOCATION, DEPTH AND ORIENTATION OF THE EXISTING 4" CONDUIT FEED IS NOT KNOWN. IT IS RUN WITH THE EXISTING UNDERGROUND PRIMARY FEED WHICH CONTINUES ON ACROSS THE STREET TO THE DIVERSIFIED PRODUCTS' TWO PADMOUNT TRANSFORMERS. LOCATE THE 480 VOLT FEEDER AND DIVERT IT INTO THE NEW PULLBOX PPB300. THE IDEA IS TO "CAPTURE" THE EXISTING 4" CONDUIT, WITHOUT DE-ENERGIZING IT, SO THAT EXISTING POWER IS MAINTAINED TO THE EXISTING PUMP CONTROL PANEL POWERING THE TWO WELL PUMPS.
IT IS ASSUMED THAT THE 480 VOLT FEEDER IS NOT RUN ON TOP OF THE EXISTING U7NDERGROUND PRIMARY FEEDER, BUT RATHER TO ONE SIDE OR THE OTHER (NORTH SIDE OR SOUTH SIDE). EXCAVATE TO DISCOVER IT, AND INSTALL PULLBOX PPB300.
ONCE THAT IS ACCOMPLISHED, THE NEXT STEP IS TO RUN A NEW TEMPORARY 4" SCHEDULE 80 PVC CONDUIT FROM THE NEW PPB300 TO THE EXISTING 200/3 NON-FUSED DISCONNECT SWITCH AT THE EXISTING PUMP CONTROL PANEL.
TWO OPTIONS (CONTRACTOR'S CHOICE):
1. OPTION 1. INSTALL A NEW 4" (EMPTY, EXCEPT INSTALL A 500# RATED PULLSTRING) SCHEDULE 80 PVC CONDUIT FROM PPB 300 TO THE EXISTING 200/3 NFDS, RUN BURIED 36" DEEP, BY OPEN CUTTING AND BACKFILLING, FOLLOWING THE APPROXIMATE PATH INDICATED, WELL CLEAR OF THE NEW FILTER BUILDING. CONNECT NEW CONDUIT INTO THE BOTTOM LEFT SIDE OF THE NFDS, WHILE MAINTAINING THE EXISTING ENERGIZED 4" CONDUIT IN PLACE, TO MAINTAIN SERVICE TO THE EXISTING PUMP CONTROL PANEL.
2. OPTION 2. INSTALL THE SAME CONDUIT AS DESCRIBED ABOVE, BUT BURIED ONLY 6" DEEP TO THE TOP (MAY BE EASIER THAN DIGGING THE 36' DEPTH, GIVEN PIPING AND OTHER OBSTRUCTIONS IN THE AREA). ONCE BURIED, POUR A 24" WIDE X 4" DEEP CONCRETE "SIDEWALK", TOP FLUSH WITH GRADE, TO ALLOW FOR MOWING MACHINERY, COVERING THE ENTIRE LENGTH OF THE TEMPORARY CONDUIT. THIS METHOD IS IN ACCORDANCE WITH THE NEC TABLE FOR "MINIMUM COVER REQUIREMENTS".

ELECTRICAL SITE PLAN
SCALE: 1" = 10"

SCALE: 1" = 10'-0" HORIZ.

DWG FILE: \\BBEC-FS1\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\E-002 - Diversified_Electrical Site Plan.dwg - 8/29/2024 12:54
User: pforet Plot Date: Thu Aug-29-2024 - 12:55PM
PM

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

No.	DESCRIPTION OF REVISION	DATE:
1	ADDENDUM 02	8/26/24

DESIGNED BY: BB
DRAWN BY: PW
CHECKED BY: MH
SUBMITTED BY: BBEC, LLC
PROJECT No.: TU23000181
ISSUE DATE: 04/15/2024
APPROVED BY: BB
SHEET SIZE: ANSI D
SCALE: AS NOTED

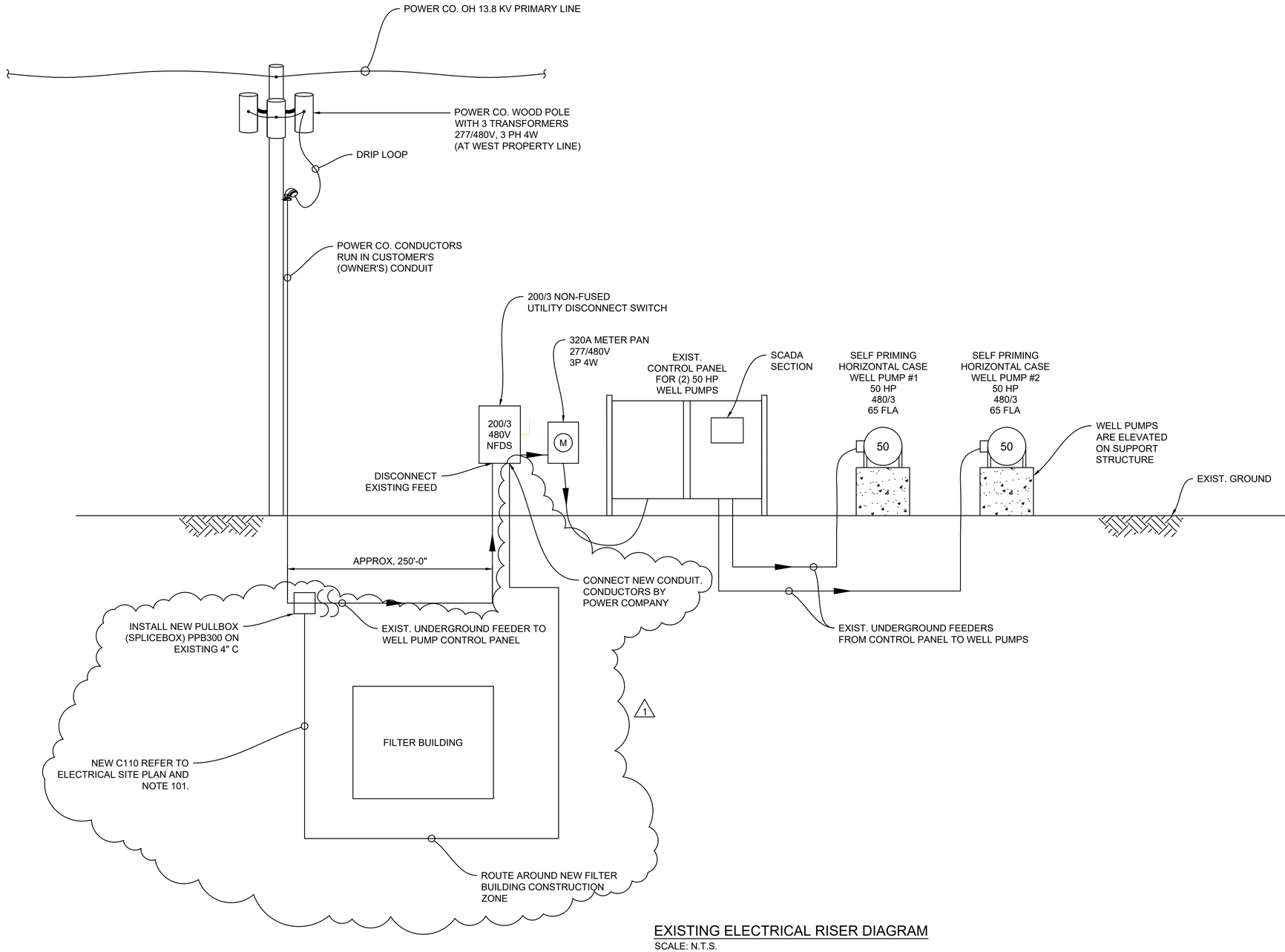
STATE OF LOUISIANA
BRUCE A. BARTON
REGISTERED PROFESSIONAL ENGINEER
05/10/24

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

ELECTRICAL SITE PLAN

SHEET NO.
E-002
SHEET 76 OF 92

REVISED



EXISTING ELECTRICAL RISER DIAGRAM

SCALE: N.T.S.

DWG FILE: \\bbec-fs1.bbedlc.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\E-003-E-004 - Diversified Electrical Riser Diagram.dwg - User: Phil Plot Date: Thu Aug-29-2024 - 11:27AM
8/29/2024 11:21 AM

ST. TAMMANY PARISH GOVERNMENT

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

No.	DESCRIPTION OF REVISION	DATE:
1	ADDENDUM 02	8/26/24

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APPROVED BY:	BB
SHEET SIZE:	ANSI D
SCALE:	N.T.S.

STATE OF LOUISIANA
BRUCE D. BARTON
PROFESSIONAL ENGINEER
03/01/24

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

EXISTING ELECTRICAL RISER
DIAGRAM

SHEET NO.
E-003
SHEET 77 OF 92

REVISED

\\bbec-fs1.bbecllc.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\E-003-E-004 - Diversified Electrical Riser Diagram.dwg - User: Phil Plot Date: Thu Aug-29-2024 - 11:27AM

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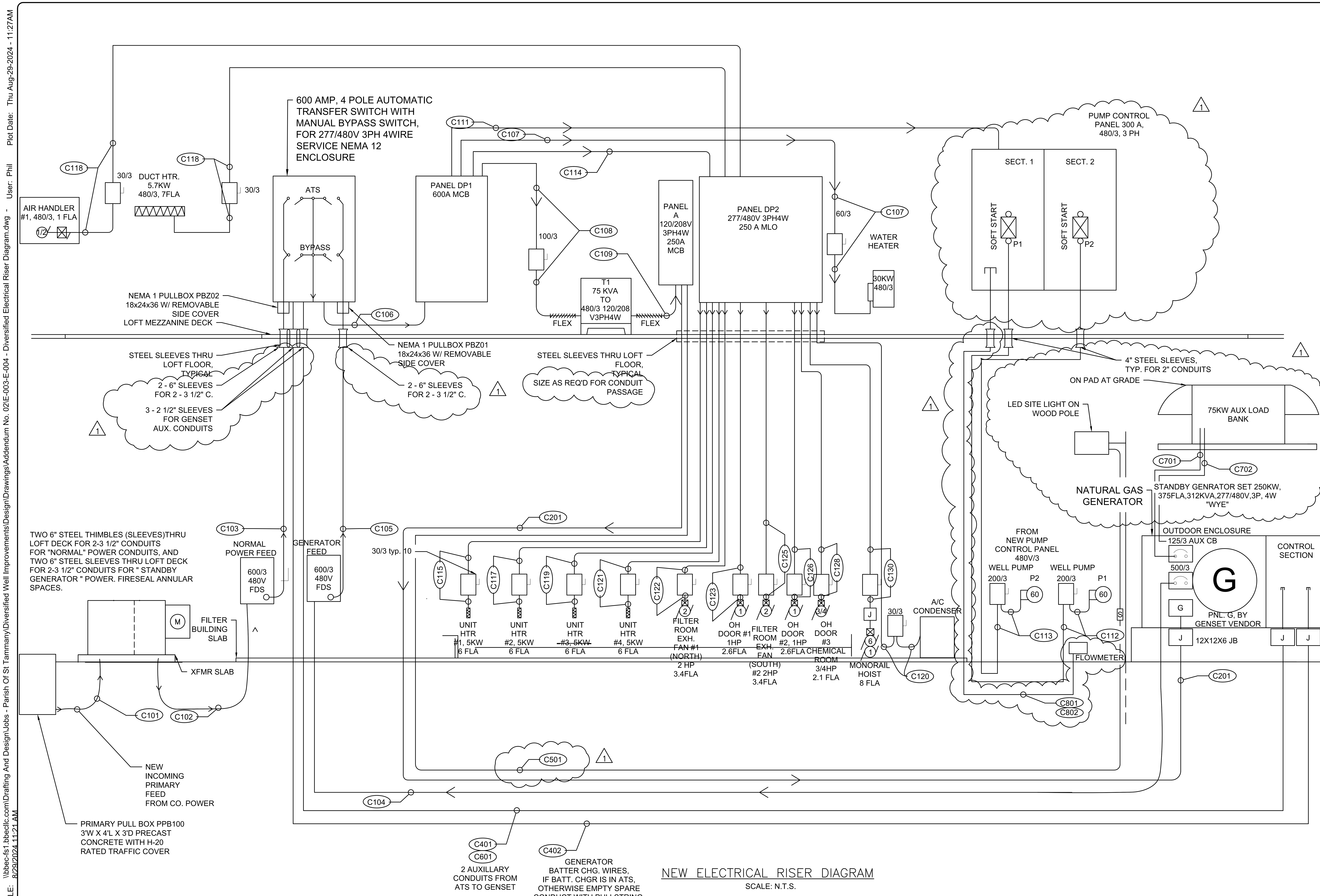

NEW ELECTRICAL RISER DIAGRAM

SCALE: N.T.S.

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COVINGTON, LA 70433

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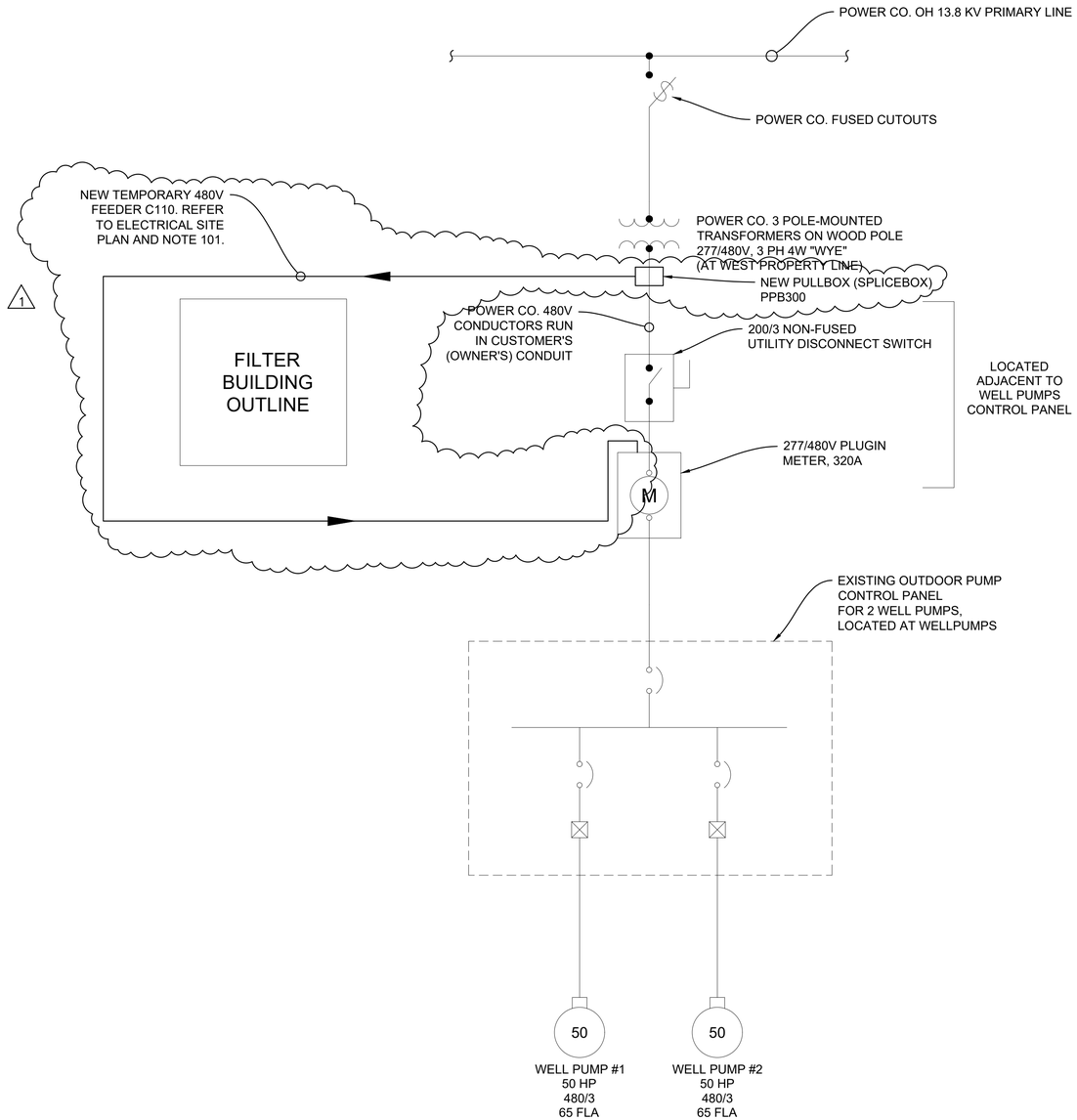
Bruce D. Barton 05/10/24
STATE OF LOUISIANA BRUCE D. BARTON REGISTERED PROFESSIONAL ENGINEER

DIVERSIFIED WATER WELL PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

NEW ELECTRICAL RISER DIAGRAM

SHEET NO.
E-004
SHEET 78 OF 92

REVISED



EXISTING ELECTRICAL ONE LINE DIAGRAM
SCALE: N.T.S.

DWG FILE: \\bbec-fs1.bbecllc.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\E-005 - Diversified_ Existing Electrical One Line Diagram.dwg
8/29/2024 1:21 PM
User: Phil
Plot Date: Thu Aug-29-2024 - 01:23PM

ST. TAMMANY PARISH GOVERNMENT

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SCALE:	

STATE OF LOUISIANA
BRUCE D. BARTON
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
Bruce D. Barton
05/10/24

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

EXISTING ELECTRICAL ONE LINE DIAGRAM

SHEET NO.
E-005
SHEET 79 OF 92

REVISED

POWER CO. HIGH VOLTAGE PRIMARY FEED

NEW PRIMARY PULLBOX PPB100 3'x4'x3'D PRECAST CONCRETE

C101

POWER CO. NEW PADMOUNT TRANSFORMER 225 KVA, 270 FLA 277/480V, 3 PH., 4W WYE

M

NEW METER FOR WATER PLANT INCLUDING FILTER BLDG. MOUNTED ON NEW PADMOUNT TRANSFORMER

POWER COMPANY METERING CTs

C102

#3/0 BOND

BLDG. COLUMN

EXOTHERMALLY WELD ½"Ø X 2" L BOLT TO BLDG. COLUMN TO MOUNT GROUNDING LUGS

GND. TO 2-3/4"ØX10' GND. RODS NEXT TO BLDG. SLAB

8'

#1/0, 1" PVC SCH. 80 PVC

N G 600

NORMAL POWER DISCONNECT SWITCH NEMA 3R ENCLOSURE ISCA =7,200A

C103

ISCA =7,200A

N G

ATS

BYPASS

600 AMP FOUR POLE AUTOMATIC TRANSFER SWITCH WITH MANUAL BYPASS, NEMA 12 FREESTANDING INDOOR ENCLOSURE

PULLBOX PBZ02

PULLBOX PBZ01

C201

C106

75KW, 480/3 AUXILIARY LOAD BANK ON PAD BESIDE GENSET

1

C701

POWER

C702

CONTROLS

NATURAL GAS STANDBY GENERATOR SET 277/480V, 3PH4W, 250 KW, 312 KVA, 375FLA

C104

125/3 AUX. CB

CONTROL SECTION

500/3

G

#3/0 BOND

N G 600

STANDBY GENERATOR DISCONNECT SWITCH NEMA 3R ENCLOSURE

3/4" x 10' GND ROD

C105

#3/0 1 ½" C. SCH.80 PVC

NO BOND

N G

60/2

PNL "G" (FURNISHED WITH GENERATOR SET)

¾" x 10' GND. ROD

#3/0 1 ½" C. SCH.80 PVC

J J J J

12X12X6 NEMA 3R JB @ EDGE OF GENERATOR SLAB

3 CONDUITS

C401

C501

C601

C114

600 A DISTRIBUTION PANEL "DP1" - REFER TO PANEL SCHEDULES

ISCA =7,200A

600/3

1	2	3	4	5	6	7	8	9	10
100/3	60/3	70/3	60/3	300/3	100	60	225	225	250/3
SPARE	SPARE	100/3 C108 100	60/3 C107 45	C111	SPARE	SPARE	BUSSED SPACE	BUSSED SPACE	

T1 75 KVA 480-120/208V 90FLA PRI

#2, 3/4" PVC SCH. 80 PVC

GND. TO BLDG. STEEL FRAME

C109

30 KW

WATER HEATER 30KW 480/3 36FLA

ISCA =7,200A NEW PUMP CONTROL PANEL 480V/30

SECT. 1 SECT. 2

300/3

150 150

SOFT START SOFT START

1

C201

PANEL "A" REFER TO PANEL SCHEDULES. BOND NEUTRAL TO GND. IN THIS PANEL

250

60/2

N G

#2 BOND

C112b C112a C112

200/3 110AF AT PUMP

110

C801 C802

C113 C113a C113b

200/3 110AF AT PUMP

110

REFER TO SHEET E-017 ENLARGED VIEW PUMP/GENSET YARD PLAN FOR DETAILS

FLOWMETER AT PUMP DISCHARGE PIPE

WELL PUMP P1 60HP, 480/3 75FLA

60

WELL PUMP P2 60HP, 480/3 75FLA

60

225 A DISTRIBUTION PANEL "DP2" - REFER TO PANEL SCHEDULES

ISCA =7,200A

1	2	3	4	5	6	7	8	9	10	11	12	13	14
30/3	20/3	30/3	30/3	30/3	30/3	30/3	20	20/3	30/3	20/3	30/3	20/3	30/3
C115 30/3 15	C116 30/3 10	C117 30/3 15	C118 30/3 15	C119 30/3 15	C120 30/3 20	C121 30/3 15	C122 30/3 20	C123 30/3 20	C125 30/3 20	C126 30/3 20	SPARE	C128 30/3 20	C130 30/3 30
UNIT HEATER #1 5KW 480/3 6 FLA	AIR HANDLER #1 1/2 AP 480/3 1 FLA	UNIT HEATER #2 5KW 480/3 6 FLA	DUCT HEATER #1 5.7KW 480/3 7 FLA	UNIT HEATER #3 5KW 480/3 6 FLA	AC CONDENSOR UNIT #1 480/3 MCA: 12.3 MOCP: 20	UNIT HEATER #4 5KW 480/3 6 FLA	FILTER ROOM EXH. FAN #1 (NORTH) 2HP 480/3 3.4 FLA	FILTER ROOM EXH. FAN #2 (SOUTH) 2HP 480/3 3.4 FLA					
							C124 1 OH DOOR 1		C127 1 OH DOOR 2		C129 3/4 OH DOOR 3	C131 6 HOIST 1 TROLLEY MONORAIL HOIST	J POWER TRACK RAILS
							OPEN/CLOSE OPERATOR FILTER ROOM WEST 1HP 480/3 2.6 FLA		OPEN/CLOSE OPERATOR FILTER ROOM EAST 1HP 480/3 2.6 FLA		OPEN/CLOSE OPERATOR CHEMICAL ROOM 3/4HP 480/3 2.1 FLA		CONTROLS PENDANT

NEW ELECTRICAL RISER / ONE LINE DIAGRAM

SCALE: N.T.S.

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

No.	DESCRIPTION OF REVISION	DATE:
1	ADDENDUM 02	8/26/24

DESIGNED BY: BB
DRAWN BY: PW
CHECKED BY: MH
SUBMITTED BY: BBEC, LLC
PROJECT No.: TU23000181
ISSUE DATE: 04/15/2024
APPROVED BY: BB
SHEET SIZE: ANSI D
SCALE: NO SCALE

STATE OF LOUISIANA
BRUCE D. BARTON
REGISTERED
PROFESSIONAL ENGINEER
CIVIL ENGINEERING
Bruce D. Barton
05/02/24

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

NEW ELECTRICAL RISER DIAGRAM/ ONE LINE DRAWING

SHEET NO.
E-006
SHEET 80 OF 92

DWG FILE: \\bbec-fs1.bbeclic.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\E-006 - Diversified_ New Electrical One Line Diagram.dwg User: Phil Plot Date: Thu Aug-29-2024 - 10:07AM
8/29/2024 10:04 AM

REVISED

CONDUIT/WIRE SCHEDULE

C101 2- 6" SCH. 80 PVC C. FOR POWER CO. PRIMARY CONDUCTORS BY POWER CO.

C102 2- 4" SCH. 80 PVC, 4# 350KCM + #3/0 GND. IN EACH

C103 2- 3-1/2" ALUM., 4# 350KCM + #3/0 GND. IN EACH

C104 2- 4" SCH. 80 PVC, 4# 350KCM + #3/0 GND. IN EACH

C105 2- 3-1/2" ALUM. 4# 350KCM + #3/0 GND. IN EACH

C106 2- 3-1/2" ALUM., 4# 350KCM + #3/0 GND. IN EACH

C107 3 #6 + #8 GND., 1" ALUM.

C108 3 #2 + #4 GND., 1-1/2" ALUM.

C109 4# 300 KCM + #1/0 GND., 3" C., ALUM.

C110 EMPTY 4" SCH. 80 PVC CONDUIT (INSTALL PULLSTRING) FOR TEMPORARY ELECTRICAL SERVICE TO EXISTING PUMP CONTROL PANEL. REFER TO NOTE 101 FOR DETAILS.

C111 4# 350KCM + # 1/0 GND. 3-1/2" ALUM.

C112 3 #2 + #4 GND., 2" ALUM. EXPOSED, 2" SCH. 80 PVC UNDERGROUND

C112a 4 #10 + #10 GND., 1" C. ALUM EXPOSED, 1" SCH 80 PVC UNDERGROUND

C112b 2 #10 + #10 GND., 3/4" C. ALUM. EXPOSED, 3/4" SCH 80 PVC UNDERGROUND

C113 3# 2+ #4 GND., 2" ALUM. EXPOSED, 2" SCH 80 PVC UNDERGROUND

C113a 4# 10 + #10 GND. 1"C. ALUM EXPOSED, 1" SCH. 80 PVC UNDERGROUND

C113b 2# 10 + #10 GND., 3/4" C. ALUM EXPOSED, 3/4" SCH 80 PVC UNDERGROUND

C114 4# 300 KCM + #1/0 GND., 3-1/2"C. ALUM.

C115 3 #10 + #10 GND., 3/4" C. ALUM.

C116 3 #10 + #10 GND., 3/4" C. ALUM.

C117 3 #10 + #10 GND., 3/4" C. ALUM.

C118 3 #10 + #10 GND., 3/4" C. ALUM.

C119 3 #10 + #10 GND., 3/4" C. ALUM.

C120 3 #10 + #10 GND., 3/4" C. ALUM.

C121 3 #10 + #10 GND., 3/4" C. ALUM.

C122 3 #10 + #10 GND., 3/4" C. ALUM.

C123 3 #10 + #10 GND., 3/4" C. ALUM.

C124 3 #10 + #10 GND., 3/4" C. ALUM.

C125 3 #10 + #10 GND., 3/4" C. ALUM.

C126 3 #10 + #10 GND., 3/4" C. ALUM.

C127 3 #10 + #10 GND., 3/4" C. ALUM.

C128 3 #10 + #10 GND., 3/4" C. ALUM.

C129 3 #10 + #10 GND., 3/4" C. ALUM.

C130 3 #10 + #10 GND., 3/4" C. ALUM.

C201 3 #2 + #4 GND., 2"C. ALUM EXPOSED, 2" SCH.80 PVC UNDERGROUND

C401 8 #10, 1-1/2"C. ALUM EXPOSED, 1-1/2" SCH.80 PVC UNDERGROUND (MONITORED START/STOP CKTS)

C402 3 #8 + #10 GND. BATTERY CHARGER 24VDC

C501 2 #10 + #10 GND., LED SITELIGHT

C601 6 #10 + #10 GND. 1"C. ALUM. EXPOSED, 1" SCH.80 PVC UNDERGROUND

C701 FEED TO AUX LOADBANK, 3# 1 + #4 GND., 2"C.

C702 AUX LOAD BANK CONTROLS 6# 12 + #12 GND., 3/4"C.

C801 FOR FLOW METER POWER/SIGNAL. 4# 10, 1"C. TO NEW PCP.

C802 FOR FLOW METER POWER/SIGNAL. 4C/#16 STRANDED SHIELDED INSTRUMENTATION CABLE, TFE OR PVC INSULATION. BELDEN # 83352E, OR EQUAL. 1-1/4" PVC TO NEW PCP.

1

ST. TAMMANY PARISH GOVERNMENT

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

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1	ADDENDUM 02	8/26/24

DESIGNED BY:	BB
DRAWN BY:	PW
CHECKED BY:	MH
SUBMITTED BY:	BBEC, LLC
PROJECT No.:	TU23000181
ISSUE DATE:	04/15/2024
APPROVED BY:	BB
SHEET SIZE:	ANSI D
SCALE:	N.T.S.

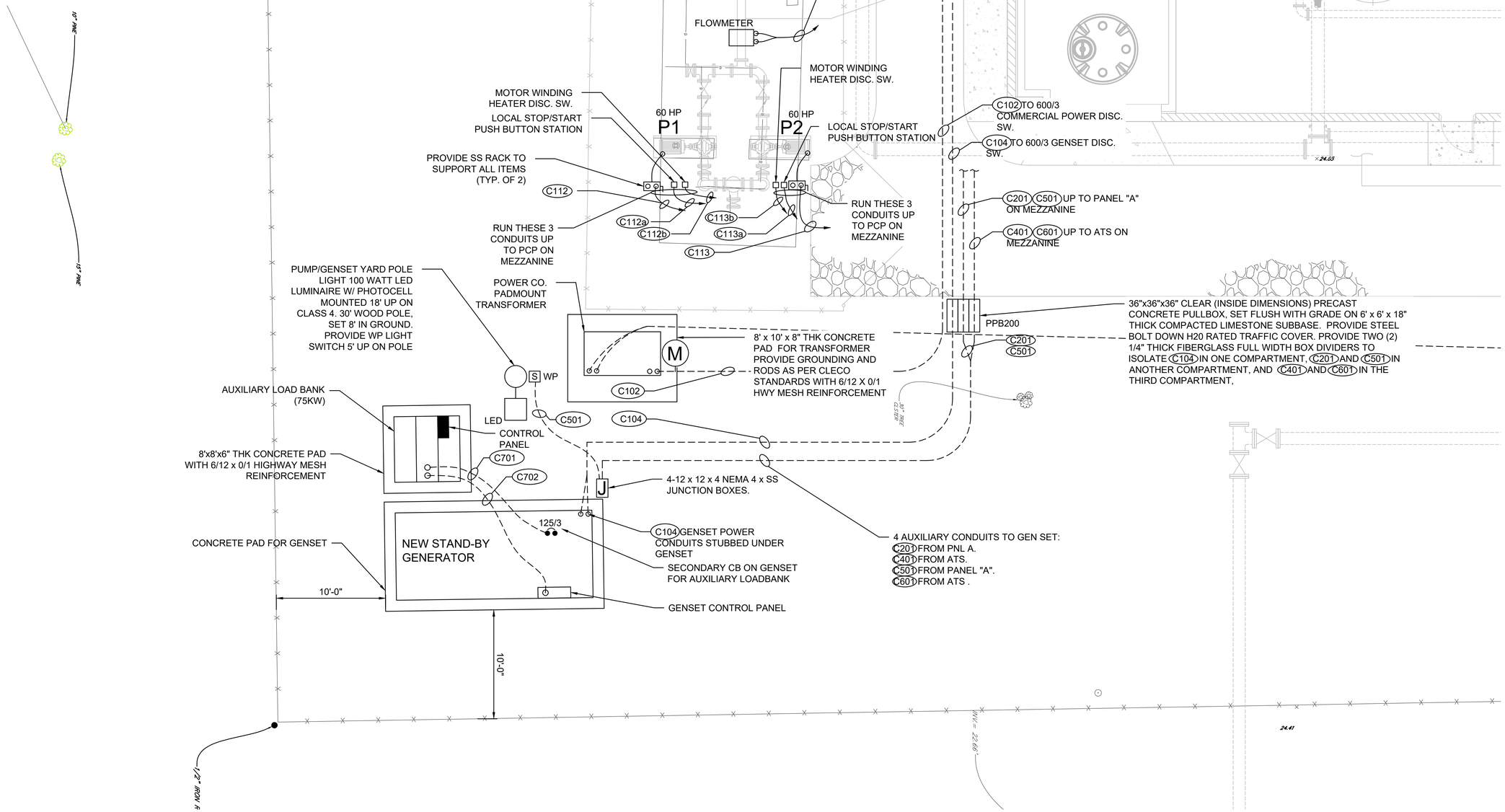
STATE OF LOUISIANA
BRUCE D. BARTON
REGISTERED
PROFESSIONAL ENGINEER
CIVIL ENGINEERING
Bruce D. Barton
05/01/24

DIVERSIFIED WATER WELL
PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

CONDUIT WIRE LEGEND

SHEET NO.
E-016
SHEET 90 OF 92

REVISED



GENERATOR SET AND PUMP YARD ENLARGED SITE PLAN

SCALE: 1" = 5"

5 0 2.5 5 10 20

SCALE: 1" = 5'-0" HORIZ.

ST. TAMMANY PARISH GOVERNMENT

DEPT. OF UTILITIES
ST. TAMMANY PARISH GOVERNMENT
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SHEET SIZE:	ANSI D
SCALE:	AS NOTED

STATE OF LOUISIANA
BRUCE D. BARTON
REGISTERED
PROFESSIONAL ENGINEER
MARCH ENGINEERING
Bruce D. Barton
05/10/24

DIVERSIFIED WATER WELL PRETREATMENT SYSTEM
MADISONVILLE, LOUISIANA
PROJECT No.: TU23000181

GENSET SITE PLAN

SHEET NO.
E-017
SHEET 91 OF 93

DWG FILE: \\bbec-fs1.bbeclic.com\Drafting And Design\Jobs - Parish Of St Tammany\Diversified Well Improvements\Design\Drawings\Addendum No. 02\E-017 - Diversified_Genset Site Plan.dwg - 8/29/2024 User: Phil Plot Date: Thu Aug-29-2024 - 11:24AM

DIVERSIFIED WATER WELL PRETREATMENT SYSTEM

RESPONSE TO GENERAC SUPPLEMENTAL INFO

ADDENDUM #2

GENERAC RESPONSES dated 082824 TO REQUEST FOR SUPPLEMENTAL GENERATOR SET INFO FROM PARISH:

1. All Generac enclosures including the standard, level 1 and level 2 enclosures are wind certified 150 MPH minimum and up to 180 MPH per ASCE7-16 . see attached Wind Speed Rating.

   ENGR RES.: Acceptable.

2. This weather protected enclosure has fixed, stamped intake louvers on the generator enclosure doors. This enclosure system meets the requirements of UL2200 for enclosure design and performance. We can provide a level 1 sound attenuated enclosure if required. Intake plenums are not required for alternator cooling or windblown debris to meet UL2200 or any other industry standard. They are primarily used for sound dBA reduction.

   ENGR RES.: Provide an enclosure with an inlet plenum and an exhaust plenum, as indicated on the Generator Set Enclosure on sheet E-015, “Generator Details”.

3. Each generator manufacturer design is different when meeting the requirements of UL2200. There are air intake louvers at the rear/alternator end of the enclosure. The required UL2200 prototype testing for this product requires multitude of product test including #44 “Temperature Test” and #73 “Rain Test” which both require the operation of the unit at 100% load for four hour.

   ENGR RES.: Provide an enclosure with an inlet plenum and an exhaust plenum, as indicated on the Generator Set Enclosure on sheet E-015, “Generator Details”.

4. The alternator rating at 105 “C” is 273 kW, 341 kVA. Page 22 of 106 in prior approval submittals I sent. I have attached for your reference.

   ENGR RES.: Acceptable.

5. Will comply with requirements, 125 amp panel to be provided and prewired from Generac.

   ENGR RES.: Acceptable.

6. Will comply and add a 125 amp LCB for load bank.

   ENGR RES.: Acceptable.

7. Generac is the manufacturer of record- see page 8 of 106 generator spec sheet and page 104 of 106 EPA

   Certification page in prior approval submittals I sent. I have attached for your reference.

   ENGR RES.: Acceptable.

8. The generator is rated for 122 degrees “F” 50 degrees “C”. Page 9 of 106 in in prior approval submittals I sent. I have attached for your reference.

   ENGR RES.: Acceptable.

9. ASCO bypass isolation automatic transfer switch 800 amp (from specs) 600 amps (from drawing single line) Specs call for NEMA 4X, single line calls for NEMA 12?. Please specify what size amperage and which enclosure to use, Specs and drawings are in conflict.

ENGR RES.: The above-mentioned discrepancies have been resolved, so that all info on the Riser Diagram, One-Line Diagram, and Specifications, now match. The ATS with Bypass Switch is rated 600 amps, and is a 4-pole switch in a NEMA 12 Gasketed Enclosure.

One item to consider: The presently shown Onan ATS is located under a building beam on the mezzanine ("Loft"). If the Proposed ASCO Switch will not fit under the building beam as indicated, move it to one side or the other so that it is not under the building beam. Any costs associated with this change shall be borne by The Contractor. There is adequate space on the Mezzanine ("Loft") to accomplish this move.

10. The alternator rating at 105 "C" is 273 kW, 341 kVA. Page 22 of 106 in submittals I sent. I have attached for your reference.

ENGR RES.: Acceptable.

Bidders are reminded of the following: In the revised Generator Set Specification Section 26 32 13, Part included as part of this Addendum #2, refer to Paragraph 2, Products, subparagraph 2, "Engine and Engine Equipment", sub paragraph "D", "Provide engine silencer…… (((new added wording follows:))) The exhaust outlet pipe shall turn vertically upward out of the top of the generator set radiator exhaust plenum, and shall be topped with a **FABRICATED 90 DEGREE "TEE" EXHAUST OUTLET** with 45 degree undercut ends (re: "Oilfield Construction"). The "TEE" shall be schedule 40 black iron pipe of the same diameter as the engine exhaust outlet pipe. The pipe shall be threaded to fit onto the engine exhaust outlet using a black iron coupling, with 2000deg. "Never Seize" compound applied liberally to all threads to prevent seizing due to rust or corrosion. The vertical section of exhaust pipe shall extend to a height 24" above the weatherproof enclosure. The vertical section shall be coped to fit centered and welded onto a single piece of full diameter horizontal schedule 40 black iron pipe 36" long, with an inlet opening cut to match the coped vertical section. The horizontal run shall have a 45 degree undercut on each end. The end result shall be a one-piece welded fabrication, which can be screwed onto the engine vertical exhaust outlet pipe. The top of the fabricated TEE shall be 24" +/- above the top of the generator set enclosure. The finished orientation of the exhaust openings is not critical, but **should** line up 90 degrees to either axis of the generator enclosure, for aesthetics. Threaded tees and pipe nipples **are not** an acceptable alternative to the one-piece welded tee. It is expected that the factory bracing for support of the exhaust piping and muffler will be sufficient to secure this fabricated exhaust TEE against 150 mph winds. If not, provide additional structural supports to accomplish this bracing. Provide written substantive confirmation either way.

The above **Welded Exhaust Tee** is not indicated on the Generator Set Drawings, but is to be provided **in lieu of** the "flip cap" type of exhaust pipe closure indicated on the drawings.