



CITY OF PETALUMA

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ADDENDUM NO. 2

Ellis Creek Water Recycling Facility Tertiary Filtration Expansion FILTER ADDITIONS AND MISCELLANEOUS IMPROVEMENTS PROJECT

CITY PROJECT NUMBER C66401416

June 14, 2023

This Addendum No. 1 modifies the Bidding Documents for the Ellis Creek Water Recycling Facility Tertiary Filtration Expansion – **Filter Additions and Miscellaneous Improvements Project**, C66401416. This Addendum shall become part of the Contract and all provisions of the Contract shall apply thereto. Bidders shall acknowledge all Addendums in the Bid Schedule.

SECTION I - BID FORMS No changes included in Addendum No. 2.

SECTION IV – TECHNICAL SPECIFICATIONS

1. Technical Specifications Table of Contents (TOC), Insert Section 15259 CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE ASTM F441 (Attached) after Section 15249 POLYVINYL CHLORIDE (PVC) PIPE: SCHEDULE TYPE.
2. Technical Specifications TOC, Insert Section 15286 STAINLESS STEEL PIPE AND TUBING (Attached) after Section 15278 STEEL PIPE - BURIED AND EXPOSED.
3. Section 11366B CLOTH MEDIA DISK FILTER, Part 1.01 Summary. C. Replace date in Sentence 4 “April 28, 2023” with May 9, 2023”.
4. Section 11366B CLOTH MEDIA DISK FILTER, Part 1.01 Summary. C. Replace dates in Sentence 6 “March 15, 2024” with May 1, 2024” and “June 16, 2024” with “July 24, 2024”.
5. Section 11366B CLOTH MEDIA DISK FILTER, Part 1.01 Summary. C. Replace date in last Sentence “June 16, 2024” with July 24, 2023”.
6. Section 13122 METAL BUILDING SYSTEM Part 1.04 System Description, B. Performance requirements, 3, a, 2), b), Change Wind drift limitation from “H/500” to “H/250”.
7. Section 13122 METAL BUILDING SYSTEM Part 2.02 MATERIALS, A, Delete Item 5 Shop finishing.
8. Section 13122 METAL BUILDING SYSTEM Part 2.02 MATERIALS, B, Delete Item 5 Shop finishing – hot rolled sections.

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9. Section 13122 METAL BUILDING SYSTEM Part 2.02 MATERIALS, B, 5, Delete b. Shop-primed and field-coated high solids epoxy system
10. Section 15052 COMMON WORK RESULTS FOR GENERAL PIPING - PLANT Part 3.03 Piping Schedule: Replace the header and first line of the FRW(BW) service with the following on page 15052-13.

Process Abbrev.	Service	Nominal Diameter (inches)	Material	Pressure Class Special Thickness Class Schedule Wall Thickness	Pipe Spec. Section	Joints/ Fittings	Test Pressure/ Method	Lining	Coating
FRW, FBW (BW)	Filter Reject Water (Backwash Water)								
	Above and below grade	½ to 3 1/2	Stainless steel	Sch 40	15286	FL	50 psig/HH	None	None

11. Section 15052 COMMON WORK RESULTS FOR GENERAL PIPING – PLANT Part 3.03 Piping Schedule: FRW (BW), second reference to “Aboveground”, revise “14-36” Nominal Diameter to “4-36” Nominal Diameter.

12. Section 15052 COMMON WORK RESULTS FOR GENERAL PIPING – PLANT Part 3.03, Piping Schedule: Add the following at the end of the pipe schedule table:

Process Abbrev.	Service	Nominal Diameter (inches)	Material	Pressure Class Special Thickness Class Schedule Wall Thickness	Pipe Spec. Section	Joints/ Fittings	Test Pressure/ Method	Lining	Coating
HCS	Sodium Hypochlorite								
	Above and below grade	½ to 2	CPVC	Sch 80	15259	SW	50 psig/HH	None	Exposed EPP per 09960

13. Insert Section 15259 CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE ASTM F441 (Attached) after Section 15249 POLYVINYL CHLORIDE (PVC) PIPE: SCHEDULE TYPE.

14. Insert Section 15286 STAINLESS STEEL PIPE AND TUBING (Attached) after Section 15278 STEEL PIPE - BURIED AND EXPOSE.

SECTION VI - PROJECT PLANS

1. Drawing G02C, DRAWING INDEX, add Drawing “51A FEF FLOW METER VAULT” after Drawing 51 C03C.
]
2. Insert the attached Drawing 51A C04C FEF FLOW METER VAULT after Drawing 51 C03C.
3. Drawing 06M01: Revise the piping size and service for the two “14” FI” callouts associated with Key Note 8, to “8 D”. Note that all piping downstream of the 8-inch plug valves will be considered Drain (D) piping.

QUESTIONS AND ANSWERS

1. Q: On sheet 22D01 everything south of the operations building is shaded indicating demo'd. Please confirm we are to demo: the security fence, the existing concrete wall, and the covered storage area.

A: Yes, everything called out and cross hatched on Drawing 22D01 is to be demolished. The existing covered storage needs to be removed to allow for construction of the new Storage building shown on Drawings 22S01 to 22S05.

2. Q:PEMB Specification:
 - a. 2.02(A&B)(5) Shop finish. Both galvanized and shop primed field coated epoxy is called out. It needs to be one or the other.
 - b. 2.02(C)(1) States factory finish each side. Industry standard is factory Kynar finish Kynar color on one side and factory wash coat (1.0 mil) on other side, both sides do not have Kynar. Is this the case or do you want a non-industry standard Kynar paint finish on both sides? This is costly and extends lead times which affect delivery.

A:

- a. Primary and secondary framing to be hot-dipped galvanized. Section 13122 has been updated per Addendum No. 2.
 - b. The phrase ‘factory-finished’ in 2.01(C)(1) is not meant to imply a colored finish on both sides but rather the standard factory finish on either side whether it’s the mentioned Kynar finish or the factory wash coat.
3. Q: The flex couplings at the pump station on sheet 06M01 are shown restrained with a call-out to the restraint detail P112, but the flex couplings and flanged coupling adapters at the tertiary filters on sheets 06M02 to 06M04 are not shown as restrained and have no call-out to restraint details. Are all of the flex couplings and flanged coupling adapters at the tertiary filters to be restrained?

A: Bid the flex couplings as shown on the drawings. The flex coupling on 6M01 are on a pumped discharge line at higher pressure and require the restrained type flex coupling. The flex couplings on 06M02 to 06M04 are on gravity lines and do not require restraint.

4. Q: At the tertiary filters on sheets 06M02 to 06M04, although the valves on the 3” FBW line are shown as by the filter manufacturer, it appears that the pipe and fittings are to be supplied by the contractor. Please confirm that the pipe and fittings are by the contractor. If the pipe and fittings are to be supplied by the contractor, there’s no system in the piping schedule called out as FBW. Is this piping to be the same as process FRW (BW)?

A: Pipe and fittings are by the installation contractor, see the Scope of Supply for the Filters included in the Aqua-Aerobics proposal in Addendum No. 1. The pipe schedule will be updated in Addendum No. 2 to revise the “FRW (BW)” to include “FBW”. Note that the FRW (BW) PIPING SCHEDULE material listing will be revised for ½ - 3 ½ size, from GSP to Stainless steel pipe Addendum No. 2. Section 15286 will be added to the bid documents by addendum.

5. G: The drain line from the pump discharge manifold on sheet 06M01 is shown to reduce from 14” to 8” with an 8” plug valve, but the buried line to the catch basin is called out as 14”. Please confirm that the entire drain line to the catch basin is to be 8”.

A: The entire pump discharge header drain line from the reducer and valve to the catch basin callout be changed from 14-inch FI to 8-inch D (Plant Drain) in Addendum No. 2.

6. Q: The 18” x 12” tee on the Filter Influent (FI) line on sheet 06M02 is shown as “optional”. Is the intent to allow the option to eliminate the flanged tee with FCA and allow a welded tee at this location with a 12” flanged outlet for the BFV? This would allow for single fabricated CML&C steel piece from the FCA at the 90 deg bend at filter 6 to the flex coupling near filter 7.

A: The “Optional” call out is with respect to operations, and selection of the inlet location. Tee is required as shown.

7. Q: The Piping Schedule calls for the above ground steel piping to be EPP coated per spec section 09960 High Performance Coatings, but spec section 09997 Pipeline Coatings and Linings calls for the steel pipe to be cement mortar coated. Which is correct?

A: The Pipe Schedule shall take precedence.

8. Q: On sheet C02C there’s a note pointing to the flowmeter vaults on the 24” FEF line that refers to DWG C04. Can you please provide the referenced DWG C04?

A: Drawing C04C will be added to the Drawing Index and to the Project Plans in Addendum No. 2, as sheet 51A, following Sheet 51.

9. Q: Specification 15116 – Plug Valves. A sole-sourced manufacturer is listed for use on these valves. Sole-sourcing valves of any kind severely limits material options on projects of this nature and could prove detrimental to the project completion schedule based on exorbitant lead times found with certain sole-source manufacturers. We would ask that Val-Matic Cam-Centric® 100% Port Eccentric Plug Valves be considered for use on this project. Val-Matic Cam-Centric® Plug Valves meet and exceed the form and function found within Specification Section 15116 and feature a 100% port suitable for both water and wastewater applications. Val-Matic Cam-Centric® plug valves also meet AWWA C517, are certified lead-free in accordance with NSF/ANSI 372, and are manufactured in Elmhurst, IL, USA. Specification data for these valves have been attached for additional reference.

A: The valve is sole sourced to match existing valves.

10. Q: Sheet 06M05 and the Intelligent Actuator Schedule on spec page 13447-10 show 5 EA electric actuators to be retrofitted onto existing butterfly valves at filters 1 – 5. Could you please provide the brand of valve and model number for these valves?

A: Manufacturer shall be confirmed by the bidder. Plant staff provided the photos below:



11. Q: There's a call out for a 1" HCS line and corresponding key note 10 on Sheet C02C Yard Piping. The piping schedule doesn't list HCS. What type of piping should this be?

A: The HCS service will be added to the Piping Schedule in Addendum No. 2. It shall be Schedule 80 CPVC with solvent welded joints. Section 15259 will be added to the bid documents by addendum.

12. Q: Are there any addendums for missing power, control and instrumentation cable and conduit schedules? Please refer to above snapshot of dwg 06E03C Tertiary Filters No. 8 & 7 Plans. We cannot determine the power, control and instrumentation cable size and conduit.

A: Conduit schedules are included in the Bid Documents, Vol 1 Specifications Section 16990A Area 6 Tertiary Filters

13. Q: Also there seems to be missing information on backwash motorized valves power supply shown on electrical dwg 06E06C and mechanical dwg 06M02. Refer below snapshots.

A: See drawings 06E04C for information on backwash valves.

14. Q: At the new flowmeter on the existing Filter Reject Water (FRW) at existing filters 1-5 shown on sheets 06M05 and 06M06 the piping is called out as 6" FRW. There's no listing in the piping schedule for 6" FRW. It appears that the line in the piping schedule for process FRW (BW) listed as above ground 14" – 36" should actually be 4" to 36" making the 6" above ground FRW piping steel. Please confirm that this was the intent.

A: Correct, this is corrected in Addendum No. 2

15. Q: 13122, 1.04, B, 2,a, 2 states "Reduction in wind, live, or snow loads based on tributary loaded area will not be permitted." CBC allows for reduction of live loads in this location. Please confirm reduction of live loads are acceptable.

A: Reduction in live loads will not be permitted as specified. The CBC, as well as ASCE 7, only provide requirements for minimum design loading however it is quite acceptable to design to a higher loading condition.

16. Q: Reduction in live loads will not be permitted as specified. The CBC, as well as ASCE 7, only provide requirements for minimum design loading however it is quite acceptable to design to a higher loading condition.

A: Primary and secondary frames are to be hot-dip galvanized. Anchor Bolts to be stainless steel type 316 per Specifications 13122 Article 2.02(E) and 05190. Per sub-note 1 in the Table shown in Specification 05190 Article 3.09(C), isolation sleeves and washers are required when the anchor is in contact with a metal that differs from that of the anchor. Specification 05190 Article 2.05(B) lists the requirements for the isolation sleeves and washers.

17. Q: 13122. OH Door Guides: indicate “Steel galvanized in accordance with ASTM A123, formed of roll formed steel channels and angles or structural angles of sufficient depth to provide a groove of adequate depth on each jamb to hold curtain firmly in guides under design wind pressure.” No mention of a design pressure was provided. Also, if the overhead doors are utilizing a wind lock to achieve the design pressure, please provide the catenary loading to be applied to the building.

A. The design wind pressure on the overhead doors is to be provided by the PEMB manufacturer per Specifications 13122 Article 1.04(B)(2)(e) and 01614. If wind locks are provided on the overhead doors, the catenary loading on the PEMB will require coordination between the PEMB and overhead door manufacturers.

18. Q: 13122, 2.02. Calls for a minimum of ¼” for the primary frames and 16ga for the secondary framing members. Typically PEMB structures will design for the prescribed loading. Please confirm the minimum dimensions are not required.

A: The minimum thicknesses are required as specified. The PEMB structure is to be designed for the prescribed loading, however any thickness that falls below the minimum values specified will be required to be increased.

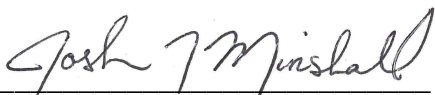
19. Q: 13122, 1.04, B. 3, a, 2 calls for a wind driG of H/500. Buildings of this use are typically H/60. Can this design parameter be reduced.

A: The wind driG limit can be reduced to a maximum to H/250. Section 13122 has been updated per Addendum No. 2.

Summary of Changes: Project questions have been answered in the attached list of questions. One project plan sheet has been added, and one drawing piping callout has been revised. All other items in the bid documents shall remain unchanged.

Addendums shall be acknowledged in the BID FORM. A signed copy of this Addendum and the attached acknowledgement form shall be attached to the bid proposal. Failure to do so may cause rejection of your bid as being non-responsive.

City of Petaluma,



Josh Minshall
Senior Civil Engineer
Public Works & Utilities Department

A signed copy of this Addendum and the attached acknowledgement form shall be attached to the bid proposal. Failure to do so may cause rejection of your bid as being non-responsive.

ADDENDUM NO. 2

**Ellis Creek Water Recycling Facility Tertiary Filtration Expansion
FILTER ADDITIONS AND MISCELLANEOUS IMPROVEMENTS PROJECT**

City Project Number C66401416

June 14, 2023

ACKNOWLEDGEMENT

Receipt of Addendum No. 2 is hereby acknowledged by _____
(Contractor's Name)

on the _____ day of _____, 2023.

By: _____
Signature

Title

Company

SECTION 15259

CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE: ASTM F441

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: ASTM F441 CPVC pipe and fittings.

1.02 REFERENCES

- A. ASTM International (ASTM):
 1. D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
 2. F437 – Standard Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.
 3. F438 - Standard Specification for Socket-Type Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 40.
 4. F439 - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80.
 5. F441 - Standard Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80.
 6. F493 - Standard Specification for Solvent Cements for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe and Fittings.
 7. F645 - Standard Guide for Selection, Design and Installation of Thermoplastic Water-Pressure Piping Systems.
- B. NSF International (NSF):
 1. 61 - Drinking Water System Components - Health Effects.

1.03 ABBREVIATIONS

- A. CPVC: Chlorinated polyvinyl chloride.

1.04 SUBMITTALS

- A. Submit as specified in Section 01330 - Submittal Procedures.
- B. Product data: As specified in Section 15052 - Common Work Results for General Piping.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Extruding and molding material: Virgin material containing no scrap, regrind, or rework material except where permitted in the referenced standards.

- B. Pipe:
 - 1. In accordance with ASTM F441 and Appendix, CPVC 4120.
 - 2. Extruded from Corzan CPVC Type IV, Grade 1, Class 24448 for sizes 8 inch and below and Class 23447 for sizes 8 inch and above material in accordance with ASTM D1784.
 - 3. Schedule 80, unless otherwise indicated on the Drawings or specified in the Piping Schedule in Section 15052 - Common Work Results for General Piping.
 - 4. Manufacturers: One of the following or equal:
 - a. IPEX USA, LLC.
 - b. GF Harvel.
 - c. Chemtrol (fittings only).

- C. Fittings:
 - 1. In accordance with ASTM F439 for pressure fittings, as appropriate to the service and pressure requirement.
 - 2. Same material as the pipe and of equal or greater pressure rating.
 - 3. Supplied by pipe manufacturer.

- D. Solvent cement:
 - 1. In accordance with ASTM F493.
 - 2. Manufacturers: The following or equal:
 - a. IPS Corp.
 - 3. Certified by the manufacturer for the service of the pipe.
 - 4. Primer: As recommended by the solvent cement manufacturer.

- E. Unions 4 inches and smaller:
 - 1. Socket end screwed unions.

- F. Unions 6 inches and larger:
 - 1. Socket flanges with 1/8-inch full-face soft gasket.
 - a. Gasket material: As indicated on the Piping Schedule.

2.02 SOURCE QUALITY CONTROL

- A. Mark pipe and fittings in accordance with ASTM F441.

PART 3 EXECUTION

3.01 DELIVERY, STORAGE, AND HANDLING

- A. Protect from sunlight, scoring, and distortion.
- B. Do not allow surface temperatures to exceed 120 degrees Fahrenheit.
- C. Store and handle as recommended by manufacturer in published instructions.

3.02 INSTALLATION

A. General:

1. Install piping in accordance with ASTM F645, or manufacturer's published instructions for installation of piping, as applicable to the particular type of piping.
2. Provide molded transition fittings for transitions from plastic to metal or IPS pipe.
 - a. Do not thread pipe.
 - b. Do not use flanged transition fittings unless specifically indicated on the Drawings.
3. Locate unions where indicated on the Drawings, and elsewhere where required for adequate access and assembly of the piping system.
4. Provide serrated nipples for transition from plastic pipe to rubber hose.

B. Installation of piping:

1. Clean dirt and moisture from pipe and fittings.
2. Bevel pipe ends in accordance with manufacturer's instructions with chamfering tool or file.
 - a. Remove burrs.
3. Use solvent cement and primer formulated for CPVC.
4. Use primer on pressure and non-pressure joints.
5. Do not solvent weld joints when ambient temperatures are below 40 degrees Fahrenheit or above 90 degrees Fahrenheit unless solvent cements specially formulated for these conditions are utilized.

3.03 FIELD QUALITY CONTROL

- A. Test as specified in Section 15052 - Common Work Results for General Piping and Section 15956 - Piping Systems Testing.

END OF SECTION

SECTION 15286

STAINLESS STEEL PIPE AND TUBING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Stainless steel piping and tubing.

1.02 REFERENCES

- A. American Society of Mechanical Engineers (ASME):
1. B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through 24.
 2. B16.11 - Forged Fittings, Socket-Welded and Threaded.
 3. B31.3 - Process Piping.
- B. ASTM International (ASTM):
1. A182 - Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
 2. A193 - Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications.
 3. A194 - Standard Specification for Carbon and Alloy Steel Nuts and Bolts for High Pressure or High Temperature Service, or Both.
 4. A240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 5. A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
 6. A276 - Standard Specification for Stainless Steel Bars and Shapes.
 7. A312 - Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
 8. A380 - Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
 9. A403 - Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings.
 10. A774 - Standard Specification for As-Welded Wrought Austenitic Stainless Steel Fittings for General Corrosive Services at Low and Moderate Temperatures.
 11. A778 - Standard Specification for Welded, Unannealed Austenitic Stainless Steel Tubular Products.
 12. A790 - Standard Specification for Seamless and Welded Ferritic/Austenitic Stainless Steel Pipe.
 13. A928 - Standard Specification for Ferritic/Austenitic (Duplex) Stainless Steel Pipe Electric Fusion Welded with Addition of Filler Metal.
 14. A967 - Standard Specification for Chemical Passivation Treatments for Stainless Steel Parts.

15. **[B622 - Standard Specification for Seamless Nickel and Nickel-Cobalt Alloy Pipe and Tube.]**
16. **[F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.]**

1.03 SUBMITTALS

- A. Submit as specified in Section 01330 - Submittal Procedures.
- B. Product data: As specified in Section 15052 - Common Work Results for General Piping.
- C. Shop drawings:
 1. Detailed layout drawings:
 - a. Dimensions and alignment of pipes.
 - b. Location of valves, fittings, and appurtenances.
 - c. Location of field joints.
 - d. Location of pipe hangars and supports.
 - e. Connections to equipment and structures.
 - f. Location and details of shop welds.
 2. Thickness and dimensions of fittings and gaskets.
 3. Photographs, drawings, and descriptions of pipe, fittings, welding procedures, and pickling and passivating procedures.
 4. Material specifications for pipe, gaskets, fittings, and couplings.
 5. Data on joint types and components used in the system including, flanged joints, grooved joint couplings and screwed joints.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

- A. Piping layout: Lay out and fabricate piping systems with piping sections as long as possible, while still allowing shipment, so that joints are minimized.
 1. Piping design indicated on the Drawings illustrates piping layout and configuration and does not indicate the location of every joint and flexible coupling that may be needed to connect piping sections fabricated in the shop.
 2. Where joints and couplings are specifically indicated on the Drawings, design and shop-fabricate piping sections utilizing the joint or coupling illustrated at the locations shown.
 3. Add joints and flexible couplings in a manner that achieves intent of maximizing size of individual piping sections.
- B. Shop fabrication: Fabricate piping sections in the shop and pickle and passivate at point of manufacture.
- C. Field assembly:
 1. Field welding is prohibited.

2.02 STAINLESS STEEL PIPE

A. General:

1. Pipe sizes specified in the Specifications and indicated on the Drawings are nominal.

B. Wall thickness:

1. As specified in Section 15052 - Common Work Results for General Piping.
2. Piping 4 inches in nominal diameter and greater:
 - a. For general service applications with pressures less than 250 pounds per square inch gauge, pipe diameter 24-inches or less, minimum wall thickness corresponding to Schedule 40S.
3. Piping less than 4 inches in nominal diameter:
 - a. Piping with threaded or grooved joints:
 - 1) Minimum wall thickness corresponding to Schedule 40S.

C. Piping material and manufacturing:

1. Comply with the requirements outlined in the following table:

Service	Stainless Steel Grade	Pipe Manufacturing Process
For low chloride water service with chloride concentrates below 200 parts per million and/or free chlorine less than 2 parts per million at ambient temperatures.		
Piping 4 inches in nominal diameter and larger	Type 304L stainless steel in accordance with ASTM A240	In accordance with ASTM A778
Piping less than 4 inches in nominal diameter	Type 304L stainless steel in accordance with ASTM A240	In accordance with ASTM A312

2. Location of material fabrication.

D. Fittings for piping 4 inches in nominal diameter and greater:

1. Material: In accordance with ASTM A240 stainless steel, grade to match the pipe.
2. Manufacturing standard: In accordance with ASTM A774.
3. Wall thickness of fitting: In accordance with ASME B36.19 for the schedule of pipe specified.
4. End configuration: As needed to comply with specified type of joint.
5. Dimensional standards:
 - a. Fittings with weld ends: In accordance with ASME B16.11.
 - b. Fittings with flanged ends: In accordance with ASME B16.5, Class 150.

E. Fittings for piping less than 4 inches in diameter:

1. Material: In accordance with ASTM A240 stainless steel, grade to match the pipe.
2. Manufacturing standard: In accordance with ASTM A403, Class WP.
3. Wall thickness and dimensions of fitting: In accordance with ASME B16.11 and as required for the schedule of pipe specified.

4. End configuration: As needed to comply with specified type of joint.
 5. Forgings in accordance with ASTM A182, or barstock in accordance with ASTM A276. Match forging or barstock material to the piping materials.
- F. Piping joints:
1. Joint types, piping greater than 2 inches in diameter, general:
 - a. Where type of joint is specifically indicated on the Drawings or specified, design and shop-fabricate piping sections utilizing type of joint illustrated or scheduled.
 - b. Joints at valves and pipe appurtenances:
 - 1) Provide flanged valves and flanged pipe appurtenances in stainless steel piping systems with flanged ends.
 - 2) Design and fabricate piping sections to make connections with flanged valves and pipe appurtenances flanged coupling adapters or flanged joints.
 - a) Flexible couplings and flanged coupling adapters: Provide stainless steel construction with materials matching the piping system, and conforming to requirements as specified in Section 15121 - Pipe Couplings.
 - c. Joints in digester gas, ozone and oxygen piping systems, membrane and reverse osmosis filtration systems:
 - 1) Aboveground piping: Welded, or flanged.
 - 2) Underwater piping: Welded or flanged.
 - 3) Buried piping: Welded or mechanically restrained.
 2. Flanges for Schedule 40S and Schedule 80S pipe:
 - a. Provide forged stainless steel (type matching piping system) welding neck flanges or slip-on flanges in accordance with ASME B16.5 Class 150.
 - b. Material: In accordance with ASTM A182.
- G. Gaskets:
1. All other service applications: EPDM, nitrile, or other materials compatible with the process fluid.
- H. Bolts for flanges:
1. Bolts and nuts: Type 316 stainless steel in accordance with ASTM A193 heavy hex head.
 - a. Bolt length such that after installation, end of bolt projects 1/8-inch to 3/8-inch beyond outer face of nut.
 - b. Nuts: In accordance with ASTM A194 heavy hex pattern.
- I. Fabrication of pipe sections:
1. Welding: Weld in accordance with ASME B31.3.
 2. Weld seams:
 - a. Full penetration welds, free of oxidation, crevices, pits and cracks, and without undercuts.
 - b. Provide weld crowns of 1/16 inch with tolerance of plus 1/16 inch and minus 1/32 inch.
 - c. Where internal weld seams are not accessible, use gas tungsten-arc procedures with internal gas purge.
 - d. Where internal weld seams are accessible, weld seams inside and outside using manual shielded metal-arc procedures.

- J. Cleaning (pickling) and passivation:
 - 1. Following shop fabrication of pipe sections, straight spools, fittings, and other piping components, clean (pickle) and passivate fabricated pieces.
 - 2. Clean (pickle) and passivate in accordance with ASTM A380 or A967.
 - a. If degreasing is required before cleaning to remove scale or iron oxide, cleaning (pickling) treatments with citric acid are permissible.
 - 1) However, these treatments must be followed by inorganic cleaners such as nitric acid/hydrofluoric acid.
 - b. Passivation treatments with citric acid are not allowed.
 - 3. Finish requirements: Remove free iron, heat tint oxides, weld scale, and other impurities, and obtain a passive finished surface.

2.03 SPARE PARTS

- A. **None**

2.04 SOURCE QUALITY CONTROL

- A. Visually inspect pipe for welding defects such as crevices, pits, cracks, protrusions, and oxidation deposits.
- B. Provide written certification that the pipe as supplied are in accordance with ASTM A778. Supplemental testing is not required.
- C. Provide written certification that the fittings as supplied are in accordance with ASTM A774.
 - 1. Supplementary testing is not required.
- D. Thoroughly clean any equipment before use in cleaning or fabrication of stainless steel.
- E. Storage: Segregate location of stainless steel piping from fabrication of any other piping materials.
- F. Shipment to site:
 - 1. Protect all flanges and pipe ends by encapsulating in dense foam.
 - 2. Securely strap all elements to pallets with nylon straps. Use of metallic straps is prohibited.
 - 3. Cap ends of tube, piping, pipe spools, fittings, and valves with non-metallic plugs.
 - 4. Load pallets so no tube, piping, pipe spools, fittings, or valves bear the weight of pallets above.
 - 5. Notify Engineer when deliveries arrive so Engineer may inspect the shipping conditions.
 - 6. Engineer may reject material due to improper shipping methods or damage during shipment.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install piping in such a manner as not to impart strain to connected equipment.
- B. Slope horizontal lines so that they can be drained completely.
- C. Provide valve drains at low points in piping systems.
- D. Install eccentric reducers where necessary to facilitate draining of piping system.
- E. Provide access for inspection and flushing of piping systems to remove sediment, deposits, and debris.

3.02 FIELD ASSEMBLY OF SHOP-FABRICATED PIPING SECTIONS

- A. Join shop-fabricated piping sections together using backing flanges, flexible couplings, flanged coupling adapters, grooved couplings, or flanges.

3.03 FIELD QUALITY CONTROL

- A. Test piping to pressure and by method as specified in Section 15052 - Common Work Results for General Piping.
 - 1. If pressure testing is accomplished with water:
 - a. Use only potable quality water.
 - b. Piping: Thoroughly drained and dried or place immediately into service.
- B. Visually inspect pipe for welding defects such as crevices, pits, cracks, protrusions, and oxidation deposits.

3.04 PROTECTION

- A. Preserve appearance and finish of stainless steel piping by providing suitable protection during handling and installation and until final acceptance of the Work.
 - 1. Use handling methods and equipment to prevent damage to the coating, include the use of wide canvas slings and wide padded skids.
 - 2. Do not use bare cables, chains, hooks, metal bars, or narrow skids.
 - 3. Store stainless steel piping and fittings away from any other piping or metals. Storage in contact with ground or outside without protection from bad weather is prohibited.
 - 4. Protect stainless steel piping and fittings from carbon steel projections (when grinding carbon steel assemblies in proximity) and carbon steel contamination (do not contact stainless steel with carbon steel wire brush or other carbon steel tool).

END OF SECTION

Plot Date: 09-DEC-2022 3:14:05 PM

User: svcPW

PlotScale: 1:1

Model: Layout1

ColorTable: gshade.ctb

LAST SAVED BY: iweich

1 2 3 4 5 6 7 8 9 10 11 12 13

A

B

C

D

E

F

G

A

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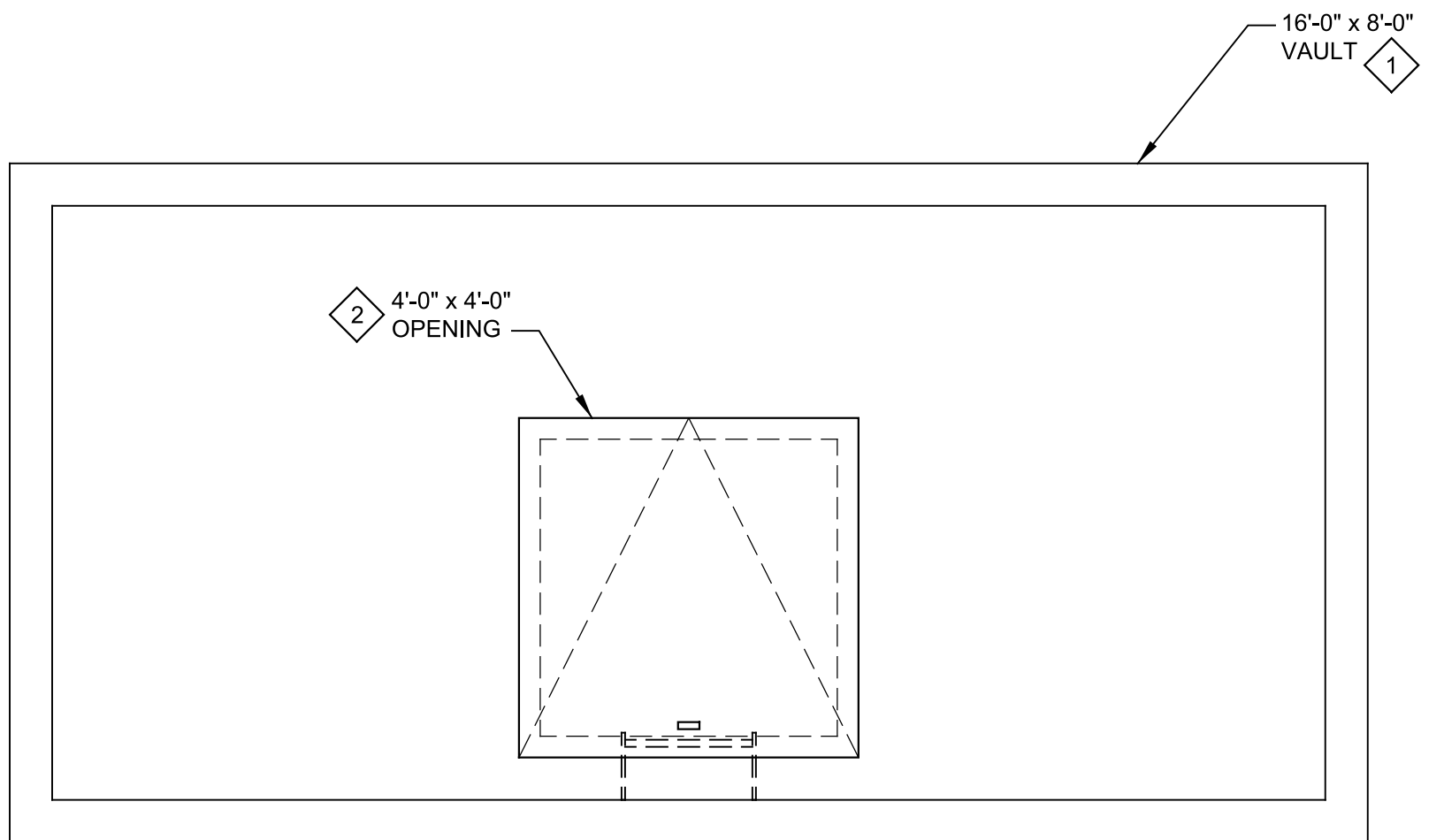
G

GENERAL NOTES:

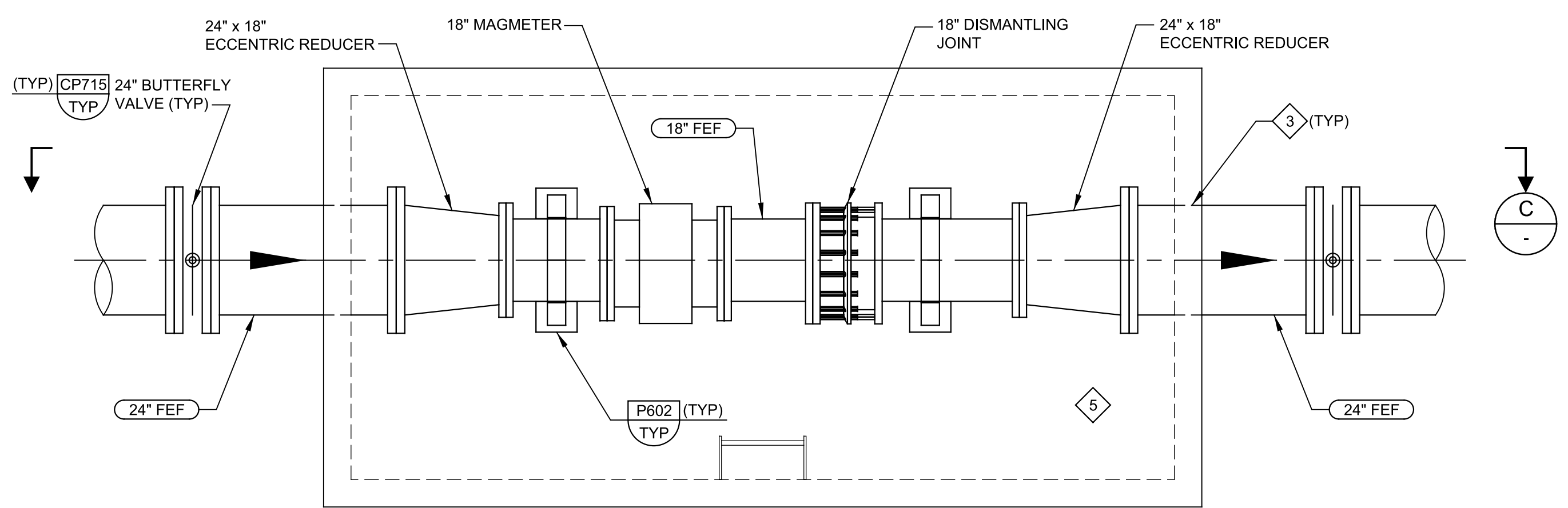
- 1. FOR GENERAL CIVIL NOTES, SEE REFERENCE SHEET G13.
- 2. SEE GEOTECHNICAL REPORT FOR SITE PREPARATION AND ENGINEERED FILL RECOMMENDATIONS.

KEY NOTES:

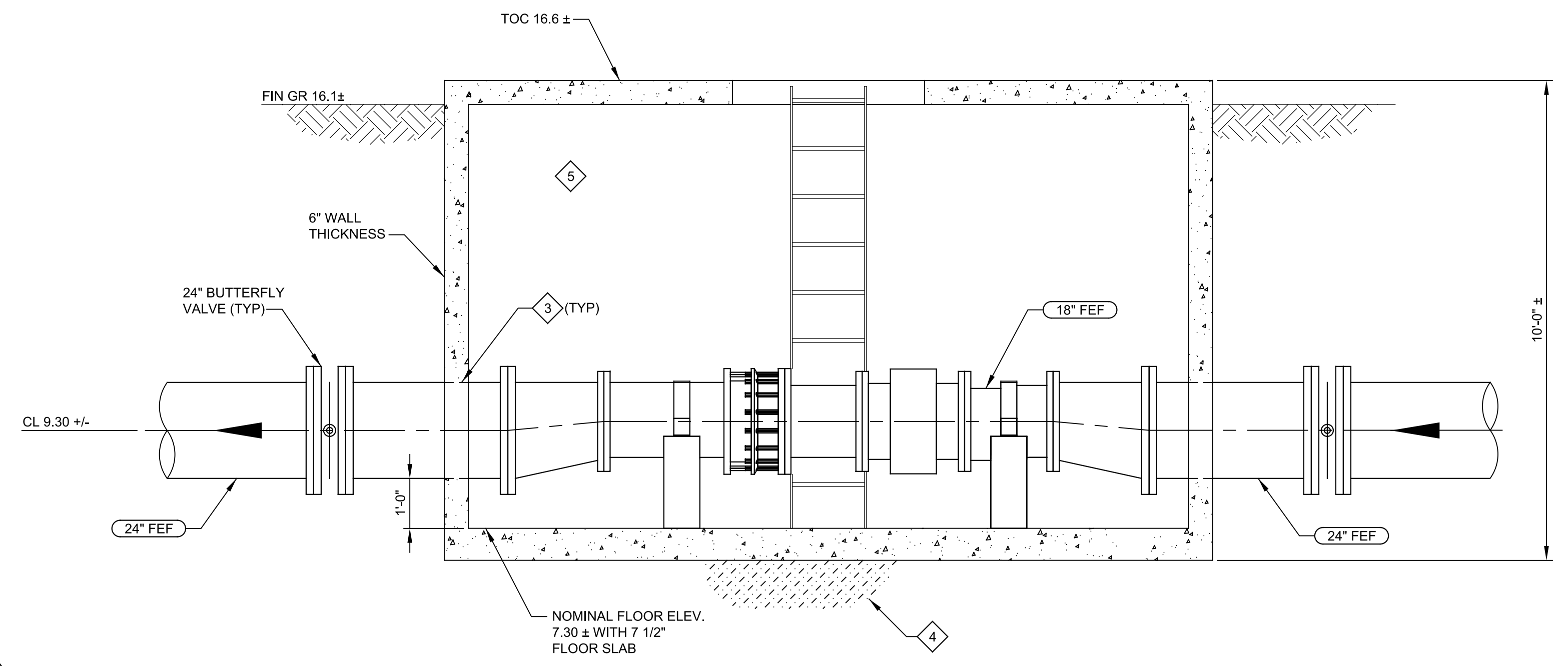
- 1 PRECAST VAULT PER SPECIFICATION SECTION 02085, NOTED SIZE IS NOMINAL INSIDE DIMENSIONS.
- 2 PROVIDE LOCKABLE STAINLESS STEEL HATCH FOR OPENING, WITH HINGES THAT LOCK IN THE UPRIGHT POSITION.
- 3 PROVIDE CUTOUT FOR PIPE PENETRATION, SEAL PENETRATION WITH LINK SEAL TYPE SEAL.
- 4 PROVIDE 12" ABC UNDER VAULT.
- 5 ALL STEEL IN VAULT SHALL BE GALVANIZED AND / OR EPOXY COATED PER SPECIFICATIONS USING COATING SYSTEM EPX-M-3



A TOP PLAN - STRUCTURAL
 SCALE: 1/2" = 1'-0"
 FILE: 7310L1000C104



B PLAN - MECHANICAL
 SCALE: 1/2" = 1'-0"
 FILE: 7310L1000C104



C SECTION
 SCALE: 1/2" = 1'-0"
 FILE: 7310L1000C104

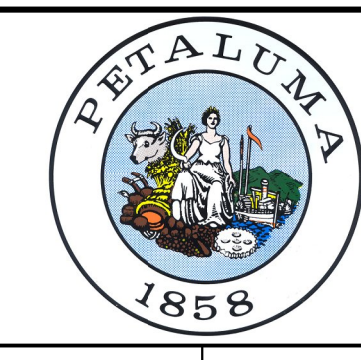
REV	DATE	BY	DESCRIPTION

DESIGNED DW
DRAWN SDW
CHECKED
DATE JANUARY 2023



Digitally signed by Douglas W. Wing
 Contact info: Carollo Engineers, Inc.
 Date: 2023.01.25 15:07:33 -0800

D.W. Wing



CITY OF PETALUMA
 FILTER ADDITION AND MISC. IMPROVEMENTS PROJECT
 CIVIL
**FEF FLOW METER VAULT
 PLANS AND SECTION**

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
 0 1" 1"
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO.
7310L.10
 DRAWING NO.
C04C
 SHEET NO.
51A OF 130