

**FOR USE WITH THE 4<sup>TH</sup> EDITION CPCS  
LAST REVISED MAY 1, 2024**

# SUPPLEMENTARY CONDITIONS – CONTRACT \*\*\*\*\*

SC-1 SCOPE. These Supplementary Conditions amend or supplement the General Conditions and other provisions of the Contract Documents. All provisions not so amended or modified remain in full force and effect.

## **Add the following SC to all Contracts.**

SC-1 ARTICLE 1--DEFINITIONS. Add the following:

**Survey Control**--Land survey monumentation lying within the area of project influence from which Right of Way (ROW) or any land boundary can be determined. Survey Control includes all physical marks including, but not limited to, range points, Public Land Survey System corners, ROW pins, property boundary corners, benchmarks, easement monuments, and all accessories.

**Project Control**--Physical site monumentation with defined horizontal and vertical values from which the project design can be laid out in the field for construction. Project Control monumentation shall be easily identifiable and maintained for the duration of the project. These monuments are the primary control for the project and do not represent any secondary control that may be needed for laying out the Work.

## **Add the following SC to all Contracts.**

SC-1 ARTICLE 4-- AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; CONTROL POINTS. Delete Paragraph 4.2.1.2 and substitute with the following:

4.2.1.2 For Physical Conditions, the CONTRACTOR shall refer to those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (including Underground Facilities) that have been utilized by the ENGINEER in preparing the Contract Documents.

## **Add the following SC to all Contracts.**

SC-1 ARTICLE 4-- AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; CONTROL POINTS. Delete Paragraph 4.3.1.2 and substitute with the following:

4.3.1.2 The CONTRACTOR shall have full responsibility for reviewing and checking such information and data, locating Underground Facilities, and obtaining professional locate services to mark such facilities that are shown or indicated in the Contract Documents; for the coordination of Work with the owners of such Underground Facilities during construction; for the safety and protection thereof as provided in Paragraph 6.19.; and for repairing any damage resulting from the Work. The cost of the listed responsibilities will be considered as having been included in the Contract Price. The CONTRACTOR shall perform this review, checking, and locating shown or indicated Underground Facilities prior to construction with sufficient lead time to allow the OWNER or the owners of Underground Facilities to correct or mitigate interferences with the Work.

**Add the following SC to all Contracts.**

SC-**[ ]** ARTICLE 4-- AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; CONTROL POINTS. Delete Paragraph 4.4 Control Points and substitute with the following:

**4.4 Control Points:**

- 4.4.1 The ENGINEER will provide engineering surveys to establish a minimum of four precise geodetic Project Controls for construction, which in the ENGINEER's judgment are necessary to enable the CONTRACTOR to proceed with the Work. The location of each Project Control will be outlined in a survey control diagram and noted in plan views of the Contract Documents. The CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the Contract Documents), shall protect and preserve the established Project Control, and shall make no changes or relocations without the prior written approval of the ENGINEER. The CONTRACTOR shall report to the ENGINEER whenever any Project Control is lost or destroyed or requires relocation due to necessary changes in the grades or locations. The CONTRACTOR shall be responsible for the cost of the accurate replacement or relocation of such Project Control, in which the ENGINEER will be responsible for the re-establishment of such Project Control.
- 4.4.2 The ENGINEER will provide engineering surveys to delineate the location of found Survey Control within the project disturbance limits for protecting and preserving such monuments. The CONTRACTOR shall be responsible for identifying the disturbance risk for the Survey Control and provide written notice to the Construction Project Manager of how each monument will be preserved or restored. After completion of the Work, the CONTRACTOR shall provide a written notice of the condition of the Survey Control within the Work disturbance area to the ENGINEER. All associated recorded/deposited documents including, but not limited to, monument record, tie out sheet, and land survey plat shall be provided to the ENGINEER. The CONTRACTOR shall be responsible for the cost of the accurate replacement or relocation of such Survey Control by a Colorado licensed professional land surveyor.

**If Professional Liability Insurance is NOT required for your Project leave the following SC in the template**

SC-**[ ]** ARTICLE 5--BONDS AND INSURANCE. Delete Paragraph 5.3.4. Professional liability insurance is not required for this Contract.

**Add the following SC if the professional liability requirement falls on a Subcontractor for the GC and not the GC directly.**

SC-**[ ]** ARTICLE 5--BONDS AND INSURANCE. Add Paragraph 5.3.4.1.

- 5.3.4.1 Professional Liability insurance requirements for the CONTRACTOR will be waived contingent upon furnishing the professional liability insurance certificate from the Subcontractor who will perform the delegated-design component of the Contract.

**Add the following SC to all Contracts.**

SC-**[ ]** ARTICLE 5--BONDS AND INSURANCE. Delete Paragraph 5.3.5.6 and substitute with the following:

- 5.3.5.6 Include "The City and County of Denver, Acting By and Through its Board of Water Commissioners" as insured as its interests may appear.

**If Pollution Liability Insurance IS required for your Project leave the following SC in the template. Discuss with management the need to optional vs required coverage.**

SC-**[REDACTED]** ] ARTICLE 5--BONDS AND INSURANCE. Add Paragraph 5.3.5.

5.3.5. Pollution liability insurance: **[It is recommended]** if CONTRACTOR's Work has the potential to create or result in an environmental hazard or pollution condition, then CONTRACTOR shall purchase and maintain a policy with limits of \$1,000,000 per occurrence or claim and \$2,000,000 in the aggregate. Such policy shall provide coverage for disturbance of a hazardous material (such as asbestos), pollutant, irritant, toxic chemical or gas, acid, vapor, smoke, fungi, mold, and which contaminates the premises or project location or surrounding land, water, or air. The CONTRACTOR's pollution liability policy shall include coverage for liability arising out of third-party bodily injury, sickness, disease, mental anguish or shock sustained by any person, including death, and property damage including physical injury or destruction of tangible property including resulting loss of use, clean-up costs, and loss of use of tangible property that has not been physically injured or destroyed. The CONTRACTOR's pollution liability policy shall provide coverage for clean-up, remediation, restoration, emergency response costs, and related legal defense costs. If coverage as required is written on a claims-made policy form, then the CONTRACTOR warrants that any retroactive date applicable to coverage under the policy precedes the effective date of this Agreement, and that continuous coverage will be maintained or an extended discovery period will be exercised for a period of three years after completion of CONTRACTOR's Work. If coverage is provided via a claims-made policy form, then the policy shall contain a notice of circumstances provision.

**RENUMBER ACCORDINGLY**

**Add the following SC to all Contracts.**

SC-**[REDACTED]** ] ARTICLE 6--CONTRACTOR RESPONSIBILITIES. Delete 6.3. and substitute with the following:

6.3 The CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work using the Project Control provided by the OWNER and to perform construction as required by the Contract Documents. The CONTRACTOR shall provide competent, suitably qualified personnel to locate and mark any Underground Facilities throughout the construction time period and reestablish any Survey Control disturbed or destroyed by construction activities as required by the Contract Documents. The CONTRACTOR shall, at all times, maintain good discipline and order at the site except in connection with the safety or protection of persons, the Work, or property at the site or adjacent thereunto, and except as otherwise indicated in the Contract Documents.

Work at the site shall be performed during regular working hours and shall not start earlier or end later than allowed by local jurisdictional codes. Working hours are the responsibility of the CONTRACTOR; the OWNER will have no additional liability for overtime or shift time unless approved beforehand.

OWNER-recognized Holidays consist of the following days:

New Year's Day (January 1st, or observed weekday)

Martin Luther King Day (3rd Monday in January)

President's Day (3rd Monday in February)

Cesar Chavez Day (Last Monday in March)

Memorial Day (Last Monday in May)

Juneteenth (June 19th, or observed weekday)

Independence Day (July 4th, or observed weekday)

Labor Day (1st Monday in September)

Veteran's Day (November 11th, or observed weekday)

Thanksgiving Day (4th Thursday in November)

Christmas Day (December 25th, or observed weekday)

**Add the following SC if stormwater management and permitting is required.**

SC- [ ] ARTICLE 6--CONTRACTOR RESPONSIBILITIES. Add to the end of paragraph 6.12.

The CONTRACTOR by submitting a bid affirms its familiarity with any State and County regulations related to any stormwater management and permit requirements; therefore, CONTRACTOR shall be entitled to an adjustment to the Contract Price for related costs only to the extent differing or unforeseen regulatory or physical conditions affect the Work.

**Add the following SC to all Contracts.**

SC- [ ] ARTICLE 6--CONTRACTOR's RESPONSIBILITIES. Add to the end of Paragraph 6.13.1.

This Agreement is subject to C.R.S. 8-17-101 regarding the utilization of Colorado labor.

**Add the following SC if stormwater management and permitting is required.**

SC- [ ] ARTICLE 6--CONTRACTOR RESPONSIBILITIES. Add to the end of paragraph 6.30.

This paragraph applies to any State or County determination regarding stormwater management and permit requirements.

**Add the following SC if the CONTRACTOR will be required to designate a Customer Liaison to manage customer communications**

**\*\*\*\*ATTACH EXHIBIT IF THIS SC IS INCLUDED\*\*\*\***

SC- [ ] ARTICLE 6--CONTRACTOR RESPONSIBILITIES. Add Paragraph 6.38.

#### **Customer Outreach:**

6.38. The CONTRACTOR shall designate a separate Customer Liaison unless otherwise approved by the OWNER to manage customer communication and relations for the duration for all projects, except those that do not impact private parties or require public outreach. The CONTRACTOR's Customer Liaison is responsible for notifying impacted customers of upcoming Project Work, Water Outages, and Lead Service Line Replacements as described in the Exhibit attached to the Agreement. The CONTRACTOR's Customer Liaison will attend construction meetings, public meetings, and individual customer meetings as directed by the OWNER and will coordinate with the OWNER.

If the CONTRACTOR's Customer Liaison neglects the abovementioned responsibilities or if the role becomes vacant and not replaced within the given 72 hours, liquidated damages of \$500 a day will be charged to the CONTRACTOR as described in the Exhibit attached to the Agreement.

The CONTRACTOR, Subcontractors, CONTRACTOR's Customer Liaison, and other representatives of the CONTRACTOR will conduct themselves in accordance with the OWNER's Good Neighbor Commitment located at <https://www.denverwater.org/project-updates/pipe-replacement/good-neighbor-commitment>.

**Add the following SC to all Contracts.**

SC- [ ] ARTICLE 6--CONTRACTOR RESPONSIBILITIES. Add Paragraph 6.39.

## **Computer and Telecommunications Resources:**

- 6.39 If any Work requires CONTRACTOR to have physical or remote access to or use of OWNER's data, computer or telecommunications resources ("IT Resources"), CONTRACTOR agrees as follows.

CONTRACTOR will not use or permit use of the IT Resources for any purposes other than those necessary to perform Work under this Contract. CONTRACTOR will not use any access mechanism that OWNER has not expressly assigned to CONTRACTOR or its employees. CONTRACTOR will not disclose information concerning the IT Resources unless authorized to do so by OWNER in writing. CONTRACTOR will treat all information maintained in or by the IT Resources as strictly confidential, encrypting data where appropriate, and will not, intentionally or unintentionally, disclose, release or provide access to the IT Resources to any unauthorized person or entity.

If CONTRACTOR or any of its employees suspects, discovers, or is notified of actual or suspected unauthorized disclosure, release or access to the IT Resources, CONTRACTOR will immediately notify OWNER's Information Security Officer (security@denverwater.org) by email within 24 hours and copy the OWNER or ENGINEER representative specified in the Contract for notices.

OWNER may limit or restrict CONTRACTOR's access to the IT Resources and inspect, remove, or otherwise alter any data, file, or system that may undermine or expand the limited scope of CONTRACTOR's authorized use of the IT Resources. If CONTRACTOR fails to abide by these terms, OWNER may terminate this Contract for cause as set forth in Article 15.2.9.

### **Add the following SC to all Contracts.**

SC- [ ] ARTICLE 15—SUSPENSION OF WORK AND TERMINATION. Add to the end of Paragraph 15.2.8.

- 15.2.9. The CONTRACTOR discontinues or suspends the prosecution of the Work (exclusive of Work stoppage due to: (i) suspension or termination by the OWNER; (ii) an excusable delay; or (iii) nonpayment by the OWNER not related to a breach by the CONTRACTOR);
- 15.2.10. The CONTRACTOR fails to resume performance of Work, which has been suspended or stopped, within a reasonable time after receipt of notice from the OWNER to do so or (if applicable) after cessation of the event preventing performance;
- 15.2.11. The CONTRACTOR fails to provide and maintain the required insurance and Payment and Performance Bonds;
- 15.2.12. The CONTRACTOR fails, absent a valid dispute, to make payment when due for labor, equipment, or materials in accordance with its agreements with Subcontractors and applicable law;
- 15.2.13. Any material representation or warranty made by the CONTRACTOR in the Contract Documents or in any certificate, schedule, instrument, or other document delivered pursuant to the Contract Documents shall have been false or materially misleading when made;
- 15.2.14. Documented Occupational Safety and Health Administration (OHSA) safety violation, or disregard for worker's safety; or

**RENUMBER ACCORDINGLY**

# SUPPLEMENTARY TECHNICAL SPECIFICATIONS – CONTRACT \*\*\*\*\*

## DIVISION 1

*Add if the project requires Market Price Adjustment.*

### SECTION 01 29 00 – PAYMENT PROCEDURES, PART 1

ADD:

#### 1.2 REFERENCES

- A. United States Bureau of Labor and Statistics:
  1. Producer Price Index

RENUMBER ACCORDINGLY

*Add if the project has a contingency and/or allowance.*

### SECTION 01 29 00 – PAYMENT PROCEDURES, PART 1, SUBPARAGRAPH 1.2

ADD:

D. Contingencies and Allowances included in the Contract:

1. Contingency - [\$ Amount - listed in Schedule of Values and Bid Form, if applicable]:
  - a. This contingency shall be a separate item as listed in the Schedule of Values for sole use by OWNER for approved changes, except for “CONTRACTOR Contingency” within a CMAR agreement.
  - b. CONTRACTOR shall submit a Proposed Change Order in accordance with Article 10.2 of the General Conditions, with adequate detail for the evaluation and approval by the CPM.
  - c. Prior to submitting an Application for Payment, a Contingency Notification Letter will be issued to the CONTRACTOR authorizing the Work and approving costs.
  - d. All unused contingencies remaining after Substantial Completion will be removed from Contract via a deductive Change Order.
2. Allowance(s) - [\$ Amount - listed in Schedule of Values and Bid Form, if applicable].
  - a. Each allowance shall be a separate item as listed in the Schedule of Values.
  - b. CONTRACTOR shall submit detailed invoices for labor, equipment and materials for approval by the CPM.
  - c. Prior to submitting an Application for Payment, the CPM will issue an Allowance Notification Letter to the CONTRACTOR approving costs.
  - d. Unused Allowances remaining after Substantial Completion will be removed from Contract via a deductive Change Order.

*Add if the project requires Market Price Adjustment.*

### SECTION 01 29 00 – PAYMENT PROCEDURES, PART 1, SUBPARAGRAPH 1.2

ADD:

D. Market Price Adjustment

1. Price Adjustment Clause (PAC):
  - a. General:
    - 1) This price adjustment clause is being utilized to minimize the risk to the CONTRACTOR with respect to commodity price fluctuations for the duration of the Work.

- 2) The Base Prices to be noted on the Tables in the Schedule of Values shall only include the material unit cost. Do not include labor and installation costs in the unit cost.
  - 3) The commodity price adjustment can go up or down depending on market conditions.
  - 4) Price adjustments shall be made to the unit prices of only those commodities identified herein.
  - 5) Price adjustments shall be made on February 25 starting in the year [ ] for all billings from March to February of the following 12-month period.
- b. Commodities to be adjusted:
- 1) Only the following commodities shall be allowed for unit price adjustments.
    - a) Ready mixed concrete:
      - (1) Index: Producer price Index for ready-mix concrete.
        - (a) PPI Series ID: WPU1333.
      - (2) Unit of measure: Cubic Yard.
    - b) Reinforcing steel:
      - (1) Index: Producer Price Index for hot rolled steel bars, plates, and structural shapes.
        - (a) PPI Series ID: WPU101704.
      - (2) Unit of measure: Hundredweight (cwt).
    - c) Large diameter steel pipe (24-inches and larger in diameter):
      - (1) Index: Producer Price Index for steel pipe and tubing:
        - (a) PPI Series ID: WPU101706.
      - (2) Unit of Measure: Linear foot of pipe.
    - d) Electrical conductors (copper wire only):
      - (1) Adjustment for copper conductors only.
      - (2) Index: Producer Price Index for wiring devices.
        - (a) PPI Series ID: WPU1171.
      - (3) Unit of measure: Feet.
    - e) Post tension cables:
      - (1) Index: Iron and steel.
        - (a) PPI Series ID-WPU101.
      - (2) Unit of Measure: Hundredweight (cwt).
    - f) Diesel fuel:
      - (1) Index: Producer Price Index for No. 2 diesel fuel.
        - (a) PPI Series ID: WPU057303.
      - (2) Unit of Measure: Gallon.
  - 2) Price Adjustment Calculation: Everything but fuel.
    - a) The unit price adjustments shall be calculated by the simple percentage method as follows:
      - (1)  $ITA / ITBPS = \text{Adjustment Factor (AF)}$ .
      - (2)  $BP \times AF = \text{Adjusted Unit Price (AUP)}$ .
  - 3) Price Adjustment Calculation: Fuel.
    - a) The unit price adjustment for fuel shall be calculated as follows:
      - (1)  $BidP = BidP_{fuel} + BidP_{other}$ .
      - (2)  $BidP_{fuel} = FU \times BP$ .
      - (3)  $AF_{fuel} = ITA/ITBPS$ .
      - (4)  $AUP_{fuel} = BP_{fuel} \times AF_{fuel}$ .
      - (5)  $AUP = AUP_{fuel} + BidP_{other}$ .

*Add if the project requires Market Price Adjustment.*

## **SECTION 01 29 00 – PAYMENT PROCEDURES, PART 1, SUBPARAGRAPH 1.3**

### **DELETE:**

- A. Construction Schedule of Values: Allocates values for the various parts of the Work (activities or groups of activities/categories) used as the basis for submitting and reviewing progress payments.



**SUBSTITUTE:**

- A. Base Period: [ ] through [ ].
- B. Base Price (BP): The unit price of a given commodity as noted in Supplement A at the end of this Section.
- C. Index at Time of Adjustment (ITA): Previous 12 months of published data (including preliminary data) at the time of adjustment.
- D. Index at Time Base Price was Set (ITBPS): 12-month average of published data (including preliminary data) for the Base Period.
- E. Adjusted Unit Price (AUP): Unit price adjusted per the index.
- F. Fuel Used (FU): Fuel used per cubic yard of task, in Supplement B at the end of this Section.
- G. BidP: Bid Price per cubic yard of earthwork including fuel, manpower, equipment, and all other costs of the task as noted in Supplement B at the end of this Section.
- H. BidPfuel: Component of BidP for fuel only.
- I. BidPother: Component of BidP excluding fuel.
- J. AUPfuel: Adjusted unit price accounting for fuel cost.
- K. BidPadj: Bid price adjusted for cost of fuel.
- L. Construction Schedule of Values: Allocates values for the various parts of the Work (activities or groups of activities/categories) used as the basis for submitting and reviewing progress payments.
- M. Time of Adjustment: February 25th each year starting in 20[ ].

**Select lump sum or unit pricing, one must be included.**

**Use for Lump sum Projects**

**SECTION 01 29 00 – PAYMENT PROCEDURES, PART 1, SUBPARAGRAPH 1.4.B**

**ADD:**

- 3. Description of items: The Construction Schedule of Values indicates major categories of Work for the purpose of comparative proposal analysis, the payment breakdown for monthly progress payments, and additions or deductions. Items are not intended to be inclusive descriptions of Work categories.
  - a. [ ]:
    - 1) This item consists of the following items:
      - a) [ ]:
      - b) [ ]:
      - c) [ ]:
      - d) [ ]:
      - e) [ ]:
      - f) Mobilization (not to exceed [ ]% of Total Bid):
        - (1) Perform operations in connection with preparatory work for the execution of Contract Work.
        - (2) Payment will be based on a lump sum price bid not to exceed the value stated on the Bid Form.
        - (3) Progress payments for mobilization will be made as work progresses as follows:
          - (a) When 10% of the Contract amount is earned, 25% of the mobilization bid item will be paid.
          - (b) When 25% of the Contract amount is earned, 50% of the mobilization bid item less previous payments will be paid.
          - (c) When 50% of the Contract amount is earned, 75% of the mobilization bid item less previous payments will be paid.
          - (d) When 75% of the Contract amount is earned, 100% of the mobilization bid item less previous payments will be paid.
        - (4) Retainage as described in the Agreement also applies to progress payments for mobilization.
    - 2) Measurement: Lump Sum.

**Use for Unit Pricing Projects**

**SECTION 01 29 00 – PAYMENT PROCEDURES, PART 1, SUBPARAGRAPH 1.4.B**

**ADD:**

3. Description of items: The Construction Schedule of Values indicates major categories of Work for the purpose of comparative proposal analysis, the payment breakdown for monthly progress payments, and additions or deductions. Items are not intended to be inclusive descriptions of Work categories.
- a. [ ]:
    - 1) This item consists of [ ].
    - 2) Measurement: [ ].
  - b. [ ]:
    - 1) This item consists of [ ].
    - 2) Measurement: [ ].
  - c. [ ]:
    - 1) This item consists of [ ].
    - 2) Measurement: [ ].
  - d. Mobilization (not to exceed [ ]% of Total Bid):
    - 1) Perform operations in connection with preparatory work for the execution of Contract Work.
    - 2) Payment will be based on a lump sum price bid not to exceed the value stated on the Bid Form.
    - 3) Progress payments for mobilization will be made as work progresses as follows:
      - a) When 10% of the Contract amount is earned, 25% of the mobilization bid item will be paid.
      - b) When 25% of the Contract amount is earned, 50% of the mobilization bid item less previous payments will be paid.
      - c) When 50% of the Contract amount is earned, 75% of the mobilization bid item less previous payments will be paid.
      - d) When 75% of the Contract amount is earned, 100% of the mobilization bid item less previous payments will be paid.
    - 4) Retainage as described in the Agreement also applies to progress payments for mobilization.

*Add if the project requires Market Price Adjustment.*

**SECTION 01 29 00 – PAYMENT PROCEDURES**

**DELETE:**

**PART 3 EXECUTION (NOT USED)**

**SUBSTITUTE:**

**PART 3 EXECUTION**

**3.1 SUPPLEMENTS**

- A. Supplement A –Base Price:
- B. Supplement B –Bid Price

*Add if the project requires Market Price Adjustment.*

**SECTION 01 29 00 – PAYMENT PROCEDURES**

**ADD:**

SUPPLEMENT A – Base Price

**SUPPLEMENT A – BASE PRICE**

<b>PPI Series ID</b>	<b>Material</b>	<b>Work Element</b>	<b>Base Price</b>		<b>Total Units</b>	
WPU1333	Ready-mixed Concrete	Concrete	\$	per CY		CY
WPU101704	Hot rolled steel bars	Reinforcing Steel	\$	per cwt		cwt
WPU101706	Steel pipe and tubing	24" Steel Pipe	\$	per LF		LF
WPU101707	Steel pipe and tubing	30" Steel Pipe	\$	per LF		LF
WPU101708	Steel pipe and tubing	36" Steel Pipe	\$	per LF		LF
WPU101	Iron and steel	Post-Tension Tendons	\$	per cwt		cwt
WPU057303	No. 2 diesel fuel	Fuel	\$	per gallon	See Supplement B	
WPU1171	Wiring devices	Electrical Conductors	\$	per LF		LF

*Add if the project requires Market Price Adjustment.*

**SECTION 01 29 00 – PAYMENT PROCEDURES**

**ADD:**

SUPPLEMENT B – Bid Price

**SUPPLEMENT B – BID PRICE**

<b>Task</b>	<b>Fuel used for Task (FU)</b>		<b>Total Units (CY)</b>	<b>Units</b>	<b>Bid Price per CY</b>
Excavation		gal/CY		CY	\$
Hauling		gal/CY		CY	\$
Backfill		gal/CY		CY	\$

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*If the Project is not in the City and County of Denver, the following paragraph is applicable.*

**SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION, PART 1, SUBPARAGRAPH 1.2**

**DELETE:**

D. City and County of Denver (City) Street Cut Occupancy Permits Requirements: *(In its entirety)*

*For Projects with Work in the City and County of Denver rights-of-way: Edit the following to suit the Project requirements – The DPM/PE shall meet with an authorized representative of the City and County of Denver and provide the City with the documents describing the Project scope and a good faith estimate of the time period that the Work will impact the rights-of-way. The DPM/PE and the City representative will review the Project scope/impacts and will mutually determine Reasonable Construction Time Periods. The DPM/PE will include these Reasonable Construction Time Periods in the chart below.*

**SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION, PART 1, SUBPARAGRAPH 1.2.D.4.a**

**ADD:**

Stations(?)	Location	Time

**SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION, PART 1, SUBPARAGRAPH 1.2.E**

**ADD:**

- 4. Facility outage dates:
  - a. [ ]

**SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION, PART 1, SUBPARAGRAPH 1.4.A**

**ADD:**

- 1. Project Milestone dates:

Milestone (or item)	Description	Completion Date
Item	Notice of Award (NOA)	Anticipated Effective Date of the Agreement - [Date]
Item	Notice to Proceed (NTP)	Within 45 days following the NOA Anticipated Date - [Date]
1	Milestone No. 1: [ ]	[Date]
2	Milestone No. 2: [ ]	[Date]
3	Substantial Completion date	[Date]
4	Final Completion date	[Date]

**Engineer: If SECTION 01 33 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 01 33 00 – SUBMITTAL PROCEDURES, PART 1, SUBPARAGRAPH 1.1**

**DELETE:**

- A. Section includes general information for submittal procedures.

**SUBSTITUTE:**

- A. Section includes general information and execution for submittal procedures.

**Engineer: If SECTION 01 33 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 01 33 00 – SUBMITTAL PROCEDURES, PART 1, SUBPARAGRAPH 1.2.A**

**DELETE:**

- 6. Revise and resubmit the Submittal in its entirety when required; identify the changes made since the previous Submittal. When requested, submit additional information.

**SUBSTITUTE:**

- 6. Revise and resubmit the Submittal in its entirety when required; identify the changes made since the previous Submittal. Report Submittal review comments to the ENGINEER in written format including original review comments. When requested, submit additional information.

**Engineer: If SECTION 01 33 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 01 33 00 – SUBMITTAL PROCEDURES**

**DELETE:**

**PART 3 EXECUTION (NOT USED)**

**SUBSTITUTE:**

**PART 3 EXECUTION**

**3.1 GENERAL**

**A. Subcontractor Submittals:**

- 1. Review for general conformance with the requirements of this section. Provide verification of review on the submittal cover sheet. Return any Subcontractor submittals that do not meet the requirements of this Section prior to sending to OWNER.

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*Add 'F' if required for the project.*

**SECTION 01 41 01 – REGULATORY REQUIREMENTS AT TREATMENT PLANTS, PART 1, SUBPARAGRAPH 1.4**

**ADD:**

- F. Work under this Contract is on or near chlorine or aqua ammonia systems.

*List required permits.*

**SECTION 01 41 01 – REGULATORY REQUIREMENTS AT TREATMENT PLANTS, PART 1, SUBPARAGRAPH 1.4.G**

**ADD:**

3. Permits to be obtained by the CONTRACTOR:
  - a.
  - b.
  - c.

*List required permits.*

**SECTION 01 41 01 – REGULATORY REQUIREMENTS AT TREATMENT PLANTS, PART 1, SUBPARAGRAPH 1.4.H**

**ADD:**

3. Permits to be obtained by the OWNER:
  - a.
  - b.
  - c.

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**Engineer: If SECTION 01 42 13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 01 42 13 – ABBREVIATIONS AND ACRONYMS, PART 1, SUBPARAGRAPH 1.4.G**

**ADD:**

24. BRE Buried Reference Electrode

**RENUMBER ACCORDINGLY**

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*ENGINEER's Field Office as defined in 2.1 – Evaluate with the CPM Section the need for a construction trailer. Remove the requirement for the trailer if it is unnecessary. Otherwise, adjust the trailer size for Project site requirements/limitations. In addition, remove the requirement for bottle water service for Projects at water treatment plants, at the West Side complex, and for any Project site that has reasonable access to potable water. (Check with the Chief of Construction Management prior to inclusion.)*

**SECTION 01 50 00 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

**DELETE:**

**PART 2 PRODUCTS (In its entirety)**

**SUBSTITUTE:**

**PART 2 PRODUCTS (NOT USED)**

*ENGINEER's Field Office as defined in 2.1 – Evaluate with the CPM Section the need for a construction trailer. Remove the requirement for the trailer if it is unnecessary. Otherwise, adjust the trailer size for Project site requirements/limitations. In addition, remove the requirement for bottle water service for Projects at water treatment plants, at the West Side complex, and for any Project site that has reasonable access to potable water. (Check with the Chief of Construction Management prior to inclusion.)*

**SECTION 01 50 00 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS, PART 3, SUBPARAGRAPH 3.2**

**DELETE:**

- A. ENGINEER's Field Office: *(In its entirety)*
- 

*Specify location.*

**SECTION 01 64 00 – OWNER-FURNISHED PRODUCTS, PART 1, SUBPARAGRAPH 1.2.C.1**

**DELETE:**

- b. Products delivered to the OWNER'S storage yard: 1600 W. 12th Avenue, Denver, CO 80204.

**SUBSTITUTE:**

- b. Products delivered to [REDACTED].

*Specify location and date.*

**SECTION 01 64 00 – OWNER-FURNISHED PRODUCTS, PART 1, SUBPARAGRAPH 1.4**

**DELETE:**

- B. Verify availability of OWNER-furnished products by contacting the ENGINEER before making final arrangements for, or committing resources to, handling, storage, protection, or installation of such products. *(In its entirety)*

**SUBSTITUTE:**

- B. Verify availability of OWNER-furnished products by contacting the ENGINEER before making final arrangements for, or committing resources to, handling, storage, protection, or installation of such products.
1. OWNER-furnished products will be available for CONTRACTOR pick up at DW's storage yards, [1600 W. 12<sup>th</sup> Avenue, Denver, CO 80204] [REDACTED]. Transport material from this location to the Work site(s).
  2. OWNER-furnished products will be available after [REDACTED].

*List applicable Exhibits where product drawings are found.*

**SECTION 01 64 00 – OWNER-FURNISHED PRODUCTS, PART 1, SUBPARAGRAPH 1.6.A**

**ADD:**

3. Drawings for the products are attached in Exhibit [REDACTED] and Exhibit [REDACTED].

*List applicable related sections and specify date.*

**SECTION 01 64 00 – OWNER-FURNISHED PRODUCTS, PART 1, SUBPARAGRAPH 1.6.B**

**DELETE:**

1. Conduct field tests as specified in this Section and SECTION 01 91 00; correct issues related to installation.

**SUBSTITUTE:**

1. Conduct field tests as specified in this Section, SECTION 01 91 00 (.01 or .02), and SECTION [REDACTED]; correct issues related to installation.
2. OWNER prepurchased product performance tests shall be completed no later than [REDACTED].



*List OWNER-furnished products.*

**SECTION 01 64 00 – OWNER-FURNISHED PRODUCTS, PART 2, SUBPARAGRAPH 2.1.B**

**ADD:**

1. OWNER-furnished products:
  - a. [ ]
  - b. [ ]
  - c. [ ]

*Specify products being installed.*

**SECTION 01 64 00 – OWNER-FURNISHED PRODUCTS, PART 3**

**DELETE:**

- 3.1. GENERAL *(In its entirety)*

**SUBSTITUTE:**

- 3.1. GENERAL
  - A. Installation Work shall conform to the Manufacturer's recommended procedures, instructions, and Shop Drawings as reviewed and approved by the ENGINEER.
  - B. Maintain a complete inventory on OWNER-furnished products after the product's transfer to the CONTRACTOR.
  - C. Install [ ], [ ], and [ ] in accordance with the Manufacturer's instructions and the Contract Documents.
  - D. Coordinate electrical connections with the OWNER for the proper operation of products.
  - E. Perform installation of OWNER-furnished products.
  - F. The setting of the product bases by the CONTRACTOR shall be acceptable to the OWNER and the Manufacturer.
  - G. Install piping, valves, and miscellaneous fittings in accordance with the Manufacturer's instructions and the Contract Documents.
  - H. Perform electrical connections in accordance with the Contract Documents.

*Specify products being installed and related sections.*

**SECTION 01 64 00 – OWNER-FURNISHED PRODUCTS, PART 3, SUBPARAGRAPH 3.3**

**DELETE:**

- B. The product installation Work shall include the installation of OWNER-prepurchased products as shown on the Drawings. Work associated with the product installation shall be performed by the CONTRACTOR. The field quality control work including the recording of field measurements, assistance with product startup, and conducting the functional and performance testing shall be performed by the CONTRACTOR.
- C. Install products in accordance with approved procedures submitted with the Manufacturer's printed instructions.
- D. Provide supervision, labor, tools, construction product, incidental materials, and necessary services required to install OWNER-furnished products.

**SUBSTITUTE:**

- B. The [ ] product installation Work shall include the installation of OWNER-prepurchased products as shown on the Drawings. The products installed by the CONTRACTOR shall include but not be limited to [ ]. Work associated with the product installation, such as [ ], shall be performed by the CONTRACTOR. The field quality control work including the recording of field measurements, assistance with product startup, and conducting the functional and performance testing shall be performed by the CONTRACTOR.
- C. Install products in accordance with approved procedures submitted with the Manufacturer's printed instructions and as specified in SECTION [ ] and SECTION [ ].

- D. Provide supervision, labor, tools, construction product, incidental materials, and necessary services required to install OWNER-furnished products.
- 

**Engineer: If SECTION 01 71 23.16 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.**

**SECTION 01 71 23.16 – CONSTRUCTION SURVEYING**

**DELETE:**

CPCS SECTION 01 71 23.16 *(In its entirety)*

**SUBSTITUTE:**

SECTION 01 71 23.16 *(located in the Technical Specifications Appendix)*

## DIVISION 2

**Engineer: If SECTION 02 41 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 02 41 19 – SELECTIVE DEMOLITION, PART 1, SUBPARAGRAPH 1.1

#### DELETE:

B. Related Sections: *(In its entirety)*

#### SUBSTITUTE:

B. Related Sections:

1. SECTION 02 60 00 – ABATEMENT – ASBESTOS, LEAD PAINT, PCB OIL, PCB ELECTRICAL EQUIPMENT, AND OTHER HAZARDOUS MATERIALS
2. SECTION 03 62 00 – NON-SHRINK GROUTING.
3. SECTION 03 93 00 – CONCRETE REHABILITATION – REPAIR CONCRETE AND MORTAR
4. SECTION 31 23 23 – FILL

*Coordinate with Denver Water's electrical engineering staff and environmental compliance staff to determine if this text is necessary and, if so, complete text.*

### SECTION 02 41 19 – SELECTIVE DEMOLITION, PART 3

#### ADD:

#### 3.2 QUALITY CONTROL

A. Other Hazardous Materials (Mercury Switches and Fluorescent Lighting):

1. Testing: [ ].

B. PCB Oil and PCB Electrical Equipment:

1. Testing: [ ].

#### 3.3 DEMOLITION SCHEDULE

A. Demolish:

1. [ ].
2. [ ].

B. Remove and Salvage:

1. [ ].
2. [ ].

C. Relocate:

1. [ ].
2. [ ].

D. As described in Exhibit [ ]:

1. Lead [was] [was not] detected in the samples.
2. Asbestos [was] [was not] detected in the samples.
3. PCB content levels [less than 50 ppm] [greater than 50 ppm] were detected in Transformer Oil.
4. Reference SECTION 02 60 00 for field removal and/or abatement requirement.

*If applicable include the following.*

5. See Drawings for direction pertaining to specific locations where surfaces, objects, or materials have not been tested are as shown on the Drawings.

**Engineer: If SECTION 02 41 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 02 41 19 – SELECTIVE DEMOLITION, PART 3, SUBPARAGRAPH 3.1.H**

**DELETE:**

12. Reinforcing steel: *(In its entirety)*

**SUBSTITUTE:**

12. Exposed reinforcing steel embedded in concrete:
  - a. Do not cut reinforcement or items embedded in concrete unless detailed on the Drawings or approved by the ENGINEER in writing.
  - b. Where permitted, cut back reinforcing steel, anchor bolts, and any associated material exposed by demolition to a minimum depth of one inch below the concrete face.
  - c. Repair the concrete surface with non-shrink grout as specified in SECTION 03 62 00 or with epoxy adhesive as specified in SECTION 03 93 00.

**Engineer: If SECTION 02 41 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 02 41 19 – SELECTIVE DEMOLITION, PART 3, SUBPARAGRAPH 3.1.J**

**ADD:**

4. Provide the original disposal manifest to the OWNER, when applicable.

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**Engineer: If SECTION 02 60 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 02 60 00 – ABATEMENT – ASBESTOS, LEAD PAINT, PCB OIL, PCB ELECTRICAL EQUIPMENT, AND OTHER HAZARDOUS MATERIALS, PART 3, SUBPARAGRAPH 3.1.A**

**ADD:**

5. Excavation & utility conflicts:
  - a. Should any debris or unknown utility conflicts suspected to contain asbestos be discovered during excavation, subcontract with a Certified Asbestos Building Inspector (CABI) trained and certified in accordance with CDPHE Air Quality Control Commission Regulation NO. 8 (5 CCR 1001-10, Part B) and CDPHE Solid and Hazardous Waste Commission/Hazardous Materials and Waste Management Division Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2) Section 5.5.
  - b. Utilize a Qualified Project Monitor (QPM) trained in accordance with 6 CCR 1007-2, Section 5.5 or CABI to perform a visual inspection for suspect asbestos-containing materials in accordance with 6 CCR 1007-2. If suspect asbestos-containing materials are discovered, the CABI will make Regulated Asbestos Contaminated Soil (RACS) determination in accordance with 6 CCR 1007-2, Section 5.5.
6. Follow all local, state, and federal rules and regulations for the excavation, demolition, or abatement of asbestos-containing materials or any other hazardous or regulated materials. Obtain permits as required to excavate and dispose of asbestos-contaminated soils or other hazardous or regulated materials.

## **DIVISION 3**

**Engineer:** *If SECTION 03 21 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:*

### **SECTION 03 21 00 – REINFORCING STEEL, PART 2, SUBPARAGRAPH 2.2.A**

**ADD:**

3. Epoxy-coated reinforcement is only permitted where required by AHJ for use in pavements. Corrosion-inhibiting admixtures are permitted as specified in SECTION 03 30 00. Galvanized reinforcement is allowed with written permission of ENGINEER.

**Engineer:** *If SECTION 03 21 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:*

### **SECTION 03 21 00 – REINFORCING STEEL, PART 2, SUBPARAGRAPH 2.5**

**DELETE:**

- A. Provide epoxy-coated reinforcement in accordance with ASTM A 775 as shown on the Drawings.

**SUBSTITUTE:**

- A. Provide epoxy-coated reinforcement in accordance with ASTM A 775 where required by AHJ.

**Engineer:** *If SECTION 03 30 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:*

### **SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 1, SUBPARAGRAPH 1.2.B**

**ADD:**

25. C 1582 - Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion Of Reinforcing Steel in Concrete

**RENUMBER ACCORDINGLY**

**Engineer:** *If SECTION 03 30 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:*

### **SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 2, SUBPARAGRAPH 2.2.B.1**

**ADD:**

- d. Type IL blended cement with up to 12% limestone by mass in accordance with ASTM C595 meeting sulfate resistance necessary for site-specific soils is allowed.

*The following paragraph includes a low alkali content cement which is more expensive and sometimes not available, and not needed unless aggregate is found to be reactive. Consult with the Materials Lab Manager before including this paragraph.*

### **SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 2, SUBPARAGRAPH 2.2.B.1**

**ADD:**

- e. Maximum alkali content of 0.60%.

**Engineer: If SECTION 03 30 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 2, SUBPARAGRAPH 2.2.C.2**

**DELETE:**

- f. Deleterious substances: In accordance with ASTM C 33, Table 1.

**SUBSTITUTE:**

- f. Deleterious substances: In accordance with ASTM C 33, Table 2.

**Engineer: If SECTION 03 30 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 2, SUBPARAGRAPH 2.2.C.4**

**DELETE:**

- c. Limit deleterious substances in accordance with ASTM C 33, Table 3 for exposed concrete.

**SUBSTITUTE:**

- c. Limit deleterious substances in accordance with ASTM C 33, Table 4 for exposed concrete.

**Engineer: If SECTION 03 30 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 2, SUBPARAGRAPH 2.2.D**

**ADD:**

- 9. Corrosion-inhibiting admixture:
  - a. In accordance with ASTM C 1582.
  - b. Minimum 30% calcium nitrite by mass.
  - c. Concrete producer data showing compressive strengths at proposed dosage.

*Consult with the Materials Lab Manager for more complex projects that may need additional considerations regarding pourback times for 3.1.A.2.*

**SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 3, SUBPARAGRAPH 3.1.A**

**DELETE:**

- 2. Minimum time between adjacent placements: *(In its entirety)*

**SUBSTITUTE:**

- 2. Minimum time between adjacent placements:
  - a. [REDACTED].

*Add the following paragraph if vapor retarders are required.*

**SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 3, SUBPARAGRAPH 3.3.A.2.b**

**ADD:**

- 3) Dampen sand where vapor retarder is specified.

*Specify county.*

**SECTION 03 45 00 – PRECAST ABOVE-GRADE CONCRETE STRUCTURES, PART 1, SUBPARAGRAPH 1.4.C**

**ADD:**

4. Demonstrate compliance with [ ] County, Colorado design requirements:

*Modify as required.*

**SECTION 03 45 00 – PRECAST ABOVE-GRADE CONCRETE STRUCTURES, PART 1, SUBPARAGRAPH 1.5**

**ADD:**

- C. County Design Requirements:
  1. Minimum design criteria for [ ] County, Colorado.
    - a. Wind speed: [ ] mph.
    - b. Wind exposure category: [ ].
    - c. Weathering: [ ].
    - d. Seismic design category: [ ].
    - e. Roof snow load: [ ] psf.
  2. In accordance with ICC IBC, its referenced versions of ACI 318 and ASCE 7, and [ ] County, Colorado amendments to the ICC IBC.
  3. Building structure to be designed where the connected wall panels are self-supporting with or without the roof panels attached.

*Modify as required.*

**SECTION 03 45 00 – PRECAST ABOVE-GRADE CONCRETE STRUCTURES, PART 2, SUBPARAGRAPH 2.2**

**ADD:**

- B. Door:
  1. Exterior exposure insulated hollow metal door as specified in SECTION 08 11 13.19.
  2. Door frame cast integrally with panel.
  3. Size: As shown on the Drawings.
  4. Finish paint System No. 6 as specified in SECTION 09 90 00.
  5. Finish paint color: **Green-green**.
  6. Left hand reverse open, opens to the outside.
  7. Door hardware as specified in SECTION 08 71 00, **Set No. HW-1**.
- B. Louver Vents:
  1. Size: As shown on the Drawings.
  2. Screened Aluminum.
  3. Manually operable from building interior for full-open to full-closed operation.
  4. Coat surfaces that may be in contact with concrete with a bituminous coating or use non-absorptive gaskets.

---

*Specify Category I for general use as filler for tie holes in concrete formwork. Specify Category II for equipment bases with a motor less than 26 hp, wall patch, bolt holes, etc. Specify Category III for large equipment bases, motors over 26 hp, etc., **Delete the one(s) that are not applicable.***

**SECTION 03 62 00 – NON-SHRINK GROUTING, PART 2, SUBPARAGRAPH 2.1**

**DELETE:**

- A. Non-Shrink Grout: *(In its entirety)*

**SUBSTITUTE:**

A. Non-Shrink Grout:

1. Category I:
  - a. Dayton Superior Corp., Sure-Grip High Performance Grout
  - b. Euclid Chemical Co., NS Grout
  - c. Sika Corporation, SikaGrout 212
2. Category II:
  - a. BASF Building Systems (Master Builders), MasterFlow 928
  - b. Euclid Chemical Co., Hi Flow Grout
  - c. Five Star Products Inc., Fluid Grout 100
  - d. Sika Corporation, SikaGrout 328
3. Category III:
  - a. Escoweld Industrial Grouts and Polymers, Escoweld 7505E/7530
  - b. Sika Corporation, Sikadur 42, Grout Pak

*Specify Category I for general use as filler for tie holes in concrete formwork. Specify Category II for equipment bases with a motor less than 26 hp, wall patch, bolt holes, etc. Specify Category III for large equipment bases, motors over 26 hp, etc. Delete the one(s) that are not applicable.*

**SECTION 03 62 00 – NON-SHRINK GROUTING, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

A. Non-Shrink Grout: *(In its entirety)*

**SUBSTITUTE:**

A. Non-Shrink Grout:

1. Category I:
  - a. Nonmetallic and nongas-liberating flowable fluid.
  - b. Prepackaged natural aggregate grout requiring only the addition of water.
  - c. Test in accordance with ASTM C 1107:
    - 1) Flowable consistency 140%, five drops in 30 seconds.
    - 2) Flowable for 15 minutes.
  - d. Grout shall not bleed at the maximum allowed water.
  - e. Minimum compressive strength of grout: 3,000 psi at 3 days; 5,000 psi at 7 days; 7,000 psi at 28 days.
2. Category II:
  - a. Nonmetallic, nongas-liberating flowable fluid.
  - b. Prepackaged natural aggregate grout requiring only the addition of water.
  - c. Aggregate shall show no segregation or settlement at fluid consistency at specified times or temperatures.
  - d. Test in accordance with ASTM C 1107:
    - 1) Fluid consistency 20 to 30 seconds.
    - 2) Temperatures of 40°F, 80°F, and 100°F.
  - e. One hour after mixing, pass fluid grout through a flow cone with continuous flow.
  - f. Minimum compressive strength of grout: 2,500 psi at 1 day; 4,500 psi at 3 days; and 7,000 psi at 28 days.
3. Category III:
  - a. Pre-proportioned, epoxy, baseplate grouting system.
  - b. Three-component Grout Pak, 100% solids, moisture-tolerant.
  - c. Non-shrink, self-leveling, flowable.
  - d. Minimum compressive strength of grout: 14,000 psi at 28 days in accordance with ASTM C 579.



*Include the following if you want the grout tested. Typically, DW only tests grout when used on large mechanical installations.*

**SECTION 03 62 00 – NON-SHRINK GROUTING, PART 3, SUBPARAGRAPH 3.2.A**

**ADD:**

- 3. Testing:
  - a. Mix grout to fluid consistency and conduct flow cone and 2 bleed tests.
  - b. Make a minimum of 6 cubes for testing of 2 cubes at one day, 3 days, and 28 days.
  - c. The ENGINEER may transport cubes for storage and testing, depending on prescribed lab curing conditions.

---

**Engineer: If SECTION 03 93 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 03 93 00 – CONCRETE REHABILITATION – REPAIR CONCRETE AND MORTAR, PART 1, SUBPARAGRAPH 1.2**

**ADD:**

- E. NSF International/American National Standards Institute (NSF/ANSI):
  - 1. 61 – Drinking Water System Components – Health Effects

**Engineer: If SECTION 03 93 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 03 93 00 – CONCRETE REHABILITATION – REPAIR CONCRETE AND MORTAR, PART 2, SUBPARAGRAPH 2.1**

**ADD:**

- D. Epoxy Paste Adhesive:
  - 1. Sika Corporation, Sikadur-31 Hi-Mod Gel

**Engineer: If SECTION 03 93 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 03 93 00 – CONCRETE REHABILITATION – REPAIR CONCRETE AND MORTAR, PART 2, SUBPARAGRAPH 2.2**

**ADD:**

- G. Epoxy Paste Adhesive:
  - 1. Description:
    - a. Two-component, 100% solids, moisture-tolerant, high modulus, high strength, structural epoxy paste adhesive.
    - b. Meets the requirements of NSF/ANSI 61.

**Engineer: If SECTION 03 93 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 03 93 00 – CONCRETE REHABILITATION – REPAIR CONCRETE AND MORTAR, PART 3, SUBPARAGRAPH 3.3**

**ADD:**

- G. Epoxy Paste Adhesive:
  - 1. Mix and apply in accordance with the Manufacturer's recommendations.
  - 2. Surface preparation:
    - a. Surface shall be clean, free from grease, oil, and loosely adhering particles.

- b. Concrete surfaces shall have a surface roughness profile of at least 1/16 inches.
  - c. Steel surfaces shall be free of rust and scale by blast cleaning or of other mechanical means.
3. Application:
- a. Place the neat-prepared mortar in void, working the material into the prepared substrate.
  - b. Place in lifts of 1-inch maximum thickness. Strike off level.
  - c. Score the surface of lower lifts if a total fill thickness of greater than 1 inch is required. Place subsequent lifts within the time frame in accordance with the Manufacturer's instructions.

## DIVISION 4

*Include the following paragraph if pre-blended bulk mortar is desired.*

### SECTION 04 21 00 – CLAY MASONRY UNIT, PART 2, SUBPARAGRAPH 2.2

#### DELETE:

D. Mortar Type: As shown on the Drawings.

#### SUBSTITUTE:

D. Mortar Type:

1. Pre-blended bulk mortar:
  - a. Provide SPEC/MIX pre-blended lime, cement mortar, sand, and color mix manufactured by Quickrete Colorado, Inc.
  - b. Under controlled conditions in a factory, weigh the dry mortar mix materials including cementitious material, aggregate, and color if specified. Completely dry and pre-blend all ingredients of the mortar material off the jobsite.
  - c. Add only clean, potable water at the jobsite.
  - d. Do not add admixtures unless approved by the ENGINEER prior to construction.
  - e. Deliver to the jobsite in bulk sacks weighing 2,600 pounds or 3,000 pounds.
  - f. Store mortar mix in accordance with the Manufacturer's instructions to prevent contamination by extraneous chemicals.
  - g. Design criteria: In accordance with ASTM C 1142 Type [S 1,800 min. psi] [M 2,500 min. psi] [N 750 min. psi].
  - h. Mixing:
    - 1) Thoroughly mix in quantities needed for immediate use.
    - 2) Mix mortar for a period of time not less than 5 minutes nor more than 10 minutes in a mechanical mixer with the amount of water required for the desired workability.
    - 3) Mortar may be retempered by adding water as required. Use mortar within [2 1/2] [ ] hours after initial mixing at ambient temperatures below [80] [ ]°F and within [1 1/2] [ ] hours after initial mixing at ambient temperatures over [80] [ ]°F.
    - 4) Provide uniformity of color in exposed mortar.

*Include the following paragraph if pre-blended, cement-lime mortar is desired.*

### SECTION 04 21 00 – CLAY MASONRY UNIT, PART 2, SUBPARAGRAPH 2.2

#### DELETE:

D. Mortar Type: As shown on the Drawings.

#### SUBSTITUTE:

D. Mortar Type:

1. Pre-blended, cement lime mortar:
  - a. Provide portland/lime [S] [ ] pre-blended portland cement and lime, and color mix manufactured by US Mix Products Company.
  - b. Under controlled conditions in a factory, weigh the dry mortar mix materials including cementitious material and color. Completely dry and pre-blend all ingredients of the pre-blended material off the jobsite.
  - c. Add only clean, potable water and specified sand at the jobsite.
  - d. Do not add admixtures unless approved by the ENGINEER prior to construction.
  - e. Deliver to the jobsite in bulk sacks weighing 70 pounds.
  - f. Store mortar mix in accordance with the Manufacturer's instructions to prevent contamination by extraneous chemicals.

- g. Design criteria: In accordance with ASTM C 109 Type [S 1,800 min. psi] [M 2,500 min. psi] [N 750 min. psi]. Pre-blended portland cement and lime product is to be a performance-based mix containing equal parts Type I portland cement and Type [S] [ ] lime, with the specified color pigment added as required to achieve the color specified by the ENGINEER.
- h. Mixing:
  - 1) Thoroughly mix in quantities needed for immediate use.
  - 2) Mix mortar for a period of time not less than 5 minutes nor more than 10 minutes in a mechanical mixer with the amount of water required for the desired workability.
  - 3) Mortar may be retempered by adding water as required. Use mortar within [2 1/2] [ ] hours after initial mixing at ambient temperatures below [80] [ ]°F and within [1 1/2] [ ] hours after initial mixing at ambient temperatures over [80] [ ]°F.
  - 4) Provide uniformity of color in exposed mortar.

*Include the following paragraph if site-mixed mortar is desired.*

#### **SECTION 04 21 00 – CLAY MASONRY UNIT, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

D. Mortar Type: As shown on the Drawings.

**SUBSTITUTE:**

- D. Mortar Type:
  - 1. Site-mixed mortar:
    - a. Provide site-mixed mortar, portland cement, sand, and color mix when color is specified.
    - b. Design criteria: In accordance with ASTM C 270 Type [S 1,800 min. psi] [M 2,500 min. psi] [N 750 min. psi].
    - c. Jobsite mixing of mortar:
      - 1) Mix using mechanical mixer. Hand mixing is not permitted.
      - 2) Mix appropriately 3/4 of required water, all of cement and lime, and 1/2 of aggregate for minimum of 2 minutes.
      - 3) Add remainder of water and aggregate; mix for a minimum of 3 minutes.

#### **SECTION 04 22 00 – CONCRETE MASONRY UNIT, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

A. CMU: *(In its entirety)*

**SUBSTITUTE:**

- A. CMU:
  - 1. In accordance with ASTM C 90, Type [II, non-moisture controlled].
  - 2. Provide [ ] weight density, (density greater than or equal to 125 pcf).
  - 3. Provide a minimum CMU 28-day compressive strength, F'm, as shown on the Drawings.
  - 4. Provide standard units with face dimensions of [ ]-inches long by [ ]-inches high nominal. Provide block thickness as shown on the Drawings.
  - 5. Provide special shapes shown on the Drawings.

*Include the following paragraph if pre-blended bulk mortar is desired.*

#### **SECTION 04 22 00 – CONCRETE MASONRY UNIT, PART 2, SUBPARAGRAPH 2.2.C.**

**ADD:**

- 3. Pre-blended bulk mortar:
  - a. Provide SPEC/MIX pre-blended lime, cement mortar, sand, and color mix manufactured by Quickrete Colorado, Inc.

- b. Under controlled conditions in a factory, weigh the dry mortar mix materials including cementitious material, aggregate, and color if specified. Completely dry and pre-blend all ingredients of the mortar material off the jobsite.
- c. Add only clean, potable water at the jobsite.
- d. Do not add admixtures unless approved by the ENGINEER prior to construction.
- e. Deliver to the jobsite in bulk sacks weighing 2,600 pounds or 3,000 pounds.
- f. Store mortar mix in accordance with the Manufacturer's instructions to prevent contamination by extraneous chemicals.
- g. Design criteria: In accordance with ASTM C 1142 Type [S 1,800 min. psi] [M 2,500 min. psi] [N 750 min. psi].
- h. Mixing:
  - 1) Thoroughly mix in quantities needed for immediate use.
  - 2) Mix mortar for a period of time not less than 5 minutes nor more than 10 minutes in a mechanical mixer with the amount of water required for the desired workability.
  - 3) Mortar may be retempered by adding water as required. Use mortar within [2 1/2] [ ] hours after initial mixing at ambient temperatures below [80] [ ]°F and within [1 1/2] [ ] hours after initial mixing at ambient temperatures over [80] [ ]°F.
  - 4) Provide uniformity of color in exposed mortar.

*Include the following paragraph if pre-blended, cement-lime mortar is desired.*

#### **SECTION 04 22 00 – CONCRETE MASONRY UNIT, PART 2, SUBPARAGRAPH 2.2.C.**

**ADD:**

- 3. Pre-blended, cement lime mortar:
  - a. Provide portland/lime [S] [ ] pre-blended portland cement and lime, and color mix manufactured by US Mix Products Company.
  - b. Under controlled conditions in a factory, weigh the dry mortar mix materials including cementitious material and color. Completely dry and pre-blend all ingredients of the pre-blended material off the jobsite.
  - c. Add only clean, potable water and specified sand at the jobsite.
  - d. Do not add admixtures unless approved by the ENGINEER prior to construction.
  - e. Deliver to the jobsite in bulk sacks weighing 70 pounds.
  - f. Store mortar mix in accordance with the Manufacturer's instructions to prevent contamination by extraneous chemicals.
  - g. Design criteria: In accordance with ASTM C 109 Type [S 1,800 min. psi] [M 2,500 min. psi] [N 750 min. psi]. Pre-blended portland cement and lime product is to be a performance-based mix containing equal parts Type I portland cement and Type [S] [ ] lime, with the specified color pigment added as required to achieve the color specified by the ENGINEER.
  - h. Mixing:
    - 1) Thoroughly mix in quantities needed for immediate use.
    - 2) Mix mortar for a period of time not less than 5 minutes nor more than 10 minutes in a mechanical mixer with the amount of water required for the desired workability.
    - 3) Mortar may be retempered by adding water as required. Use mortar within [2 1/2] [ ] hours after initial mixing at ambient temperatures below [80] [ ]°F and within [1 1/2] [ ] hours after initial mixing at ambient temperatures over [80] [ ]°F.
    - 4) Provide uniformity of color in exposed mortar.

*Include the following paragraph if site-mixed mortar is desired.*

#### **SECTION 04 22 00 – CONCRETE MASONRY UNIT, PART 2, SUBPARAGRAPH 2.2.C.**

**ADD:**

- 3. Site-mixed mortar:
  - a. Provide site-mixed mortar, portland cement, sand, and color mix when color is specified.
  - b. Design criteria: In accordance with ASTM C 270 Type [S 1,800 min. psi] [M 2,500 min. psi] [N 750 min. psi].

- c. Jobsite mixing of mortar:
- 1) Mix using mechanical mixer. Hand mixing is not permitted.
  - 2) Mix appropriately 3/4 of required water, all of cement and lime, and 1/2 of aggregate for minimum of 2 minutes.
  - 3) Add remainder of water and aggregate; mix for a minimum of 3 minutes.

## DIVISION 5

*Edit the following to suit the Project requirements.*

### SECTION 05 50 00 – METAL FABRICATIONS, PART 1, SUBPARAGRAPH 1.4

ADD:

- B. System Description:
1. Minimum design loads:
    - a. Pedestrian loading:
      - 1) Uniform load of [100] [ ] psf.
      - 2) Concentrated load of [300] [ ] lbs.
      - 3) Maximum deflection under loading: [L/180] [L/240].
    - b. Vehicular loading:
      - 1) Uniform load of [500] [ ] psf.
      - 2) Concentrated load of [2000] [ ] lbs.
      - 3) Maximum deflection under loading: [L/180] [L/240].
    - c. Guard rails and handrails:
      - 1) Concentrated lateral force of [250] [ ] lbs. at any point.
      - 2) Uniform load of [50] [ ] lbs. per linear foot applied in any direction.
      - 3) Maximum deflection under loading: [L/180] [ ] .
    - d. Ladders and Cage Ladders:
      - 1) Concentrated vertical rung load of 300 lbs. at any location.
      - 2) Concentrated side rail lateral load of 100 lbs. in any direction.
      - 3) Concentrated loads to act at 10-foot vertical intervals.
      - 4) Concentrated and uniform loads do not need to be applied simultaneously.
      - 5) Fabricate guard rails and handrails in accordance with ASTM E 985.

*Include the following for full size mockups for review of construction, coordination of Work of several sections, testing, or observation of operation. Minimize mockups on smaller, less complex projects.*

### SECTION 05 50 00 – METAL FABRICATIONS, PART 1, SUBPARAGRAPH 1.4

ADD:

- C. Mockup:
1. Provide mockup of [ ] .
  2. Size: [ ] .
  3. Show: [ ] .
  4. Locate [where directed] [ ] .
  5. The approved mockup may [not] remain as part of the Work.

*Use the following to specify applicable finishes to be used on the Project.*

### SECTION 05 50 00 – METAL FABRICATIONS, PART 2

ADD:

- 2.5 FINISHES
- A. [Exterior] Ferrous Metal: Galvanized in accordance with ASTM A 123.
  - B. [Interior] Ferrous Metal:
    1. Shop painted except steel to be encased in concrete and surfaces to be welded.
    2. Surface preparation: in accordance with SECTION 09 90 00.
  - C. Aluminum: Mill finish.

\*\*\*\* OR \*\*\*\*

*In the following paragraphs, Class I anodized aluminum is suitable for exterior or interior use. Class II is typically used for interior locations only.*

- C. Aluminum: AAMA 611, Architectural Class [I] [III] anodized, clear.

\*\*\* OR \*\*\*

- C. Aluminum: AAMA 611, Architectural Class [I] [III] anodized, [light] [medium] [dark] bronze [black] [ ] color.

\*\*\* OR \*\*\*

- C. Aluminum: AAMA 2605 fluoropolymer coating containing minimum [50] [70]% polyvinylidene resins, [2] [3] [4] coat system, [custom] [ ] color [to be selected from the Manufacturer's full color range].

\*\*\* OR \*\*\*

- C. Aluminum: AAMA [2603 thermosetting modified acrylic enamel] [2604 polyester enamel] coating, [custom] [ ] color [to be selected from the Manufacturer's full color range].

- D. Stainless Steel: Mill finish.

\*\*\* OR \*\*\*

- D. Stainless Steel: NAAMM AMP 503; [No. 4 satin] [No. 8 mirror polished] [ ].

---

*Edit the following paragraphs to suit the Project requirements.*

#### **SECTION 05 51 01 – STEEL STAIRS, PART 1, SUBPARAGRAPH 1.4.D.1**

##### **DELETE:**

- a. Fabricate the stair assembly to support a uniform live load of 100 pounds psf and a concentrated load of 300 pounds, with a maximum deflection of 1/240 of the span.

##### **SUBSTITUTE:**

- a. Fabricate the stair assembly to support a uniform live load of [ ] pounds psf and a concentrated load of [ ] pounds, with a maximum deflection of [1/180] [ ] of the span.

*Include the following for metal grating landings.*

#### **SECTION 05 51 01 – STEEL STAIRS, PART 2, SUBPARAGRAPH 2.2.A**

##### **ADD:**

6. Gratings: NAAMM MBG 531, [welded] [pressure locked] [riveted] type, [main] bar size of [ ] [by] [ ]-inches, [plain] [serrated] [ ] top surface.



## DIVISION 6

*Include the following for full size mockups for review of construction, coordination of Work of several sections, testing, or observation of operation. Minimize mockups on smaller, less complex projects.*

### SECTION 06 40 00 – ARCHITECTURAL WOODWORK, PART 1, SUBPARAGRAPH 1.4

**ADD:**

- C. Mockups:
1. Size: [[8] [ ]]-feet long. [ ].
  2. Show: [Each trim profile]. [ ].
  3. Locate [where directed]. [ ].
  4. The approved mockup may [not] remain as part of the Work.

*Include the following for a Pre-Installation Conference attended by the parties performing the Work of this Section. Minimize conferences on smaller, less complex projects.*

### SECTION 06 40 00 – ARCHITECTURAL WOODWORK, PART 1, SUBPARAGRAPH 1.4

**ADD:**

- D. Pre-Installation Conference:
1. Convene [2] [ ] weeks prior to beginning Work of this Section.
  2. Attendance: ENGINEER, [OWNER], [CONTRACTOR], installer, and related trades.
  3. Review, discuss, and resolve:
    - a. Critical dimensions.
    - b. Product delivery and storage.
    - c. Staging and sequencing.
    - d. Protection of completed Work.

*Modify the following section to suit the Project:*

### SECTION 06 40 00 – ARCHITECTURAL WOODWORK, PART 2, SUBPARAGRAPH 2.1

**DELETE:**

- A. Interior trim shall be as shown on the Drawings.

**SUBSTITUTE:**

- A. Interior Trim:
1. Graded in accordance with AWI Section 100 requirements for quality grade specified, average moisture content of [6] [ ]%.
  2. [ ] species, [ ] cut, of quality suitable for [opaque] [transparent] finish.
  3. [Open] [Closed] grain [hardwood], [softwood], of quality suitable for opaque finish.

*Include the following to specify applicable finishes for the Project:*

### SECTION 06 40 00 – ARCHITECTURAL WOODWORK, PART 2

**ADD:**

#### 2.4 FINISHES

- A. Finish System: In accordance with AWI Section 1500, Finish System No. [TR-1, Standard Lacquer]. [TR-2, Catalyzed Lacquer]. [TR-6 Catalyzed Polyurethane]. [TR-7 Polyester]. [OP-1, Standard Lacquer]. [OP-2, Catalyzed Lacquer]. [ ].
- B. Finish Standard: AWI [Custom] [Premium] [Economy] standards.

- C. Color: [ ]. [To be selected from the Manufacturer's full color range].
- D. Sheen: [Satin]. [ ].

*Include the following for full size mockups for review of construction, coordination of Work of several sections, testing, or observation of operation. Minimize mockups on smaller, less complex projects.*

## **SECTION 06 41 00 – ARCHITECTURAL WOOD CASEWORK, PART 1, SUBPARAGRAPH 1.4**

### **ADD:**

- B. Mockup:
  - 1. Size: [Base [and wall] cabinet, minimum [48] [ ]-inches wide]. [ ].
  - 2. Show: Cabinets, [countertops], and hardware.
  - 3. Locate [where directed]. [ ].
  - 4. The approved mockup may [not] remain as part of the Work.

## **SECTION 06 41 00 – ARCHITECTURAL WOOD CASEWORK, PART 2, SUBPARAGRAPH 2.2**

### **DELETE:**

- A. Plastic Laminate: In accordance with NEMA LD-3; laminate grades as required by quality standard. *(In its entirety)*

### **SUBSTITUTE:**

- A. Panel Products:
  - 1. Graded in accordance with AWI Section 200 requirements for quality grade specified.
  - 2. Exposed and semi-exposed veneers: [ ] species, [ ] cut, of quality suitable for [opaque] [transparent] finish.

\*\*\* OR \*\*\*

- 1. [Open] [Closed] grain [hardwood], [softwood], of quality suitable for opaque finish.
  - 2. Certified to FSC STD-04-004.
  - 3. Panel core: Particleboard or medium density fiberboard.
  - 4. Plastic laminate: NEMA LD-3.
- B. Horizontal Surfaces:
  - 1. Backing sheet: Grade [BGF]. [ ].
  - 2. Postformed surfaces: Grade [HGP]. [ ].
  - 3. Acid resisting: Grade [LGP]. [ ].
  - 4. Other surfaces: Grade [HGS]. [ ].
- C. Vertical Surfaces:
  - 1. Backing sheet: Grade [BKL]. [ ].
  - 2. Cabinet liner: Grade [CLS]. [ ].
  - 3. Other surfaces: Grade [VGP]. [ ].
  - 4. Melamine laminate: Grade VGL.
  - 5. Colors: [ ]. [To be selected from the Manufacturer's full color range].
  - 6. Finish: [Matte]. [Gloss]. [Textured]. [ ].
- D. Lumber:
  - 1. Graded in accordance with AWI Section 100 requirements for quality grade specified, average moisture content of [6] [ ]% for hardwood and [11] [ ]% for softwood.
  - 2. Exposed and semi-exposed locations: [ ] species, [ ] cut, of quality suitable for [opaque] [transparent] finish.

\*\*\* OR \*\*\*

- 1. [Open] [Closed] grain [hardwood], [softwood], of quality suitable for opaque finish.
  - 2. Certified to FSC STD-04-004.

*For plastic laminate cabinets, use as specified in the CPCS and delete below, or modify using text below:*

**SECTION 06 41 00 – ARCHITECTURAL WOOD CASEWORK, PART 2, SUBPARAGRAPH 2.4**

**DELETE:**

A. Cabinets – Plastic Laminate Finish: *(In its entirety)*

**SUBSTITUTE:**

A. Cabinets – Plastic Laminate Finish:

1. Quality: In accordance with AWI Architectural Woodwork Quality Standards, Section 400 B, [ ] Grade.
2. Type: [ ].
3. Semi-exposed surfaces: [Plastic laminate]. [ ].
4. Fit exposed and semi-exposed panel edges with matching [PVC] edging.

*Include the following for wood veneer faced cabinets:*

**SECTION 06 41 00 – ARCHITECTURAL WOOD CASEWORK, PART 2, SUBPARAGRAPH 2.4**

**DELETE:**

B. Cabinets – Transparent Finish: *(In its entirety)*

**SUBSTITUTE:**

B. Cabinets – [Opaque] Finish:

1. Quality: In accordance with AWI Architectural Woodwork Quality Standards, Section 400 A, [ ] Grade.
2. Type: [ ].
3. Semi-exposed surfaces: [Wood suitable for opaque finish]. [Plastic laminate].
4. Fit exposed and semi-exposed panel edges with matching wood edging.

*Include the following for plastic laminate countertops:*

**SECTION 06 41 00 – ARCHITECTURAL WOOD CASEWORK, PART 2, SUBPARAGRAPH 2.4**

**DELETE:**

C. Plastic Laminate Countertops: *(In its entirety)*

**SUBSTITUTE:**

C. Plastic Laminate Countertops:

1. In accordance with AWI Architectural Woodwork Quality Standards, Section 400 C, [ ] Grade.
2. Fabricate from panel product.
3. Locate end joints centered or symmetrical; join sections with concealed clamp fasteners; locate plastic laminate butt joints a minimum of 2-feet away from sinks.
4. Provide holes and cutouts for the mounting of [ ].
5. Edge treatment: [Postformed] [Lumber edge for transparent finish] [PVC].

*Include the following finish for wood cabinets:*

**SECTION 06 41 00 – ARCHITECTURAL WOOD CASEWORK, PART 2, SUBPARAGRAPH 2.4**

**ADD:**

I. Wood Cabinets:

1. Transparent Finish System: AWI Section 1500, Finish System No. [TR-1, Standard Lacquer]. [TR-2, Catalyzed Lacquer]. [TR-6 Catalyzed Polyurethane]. [TR-7 Polyester]. [ ].

\*\*\*\* OR \*\*\*\*

1. Opaque finish system: AWI Section 1500, Finish System No. [OP-1, Standard Lacquer]. [OP-2, Catalyzed Lacquer]. [ ].
2. Finish standard: AWI [Custom] [Premium] [Economy] standards.
3. Color: [ ]. [To be selected from the Manufacturer's full color range].
4. Sheen: [Satin]. [ ].

*Include the following for a schedule listing the required hardware for products in this Section. Coordinate with Part 2 – Products.*

**SECTION 06 41 00 – ARCHITECTURAL WOOD CASEWORK, PART 3**

**ADD:**

3.5 FINISH HARDWARE SCHEDULE

Description	Manufacturer	Model
Door and drawer pull		
Drawer slide		
Door hinge		
Door hinge		
Cabinet lock		
Adjustable shelf standards and brackets		

## DIVISION 7

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*Substitute if necessary to revise flame spread requirements for Project.*

### SECTION 07 21 00 – THERMAL INSULATION, PART 1, SUBPARAGRAPH 1.4

**DELETE:**

- A. Fire Hazard Classification: *(In its entirety)*

**SUBSTITUTE:**

- A. Fire Hazard Classification:
1. Rigid insulation: Classified by UL.
  2. Batt insulation: Noncombustible, tested in accordance with ASTM E 136.

**\*\*OR\*\***

2. Batt insulation: Flame spread rating of [25] [200] or less, tested in accordance with ASTM E 84.

---

*Modify as required*

### SECTION 07 41 13 – STANDING SEAM METAL ROOF PANELS, PART 1, SUBPARAGRAPH 1.7

**ADD:**

8. Solar reflectance index: Not less than 29 when calculated in accordance with ASTM E 1980 based on testing identical products by a qualified testing agency.

---

*Modify below as required to suit the Project:*

### SECTION 07 51 13 – BUILT-UP ASPHALT ROOFING, PART 3, SUBPARAGRAPH 3.2.B

**DELETE:**

5. Mechanically fasten to the substrate in the Manufacturer's recommended fastening pattern for the corner, perimeter, and field uplift pressures specified.

**SUBSTITUTE:**

5. Mechanically fasten to the substrate in the Manufacturer's recommended fastening pattern for the [FM windstorm classification] specified.

**\*\*OR\*\***

*Include the following for an adhered application:*

### SECTION 07 51 13 – BUILT-UP ASPHALT ROOFING, PART 3, SUBPARAGRAPH 3.2.B

**ADD:**

9. Install each layer of insulation and cover board and adhere to substrate in a solid mopping of hot roofing asphalt. Fit insulation to other boards and at perimeter and around penetrations with maximum [1/4] [ ]-inch voids.

*Modify as required*

**SECTION 07 53 00 – ELASTOMERIC MEMBRANE ROOFING, PART 1, SUBPARAGRAPH 1.5.J**

**ADD:**

- f. Solar reflectance index: Not less than 78 when calculated in accordance with ASTM E 1980 based on testing identical products by a qualified testing agency.

---

*Include the following for full size mockups for review of construction, coordination of Work of several sections, testing, or observation of operation. Minimize mockups on smaller, less complex projects.*

**SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM, PART 1, SUBPARAGRAPH 1.4**

**ADD:**

- C. Mockup:
1. Size: [ ] .
  2. Include: [Counterflashing] [Coping] [Downspout] [ ] .
  3. Locate [where directed]. [ ] .
  4. The approved mockup may [not] remain as part of the Work.

*Use the CPCS text and delete the following, or markup to replace the CPCS text:*

**SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM, PART 2**

**DELETE:**

2.2 MATERIALS (In its entirety)

**SUBSTITUTE:**

2.2 MATERIALS

- A. Galvanized Steel Sheet:
1. Structural quality, [ ] gauge core steel, in accordance with ASTM A 653, [ ] coating class.
  2. Where sheet metal is to be painted, apply phosphate film at the factory.
- B. Pre-coated Galvanized Steel Sheet:
1. Steel, [ ] gauge, in accordance with ASTM A 792.
  2. Finish: Pre-coated with fluoropolymer coating, containing minimum 70% PVDF resins, to be selected from the Manufacturer's full color range.
- C. Aluminum-Zinc Alloy Coated Steel Sheet: In accordance with ASTM A 792, Commercial Quality, [ ] aluminum-zinc alloy coating, [ ] gauge core steel unless noted otherwise.
- D. Lead Sheet: Common lead, weighing 4 lbs/sf, in accordance with ASTM B 749, Type L50049.

*Specify finish color for the Project:*

**SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM, PART 2, SUBPARAGRAPH 2.6.A**

**ADD:**

5. Color: As selected by the ENGINEER from [AEP] [ ] standard colors.

*Replace CPCS text if 12-inches is insufficient, or delete this text:*

**SECTION 07 72 13 – MANUFACTURED ROOF CURBS, PART 2, SUBPARAGRAPH 2.2.A.1**

**DELETE:**

- a. Height: 12-inches, minimum or as specified on Drawings.

**SUBSTITUTE:**

- a. Height: [16] [ ]-inches, minimum.

*Modify to meet project requirements.*

**SECTION 07 92 00 – JOINT SEALANTS, PART 3**

**ADD:**

**3.4 JOINT SEALER SCHEDULE**

- A. Sealant Color Selection: Submit color charts of available colors and wet samples of colors from the initial selection as specified in this Section.
- B. Color selection for sealants will not be limited to one color for each sealant type.
- C. The ENGINEER may select different sealant colors for the same sealant type at exterior and interior joint conditions if applicable.
- D. The ENGINEER may select up to 2 colors for each joint sealer type.
- E. The ENGINEER may select up to [ ] custom colors on the Project.
- F. Products listing schedule:

Joint Location or Type	Sealer type
Exterior Joints:	
Floor Control and expansion joints subject to [pedestrian] [or] [vehicular] traffic	1
Expansion joint between concrete slab-on-grade and building walls or other elements	1
Perimeters of exterior openings where window and door frames meet adjacent building materials	[2] [5]
Wall expansion and control joints, joints between precast concrete pieces, sections of masonry	[2]
Joints in [fountains] [water features] [ ]	7
Joints in vertical surfaces at dissimilar materials	[2] [3] [9]
Expansion joint between concrete slab-on-grade and building walls or other elements at chemical storage areas and areas with the possibility of being exposed to chemicals from adjacent chemical areas or rooms	[7]
Interior Joints:	
Floor Control and expansion joints subject to [pedestrian] [or] [vehicular] traffic	1
Floor Control and expansion joints at chemical storage areas and areas with the possibility of being exposed to chemicals from adjacent chemical areas or rooms	[7]
Seal interior perimeters of exterior openings as detailed on drawings	[2]
Perimeters of interior frames, as detailed and itemized	[2] [4]
Joints at perimeter of plumbing fixtures	6
Wall control and expansion joints	[2]
Joints in acoustical assemblies	8
Field painted vertical and overhead joints not indicated otherwise	4

## DIVISION 8

*Modify as required:*

### SECTION 08 31 01 – ACCESS HATCHES AND DOORS FOR ROOF ACCESS, PART 2, SUBPARAGRAPH 2.2

ADD:

E. Hatch/Door Schedule:

Hatch/Door identifier No.	Nominal Opening Dimensions (W x L*)	Leaf Type (single/double)	Required Load Rating (roof/pedestrian/vehicular**/airport)	Mounting Type (curb/flush)	Access Type (ladder/stairs)

\*Second dimension listed denotes length on the hinge side.

\*\*Vehicular loading is for off-street installation not subject to high density, fast moving traffic.

*Modify the following to establish wind load requirements:*

### SECTION 08 36 13 – SECTIONAL OVERHEAD DOORS, PART 1, SUBPARAGRAPH 1.3.C.1

ADD:

a. Design wind load: [20] psf.

*Use as specified in the CPCS and delete below or modify using text:*

### SECTION 08 36 13 – SECTIONAL OVERHEAD DOORS, PART 2

DELETE:

2.3 OPERATION (In its entirety)

SUBSTITUTE:

2.3 OPERATION

A. Type: [Manual push-up] [Chain hoist] [Motor with chain hoist] operation.

B. Electric Operator:

1. Type: [trolley] type [gear] drive with a totally enclosed motor, with an instant reversing feature.

2. Rating: Continuous duty [1/3] [1/2] [ ] hp as recommended by the door Manufacturer for the size and type of door.

3. Electrical characteristics: [115/230 VAC 1-Phase].

4. Control station: [ ] V; [ ] station marked OPEN, CLOSE, and STOP.

C. Entrapment Protection – Door Bottom Safety Edge: Full door width, weather edge seal, electric sensing type, to reverse the door travel to the fully open position upon the striking of an object.

\*\*\*\* OR \*\*\*\*

C. Entrapment Protection – Photoelectric Sensor: Detect obstruction and reverse the door to the fully open position without requiring the door to contact the obstruction.



*Use as specified in the CPCS and delete below or modify using text:*

## **SECTION 08 36 13 – SECTIONAL OVERHEAD DOORS, PART 2**

### **DELETE:**

2.4 COMPONENTS *(In its entirety)*

### **SUBSTITUTE:**

2.4 COMPONENTS

A. Door Sections:

1. Construction: Exterior and interior steel skins separated by a continuous dual durometer vinyl extrusion held in place by a mechanical interlock to form an effective thermal break and a complete weather-tight seal along the section joint.
2. Exterior skin: [ ] gauge roll formed, commercial quality hot-dipped galvanized steel, in accordance with ASTM A 924 and ASTM A 653.
3. Interior skin: [ ] gauge roll formed, commercial quality hot-dipped galvanized steel, in accordance with ASTM A 924 and ASTM A 653.
4. Section thickness: [ ]-inches.
5. End stiles: [ ] gauge channel galvanized steel, full height, separated from the exterior skin with a vinyl thermal break.

B. Insulation: 2 7/8-inch thickness expanded polystyrene.

C. Reinforcing: Steel struts as required for the design wind load and to limit door deflection in the horizontal position to a maximum of 1/120 of the door width.

D. Track:

1. Material: [2]-inch galvanized steel, in accordance with ASTM A 653, Grade 40.
2. Vertical track: Continuous angle-mounted tracks for steel or concrete jambs, graduated to provide wedge type weathertight closing, and fully adjustable for sealing the door to the jamb.
3. Horizontal track: Reinforce with a continuous angle consistent with door size and weight.
4. Lift type: [Standard lift] [High lift] [Vertical lift] [Low headroom].

E. Counterbalance: Heavy duty, oil-tempered wire torsion springs on a continuous ball bearing cross header steel shaft:

1. Provide a minimum of [50,000] [25,000] cycles of use.
2. Galvanized aircraft type lifting cables with a minimum safety factor of 5 to 1.

F. Hardware:

1. Hinges and brackets: Form from hot-dipped galvanized steel.
2. Track rollers: Full floating ball bearing type with hardened steel races.

G. Windows:

1. Lights: Extruded PVC light frames, size 36-inch by 14-inch or 42-inch by 14-inch, use the [ ].
2. Glazing: [ ]-inch thickness [exterior pane] [tinted] [reflective], color [ ].

H. Weatherstripping:

1. Door head: A continuous length EPDM rubber sealing strip.
2. Jambs: A clip-on rigid retainer and replaceable rubber seal.
3. Bottom: A continuous length aluminum retainer and a U-shaped [vinyl] seal.
4. Between sections: A dual-durometer vinyl weather seal, mechanically interlocked thermal break.

*Coordinate the following with safety and security to determine compatibility with the Owner's keying system:*

- I. Lock: Interior lock, deadbolt mounted on section engaging through the track to accept the OWNER's padlock.

\*\*\*\* OR \*\*\*\*

- I. Lock: Exterior lock, masterkeyable tumbler type with a night latch and steel bar engaging the track

*Use as specified in the CPCS and delete below or modify using text below.*

**SECTION 08 41 13 – ALUMINUM ENTRANCES AND STOREFRONTS, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

- B. Storefront Framing: *(In its entirety)*
- C. Entrance Doors: *(In its entirety)*

**SUBSTITUTE:**

- B. Storefront Framing:
  - 1. Frame nominal wall thickness: 0.080-inches.
  - 2. Frame member depth: [ ]-inches.
  - 3. Frame member face: [ ]-inches.
  - 4. Thermal barrier: Rigid, structural thermal barrier providing a separation between interior and exterior aluminum surfaces consisting of 2-part, chemically curing, high-density polyurethane.
- C. Entrance Doors:
  - 1. Type: Stile and rail design of 1 3/4-inch tubular framing members, with welded and mechanical joints using heavy reinforcing channels with backup plates.
  - 2. Frame nominal wall thickness: 0.125-inches.
  - 3. Door moldings nominal wall thickness: 0.050-inches.
  - 4. Stile width: [ ]-inches.
  - 5. Top rail height: [ ]-inches.
  - 6. Mid rail height: [ ]-inches.
  - 7. Bottom rail height: [ ]-inches, [ ].

*Include the following to specify finishes for the Project:*

**SECTION 08 41 13 – ALUMINUM ENTRANCES AND STOREFRONTS, PART 2**

**ADD:**

**2.5 FINISHES**

- A. Aluminum: AAMA 611, [AA-M12-C22-A44], Architectural Class I anodized to 0.0007-inch minimum thickness, [[dark] bronze] [ ] color.

\*\*\*\* OR \*\*\*\*

- A. Aluminum: AAMA 2605, [AA-M12-C42-R1X], organic with 70% PVDF fluoropolymer coating, [ ] color.

---

*Use as specified in the CPCS and delete below, or modify using text below:*

**SECTION 08 44 13 – ALUMINUM CURTAIN WALLS, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

- B. Curtain Wall Framing: *(In its entirety)*

**SUBSTITUTE:**

- B. Curtain Wall Framing:
  - 1. Frame nominal wall thickness: 0.093-inch to 0.125-inch.
  - 2. Frame member depth: [ ]-inches.
  - 3. Frame member face: [ ]-inches.
  - 4. Thermal barrier: A rigid, structural thermal barrier providing a separation between the interior and exterior aluminum surfaces consisting of extruded PVC.

*Include the following to specify finishes for the Project.*

## **SECTION 08 44 13 – ALUMINUM CURTAIN WALLS, PART 2**

**ADD:**

### **2.4 FINISHES**

A. Aluminum: AAMA 611, [AA-M12-C22-A44], Architectural Class I anodized to 0.0007-inch minimum thickness, [[dark] bronze] [ ].

**\*\*OR\*\***

A. Aluminum: AAMA 2605, [AA-M12-C42-R1X], organic with 70% PVDF fluoropolymer coating, [ ] color.

---

*Use if required to modify compression seal windows or delete text.*

## **SECTION 08 51 13 – ALUMINUM WINDOWS, PART 1, SUBPARAGRAPH 1.4.D.1.**

**DELETE:**

a. Product type: *(In its entirety)*

**SUBSTITUTE:**

a. Product type:

- 1) Compression seal windows: [C - Casement]. [VP – Vertical Pivoted]. [HP – Horizontally Pivoted]. [SHW – Single-Hinged Inswinging]. [TH – Top-Hinged Inswinging].
- 2) Fixed windows: F – Fixed.

*Use if required for sliding windows or delete text:*

## **SECTION 08 51 13 – ALUMINUM WINDOWS, PART 1, SUBPARAGRAPH 1.4.D.1.**

**DELETE:**

a. Product type: *(In its entirety)*

**SUBSTITUTE:**

a. Product type:

- 1). Sliding windows: [H – [Single] [Double] [Triple] Hung]. [HS – Horizontal Sliding]. [DW – Dual]. [VS – Vertical Slide].

*Include the following for full size mockups for review of construction, coordination of Work of several sections, testing, or observation of operation. Minimize mockups on smaller, less complex projects. Delete text if not required.*

## **SECTION 08 51 13 – ALUMINUM WINDOWS, PART 1, SUBPARAGRAPH 1.4**

**ADD:**

E. Mockup:

1. Size: [One full sized window unit]. [ ].
2. Locate [where directed]. [ ].
3. The approved mockup may [not] remain as part of the Work.

*If other window types other than projected windows are being specified, edit the requirements below accordingly:*

## **SECTION 08 51 13 – ALUMINUM WINDOWS, PART 2, SUBPARAGRAPH 2.2.A.9**

**ADD:**

- c. Horizontal sliding windows: Extruded PVC interfacing tracks and cam type lock.
- d. [Single] [Double] hung windows: Concealed [spiral] [block and tackle] [tape] sash counterbalances, cam locks, and pulls.
- e. [Casement] [Awning] [ ] windows: [Lever action handle] [Geared rotary handle] operator, projecting sash arms with limit stops, and cam type lock.

*Include the following to specify finishes for the Project:*

## **SECTION 08 51 13 – ALUMINUM WINDOWS, PART 2**

**ADD:**

### **2.5 FINISHES**

- A. Aluminum: AAMA 611, [AA-M12-C22-A44], Architectural Class I anodized to 0.0007-inch minimum thickness, [[dark] bronze] [ ] color.

\*\*\*\* OR \*\*\*\*

- A. Aluminum: AAMA 2605, [AA-M12-C42-R1X], organic with 70% PVDF fluoropolymer coating, [ ] color.

---

*Determine the design wind pressure for the Project and insert applicable criteria below:*

## **SECTION 08 64 00 – FIBERGLASS-SANDWICH-PANEL SKYLIGHT ASSEMBLIES, PART 1, SUBPARAGRAPH 1.4.F.3.b**

**ADD:**

- 1) The system shall withstand the following loads: [ ] psf positive pressure and [ ] psf negative pressure.
- 2) Live and dead loads in accordance with [Building Code]. The system shall withstand the following loads: [ ] psf. Dead load: [ ] psf.

---

*Choose project colors or delete text if not required.*

## **SECTION 08 80 00 – GLAZING, PART 2, SUBPARAGRAPH 2.2.C**

**ADD:**

- 1. Color: [Green] [ ].

*Include the following for a schedule listing the products in this Section. Coordinate with Part 2 – Products.*

## **SECTION 08 80 00 – GLAZING, PART 3**

**ADD:**

### **3.5 SCHEDULE**

- A. Type [GL-1]:
  - 1. Description: [ ]
    - a. Outboard lite: [1/4]-inch thick [tinted] glass, [heat strengthened or] tempered where required, [with low-e coating on No. [2] [3[surface]]].

- b. Inboard lite: [1/4]-inch thick clear glass, [tempered where required].
- c. Total unit thickness: [One]-inch.
- 2. Performance characteristics:
  - a. Visible transmittance: [73] %.
  - b. Solar transmittance: [52] %.
  - c. Ultraviolet transmittance: [36] %.
  - d. Visible reflectance: [17] %.
  - e. Solar reflectance: [14] %.
  - f. U-value: [0.33] winter nighttime; [0.33] summer daytime.
  - g. Shading coefficient: [0.76].
  - h. Relative heat gain: [0.66].
  - i. Emissivity: [0.15].
  - j. Locations: [Aluminum windows] [ ].
- B. Type [GL-2]:
  - 1. Description: [1/4]-inch thick clear tempered glass.
  - 2. Locations: Interior doors and glazed openings at locations subject to human impact.
- C. Type [GL-3]:
  - 1. Description: [1/4]-inch thick clear glass.
  - 2. Locations: Interior glazed openings at locations not subject to human impact.
- D. Type [GL-4]:

**Select 3/16-inch firelite for rated conditions and 5/16-inch firelite for rated conditions requiring impact safety-rated glazing.**

- 1. Description: [3/16] [5/16]-inch fire-rated glass.
- 2. Locations: [Door] [window] openings as indicated.

## DIVISION 9

*Use the following to specify tile setting methods required for the Project:*

### **SECTION 09 30 00 – TILE, PART 3, SUBPARAGRAPH 3.2**

#### **DELETE:**

P. Setting Methods: In accordance with the Contract Documents.

#### **SUBSTITUTE:**

P. Setting Methods:

1. General: Provide reinforcing, membrane, and other accessories required in specific TCNA methods specified in this Section.

*Choose from the setting methods listed below to suit Project conditions or add methods from the TCNA Handbook for Ceramic Tile Installation. Edit the materials sections to show only the materials applicable to the selected methods.*

2. Floor: Thin-set installation, heavy performance level, dry interior locations over concrete slabs and floor structures with deflection not to exceed 1/360 of the span.

*TCNA Method F111 is the preferred method for concrete structures subject to movement and deflection. TCNA Method F113 with acrylic polymer emulsion admixtures to mortar and grout may be acceptable when installation occurs at above grade structures with a substrate deflection greater than 1/360 of the span but less than 1/240 of the span; verify with the mortar/grout Manufacturer.*

- a. TCNA Method F113.
  - b. Mortar: In accordance with ANSI A118.4 latex portland cement.
  - c. Grout: [In accordance with ANSI A118.7 polymer modified grout] [In accordance with ANSI A118.6 standard cement grout].
  - d. Installation specification: In accordance with ANSI A108.5 and ANSI A108.10.
3. Floor: Thick-set installation, heavy performance level, dry interior locations over concrete floors subject to bending and deflection.
    - a. TCNA Method F111.
    - b. Mortar bed: In accordance with ANSI A108.1B portland cement, reinforcing cleavage membrane.
    - c. Grout: [In accordance with ANSI A118.7 polymer modified grout] [In accordance with ANSI A118.6 standard cement grout].
    - d. Installation specification: In accordance with ANSI A108.1B and ANSI A108.10.

*The following is for shower floors:*

4. Shower floors: Thick-set installation, heavy performance level, wet shower locations over concrete or wood floors.
  - a. TCNA Method F415, used in conjunction with Method W244 at walls. Slope setting bed to drain.
  - b. Mortar: In accordance with ANSI A118.4 latex portland cement.
  - c. Grout: [In accordance with ANSI A118.7 polymer modified grout] [In accordance with ANSI A118.6 standard cement grout].
  - d. Fiber cement underlayment: In accordance with ASTM C 1288. Slope substrate to drain.
  - e. Waterproof membrane: In accordance with ANSI A118.10 and ANSI A118.12 elastomeric.
  - f. Installation specification: In accordance with ANSI A108.1B and ANSI A108.10.
5. Wall: Dry interior locations over gypsum board:
  - a. TCNA Method W243.
  - b. Mortar: In accordance with ANSI A118.4 latex portland cement.
  - c. Grout: [In accordance with ANSI A118.7 polymer modified grout] [In accordance with ANSI A118.6 standard cement grout].

- d. Installation specification: In accordance with ANSI A108.5 and ANSI A108.10.
- 6. Wall: Wet interior locations over cementitious backer board:
  - a. TCNA Method W244.
  - b. Mortar: In accordance with ANSI A118.4 latex portland cement.
  - c. Grout: [In accordance with ANSI A118.7 polymer modified grout] [In accordance with ANSI A118.6 standard cement grout].
  - d. Moisture-resistant membrane: 15# asphalt roofing felt.
  - e. Installation specification: In accordance with ANSI A108.5 and ANSI A108.10.

---

*Replace CPCS text with the following modified text, or delete this text:*

## **SECTION 09 51 00 – ACOUSTICAL CEILINGS, PART 1, SUBPARAGRAPH 1.4**

### **DELETE:**

- C. Fire Hazard Classification: Class A rated, tested in accordance with ASTM E 84.

### **SUBSTITUTE:**

- C. Fire Hazard Classification: Class [ ] rated, tested in accordance with ASTM E 1264.

*Use as specified in the CPCS and delete below, or modify using text below:*

## **SECTION 09 51 00 – ACOUSTICAL CEILINGS, PART 2**

### **DELETE:**

### 2.2 MATERIALS *(In its entirety)*

### **SUBSTITUTE:**

### 2.2 MATERIALS

- A. Suspension Grid System:
  - 1. [Light] [Heavy] duty, die cut, interlocking ends, in accordance with ASTM C 635.
  - 2. Grid type: [ ].
  - 3. Material: [ ].
  - 4. Runners: 1 1/2-inches high, [ ]-inch exposed width, [ ] profile.
  - 5. Perimeter molding: [ ] shape.
  - 6. Finish: [ ], [ ] color.
  - 7. Accessories: Stabilizer bars, clips, splices and [ ].
- B. Acoustical Panels:
  - 1. Size: [24-inch by 24-inch] by [ ]-inch thick.
  - 2. Edge configuration: [Tegular] [ ].
  - 3. Performance requirements:
    - a. Tested in accordance with ASTM E 1264:
      - 1) NRC: [ ].
      - 2) CAC: [ ].
    - b. Tested in accordance with ASTM E 84:
      - 1) Flame spread: [ ].
      - 2) Smoke developed: [ ].

*Modify the blue text for washable ceiling tile:*

- C. Acoustical Panels:
  - 1. Size: [24-inch by 24-inch] by [ ]-inch thick.
  - 2. Edge configuration: [ ].
  - 3. Performance requirements:
    - a. Tested in accordance with ASTM E 1264:
      - 1) NRC: [ ].
      - 2) CAC: [ ].

- b. Tested in accordance with ASTM E 84.
- D. Maintenance:
  - 1. Extra materials: Minimum 2% of acoustical panels; not less than 10 units.
  - 2. Grid: 20 linear feet.

---

*Replace CPCS text with the following modified text or delete this text.*

## **SECTION 09 65 13 – RESILIENT BASE, PART 2, SUBPARAGRAPH 2.2**

### **DELETE:**

- A. Resilient Base: *(In its entirety)*

### **SUBSTITUTE:**

- A. Resilient Base:
  - 1. Type: In accordance with ASTM F 1861, Type **[thermoset vulcanized rubber]** thermoset vulcanized rubber Group I.
  - 2. Thickness: **[ ]**-inch.
  - 3. Profile: **[ ]**.
  - 4. Height: **[ ]**-inches.
  - 5. Length: **[ ]** feet, **[ ]**.
  - 6. Color: **[ ]**.

*Include the following if premolded corners or ends are required.*

- 7. **[End units] [and] [preformed] [inside] [and] [outside corners]**: Preformed; profile, size, and color to match base.

*Replace CPCS text with the following modified text or delete this text.*

## **SECTION 09 65 13 – RESILIENT BASE, PART 3, SUBPARAGRAPH 3.2**

### **DELETE:**

- E. Install internal corners from preformed material or fabricated from base materials or mitered and coped.
- F. At outside corners use preformed material or a V-cut back of base to 2/3 of its thickness and bend around the corner.

### **SUBSTITUTE:**

- E. Install internal corners **[from preformed material] [fabricated from base materials Mitered coped]**.
- F. At outside corners **[use preformed material] [“V” cut back of base to 2/3 of its thickness and bend around corner]**.

---

*Replace CPCS text with the following modified text or delete this text.*

## **SECTION 09 65 19 – RESILIENT TILE FLOORING, PART 2, SUBPARAGRAPH 2.2**

### **DELETE:**

- A. Vinyl Composition Tile: *(In its entirety)*

### **SUBSTITUTE:**

- A. Vinyl Composition Tile:
  - 1. In accordance with ASTM F 1066, Class **[ ]**.
  - 2. Size: 12-inch by 12-inch by **[ ]**-inch thick.
  - 3. Color: **[ ]**.



**Engineer: If SECTION 09 90 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

## **SECTION 09 90 00 – PAINTING AND COATING, PART 1, SUBPARAGRAPH 1.2**

### **ADD:**

- F. International Organization for Standards (IOS):
  - 1. 8502-3 – Preparation of steel substrates before application of paints and related products — Tests for the assessment of surface cleanliness — Part 3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method)

### **RENUMBER ACCORDINGLY**

*Modify as required.*

## **SECTION 09 90 00 – PAINTING AND COATING, PART 3, SUBPARAGRAPH 3.2.A**

### **DELETE:**

- 1. Paint new interior and exterior masonry, concrete, and metal surfaces, except as specified otherwise. Do not paint exterior concrete surfaces unless specified otherwise.

### **SUBSTITUTE:**

- 1. Paint new interior and exterior masonry, concrete, and metal surfaces, except as specified otherwise. Do not paint exterior concrete surfaces unless specified otherwise. Paint the following existing surfaces:
  - a. [ ].
  - b. [ ].
  - c. [ ].

**Engineer: If SECTION 09 90 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

## **SECTION 09 90 00 – PAINTING AND COATING – PART 3**

### **DELETE:**

- 3.4. QUALITY CONTROL *(In its entirety)*

### **SUBSTITUTE:**

- 3.4. QUALITY CONTROL
  - A. Inspection:
    - 1. The ENGINEER may conduct random inspections and testing for final acceptance or rejection of coating.
    - 2. Perform cleanliness test in accordance with ISO 8502-3 using the dust quantity rating meeting Class 2 or better.
    - 3. Provide time for ENGINEER inspection of prepared surface and coating as specified in SSPC PA 2.
    - 4. Provide QC testing with approved calibrated equipment.
    - 5. Follow the most stringent Equipment Manufacturer recommendations for QC testing, including recommendations for attachments or appurtenances to testing equipment. Equipment size and type shall provide complete examination of the coating surface.
  - B. DFT Testing:
    - 1. Measure DFT in accordance with SSPC PA 2 with a properly calibrated magnetic gauge. Coatings and linings shall meet coating thickness restriction level 4, unless otherwise specified by the ENGINEER.
    - 2. Conduct coating thickness measurements as necessary and without limitation.

- a. If applying different products, provide DFT for each applied coat prior to further coating application.
  3. The ENGINEER may conduct random DFT testing and may identify individual areas.
- C. Holiday Testing:
  1. Coating application plant testing: Conduct holiday testing on the sufficiently cured pipe/fitting coating using a high-voltage spark tester in accordance with NACE SP0188. Coatings or linings that exceed 20 mils DFT shall be holiday tested in accordance with NACE SP0274.
  2. Field testing: Conduct holiday testing on the sufficiently cured pipe/fitting coating using a high-voltage spark tester in accordance with NACE SP0274 for coatings over 20 mils DFT or a low-voltage wet sponge tester in accordance with NACE SP0188 for coatings less than 20 mils DFT prior to installation. Conduct holiday testing in the presence of the ENGINEER and provide a minimum of 3 days notification ahead of testing.
  3. Repair holidays or defects in the coating:
    - a. Feather edges and repair in accordance with the recommendations of the Paint Manufacturer.
    - b. Hand or power sand visible areas of chipped, peeled, or abraded paint, and feather the edges. Follow with primer and finish coat. Depending on the extent of repair and appearance, a finish sanding and topcoat may be required.
    - c. Apply finish coats, including touch up and damage-repair coats, in a manner that will present a uniform texture and color-matched appearance.
  4. Conduct testing with properly sized wands, springs, or other attachments to provide testing for the entirety of the coated surface area.
  5. Holiday testing voltage: Set holiday testing voltage for coatings over 20 mils DFT in accordance with the following equation, where 't' is equal to the maximum measured coating thickness on the area being tested. ENGINEER approval of holiday testing voltage is required prior to testing:
    - a.  $1,250\sqrt{t}$ .
- D. Unsatisfactory Application:
  1. If an item has an improper finish color or insufficient film thickness, clean the surface and topcoat with specified.
    - a. Paint material to obtain the specified color and coverage. Obtain specific surface preparation information from the Paint Manufacturer.
      - 1) Evidence of runs, bridges, shiners, laps, porosity, or other imperfections is cause for rejection.
      - 2) Repair defects in accordance with the recommendations of the Paint Manufacturer.

**Engineer: If SECTION 09 90 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 09 90 00 – PAINTING AND COATING – SUPPLEMENT A**

**DELETE:**

SUPPLEMENT A – Piping color Code Schedule

**SUBSTITUTE:**

**SUPPLEMENT A – PIPING COLOR CODE SCHEDULE**

<b>Legend</b>	<b>Pipe System</b>	<b>Color</b>	<b>Pantone Color Chart [1]</b>	<b>Pipe Banding Color</b>
AHP	Air, High Pressure	Dark Green	Pantone 5467	Orange Band
AI	Air Instrument	None	None	None
ALP	Air, Low Pressure	Dark Green	Pantone 5467	Yellow band
AVD	Air Valve Drain	Black	Pantone 419	None
ALUM	Aluminum Sulfate	Federal Safety Orange	Pantone 152	Blue Band
POA	Anionic Polymer	Federal Safety Orange	Pantone 152	Violet Band
NH <sub>3</sub>	Aqueous Ammonia	White	Pantone 427	NONE
BWA	Backwash Air	Dark Green	Pantone 5467	Blue Band
BWS	Backwash Supply	Safety Purple	Pantone 2665	Blue Band
BWW	Backwash Waste	Light Brown	Pantone 479	None
AA	Aeration Air	Safety Green	Pantone 3415	None
CA	Carbon	Black	Pantone 419	Red Band
CO <sub>2</sub>	Carbon Dioxide	Federal Safety Yellow	Pantone 109	Violet Band
PC	Cationic Polymer	Federal Safety Orange	Pantone 152	White Band
CD	Chemical Drain	Federal Safety Yellow	Pantone 109	Black Band
CHWR	Chilled Water Return	Light Blue	Pantone 290	White Band
CHWS	Chilled Water Supply	Light Blue	Pantone 290	None
CG	Chlorine Gas, Pressured	Federal Safety Yellow	Pantone 109	None
CGV	Chlorine Gas, Vacuum	Federal Safety Yellow	Pantone 109	None
CS	Chlorine Solution	Federal Safety Yellow	Pantone 109	None

<b>Legend</b>	<b>Pipe System</b>	<b>Color</b>	<b>Pantone Color Chart <sup>[1]</sup></b>	<b>Pipe Banding Color</b>
CSHP	Chlorine Solution, High Pressure	Federal Safety Yellow	Pantone 109	None
CL	Chlorine Liquid, Pressured	Federal Safety Yellow	Pantone 109	None
CLD	Chlorine Dioxide	Federal Safety Yellow	Pantone 109	Violet Band
CLR	Clarified Water	Aqua	Pantone 3262	None
CND	Condensate Drain	Dark Grey	Pantone 445	None
DSL	Decant Sludge Line	Light Brown	Pantone 479	None
DIW	Deionized Water	None	None	None
DHW	Domestic Hot Water	Dark Blue	Pantone 301	Red Band
DHWR	Domestic Hot Water Recirculation	Dark Blue	Pantone 301	White Band
DR	Drain	Black	Pantone 419	None
DS	Drain, Sanitary	Dark Grey	Pantone 445	None
DWS	Drain, Sanitary – Double Wall	Dark Grey	Pantone 445	None
LD	Dry Lime			
ELECT	Electrical Conduit	Dark Grey	Pantone 431	None
HV	Electrical Enclosures, High Voltage	ANSI 61 Grey	Pantone 443	
LV	Electrical Enclosures, Low Voltage	ANSI 61 Grey	Pantone 443	
FECL <sub>3</sub>	Ferric Chloride	Federal Safety Orange	Pantone 152	
FS	Ferric Sulfate	Federal Safety Orange	Pantone 152	Black Band
FST	Ferric Sulfate (Tanks Only)	Reddish Brown	Pantone 478 C	Black Band
FE	Filter Effluent	Medium Blue	Pantone 292	None
FE	Filter Effluent (Recycled Water)	Purple	Pantone 2577 U <sup>[2]</sup>	Yellow Band
FH	Fire Hydrant	Federal Safety Yellow	Pantone 109	None
FI	Filter Influent	Aqua	Pantone 3262	None
FTW	Filter to Waste	Light Brown	Pantone 479	Yellow Band
FW	Finished Water	Dark Blue	Pantone 301	Violet Band
FA	Fire Alarm	Red	Pantone 484	None
FS	Fire Sprinkler	Dark Blue	Pantone 301	Red Band

<b>Legend</b>	<b>Pipe System</b>	<b>Color</b>	<b>Pantone Color Chart <sup>[1]</sup></b>	<b>Pipe Banding Color</b>
FSI	Flocculation/Sedimentation Influent	Olive Green	Pantone 357	Orange Band
FL	Fluoride, Dry Powder			
FLS	Fluoride Solution	Light Blue	Pantone 290	Red Band
GAS	Gasoline			
HTWR	Heating Water Return (HVAC)			
HTWS	Heating Water Supply (HVAC)			
HPT	High Pressure Return (Condensate)			
HPS	High Pressure Steam			
HYDOL	Hydraulic Oil Return	Ivory	Pantone 9224 C	None
HYDOS	Hydraulic Oil Supply	Ivory	Pantone 9224 C	None
IRR	Irrigation (Potable Water)	Dark Blue	Pantone 301	None
IRR	Irrigation (Recycle Water)	Purple	Pantone 2577 U <sup>[2]</sup>	None
LD	Lime, Dry Powder			
LS	Lime Slurry	Light Green	Pantone 360 C	None
LOX	Liquid Oxygen			
LPR	Low Pressure Return (Condensate)			
LPS	Low Pressure Steam			
MPR	Medium Pressure Return (Condensate)			
MPS	Medium Pressure Steam			
G	Natural Gas	Federal Safety Green	Pantone 3415	None
N <sub>2</sub>	Nitrogen Gas	Light Green	Pantone 360 C	Red Band
PON	Non-Ionic Polymer	Federal Safety Orange	Pantone 152	Green Band
O	Oxygen			
ORD	Overflow Roof Drain	Black	Pantone 419	None
OVFL	Overflow	Black	Pantone 419	None
O <sub>3</sub>	Ozone	Federal Safety Yellow	Pantone 109	Orange Band
POTW	Potable Water	Dark Blue	Pantone 301	None

<b>Legend</b>	<b>Pipe System</b>	<b>Color</b>	<b>Pantone Color Chart <sup>[1]</sup></b>	<b>Pipe Banding Color</b>
PP	Potassium Permanganate	Violet	Pantone 2665 C	None
PPS	Potassium Permanganate Solution	Violet	Pantone 2665 C	None
PS	Pressure Sewer	Dark Grey	Pantone 445	Red Band
P	Propane Gas	Federal Safety Green	Pantone 3415	Red Band
RW	Raw Water	Olive Green (John Deere)	Pantone 357	None
RW	Raw Water (Recycling Source)	Dark Green	Pantone 5535	None
R	Recycled Water	Purple	Pantone 2577 U <sup>[2]</sup>	None
RD	Roof Drain	Black	Pantone 419	None
SS	Sanitary Sewer (Gravity)	Dark Grey	Pantone 445	None
SAMP	Sample Water	Medium Green	Pantone 363	None
SVW	Service Water (Recycled Water)	Purple	Pantone 2577 U <sup>[2]</sup>	None
SVW/HP	Service Water, High Pressure	Medium Blue	Pantone 292	Red Band
SVW/LP	Service Water, Low Pressure	Light Blue	Pantone 290	Blue Band
SETW	Settled Water	Aqua	Pantone 3262	None
SASH	Soda Ash	Light Green	Pantone 360 C	Orange
NA	Sodium Hydroxide	Federal Safety Yellow	Pantone 109	Green Band
SD	Storm Drain	Grey	Pantone 444	None
SFA	Sulfuric Acid	Federal Safety Yellow	Pantone 109	Red Band
SPD	Sump Pump Discharge	Dark Grey	Pantone 444	None
SURW	Surface Wash			
TSL	Thickened Sludge Line	Dark Brown	Pantone 732	None
USL	Unthickened Sludge Line	Dark Brown	Pantone 732	None
VAC	Vacuum	Federal Safety Green	Pantone 3415	Black Band
V	Vent	Pump Grey	Pantone 442	Red Band
VS	Vent, Sanitary	Pump Grey	Pantone 442	None
VTR	Vent to Roof	Pump Grey	Pantone 442	Black Band
XE	Xcel Energy			

<b>Legend</b>	<b>Pipe System</b>	<b>Color</b>	<b>Pantone Color Chart <sup>[1]</sup></b>	<b>Pipe Banding Color</b>
PWFM	Waste Force Drain	Dark Grey	Pantone 445	None

**Notes:**

**[1] Pantone paint color reference is used solely to facilitate color selection. Other Manufacturers listed in the Section are acceptable with similar matching colors.**

**[2] Pantone 2577U color reference is manufactured and used solely to facilitate color selection. Other Manufacturers listed in the Section are acceptable with similar matching colors.**

**In accordance with EIA 359 for items for specifically covered in the PCCS.**

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**Engineer: If SECTION 09 97 13.01 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 09 97 13.01 – POLYURETHANE COATINGS, PART 3, SUBPARAGRAPH 3.2**

**DELETE:**

- H. Field Surface Preparation of Holdback Areas: (In its entirety)

**Engineer: If SECTION 09 97 13.01 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 09 97 13.01 – POLYURETHANE COATINGS –SUBPARAGRAPH 3.4.D**

**DELETE:**

2. Field testing: Conduct holiday testing on the sufficiently cured pipe/fitting coating using a high-voltage spark tester in accordance NACE SP0274. Coated piping and appurtenances shall be field holiday tested prior to installation. Conduct holiday testing in the presence of the ENGINEER and provide a minimum of 3 days notification ahead of testing.

**SUBSTITUTE:**

2. Field testing: Conduct holiday testing on sufficiently cured coating using a high-voltage spark tester in accordance with NACE SP0274 immediately prior to installation. Retest following any activity or work that could damage coating or lining, including foot traffic. Conduct holiday testing in the presence of the ENGINEER and provide a minimum of 3 days notification ahead of testing.

**Engineer: If SECTION 09 97 13.01 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 09 97 13.01 – POLYURETHANE COATINGS –SUBPARAGRAPH 3.4.D**

**ADD:**

5. Holiday testing voltage: Set holiday testing voltage in accordance with the following equation, where 't' is equal to the maximum measured coating thickness on the area being tested. ENGINEER approval of holiday testing voltage is required prior to testing:
- a.  $1,250\sqrt{t}$ .

---

**Engineer: If SECTION 09 97 13.02 is applicable to your project, the following change MUST stay in the Supplementary**

**SECTION 09 97 13.02 – LIQUID-EPOXY LININGS AND COATINGS –SUBPARAGRAPH 2.2.B**

**DELETE:**

2. Apply material to a minimum DFT of 16 mils unless otherwise specified by the ENGINEER.

**SUBSTITUTE:**

2. Apply material to a minimum DFT of 20 mils unless otherwise specified by the ENGINEER.

**Engineer: If SECTION 09 97 13.02 is applicable to your project, the following change MUST stay in the Supplementary**

**SECTION 09 97 13.02 – LIQUID-EPOXY LININGS AND COATINGS –SUBPARAGRAPH 3.1**

**DELETE:**



- A. Flanges: The inside of blind flanges shall be coated with 16 mils of liquid-epoxy in accordance with AWWA C210. Do not coat flange gasket sealing surfaces.

**SUBSTITUTE:**

- A. Flanges: The inside of blind flanges shall be coated with 20 mils of liquid-epoxy in accordance with AWWA C210. Do not coat flange gasket sealing surfaces.

**Engineer: If SECTION 09 97 13.02 is applicable to your project, the following change MUST stay in the Supplementary**

**SECTION 09 97 13.02 – LIQUID-EPOXY LININGS AND COATINGS –SUBPARAGRAPH 3.5.C**

**DELETE:**

2. Field Testing: Conduct holiday testing on the sufficiently cured pipe/fitting coating using a high-voltage spark tester or a low-voltage wet sponge tester in accordance with NACE SP0188 prior to installation. Conduct holiday testing in the presence of the ENGINEER and provide a minimum of 3 days notification ahead of testing.

**SUBSTITUTE:**

2. Field testing: Conduct holiday testing on sufficiently cured coating using a high-voltage spark tester in accordance with NACE SP0274 immediately prior to installation. Retest following any activity or work that could damage coating or lining, including foot traffic. Conduct holiday testing in the presence of the ENGINEER and provide a minimum of 3 days notification ahead of testing.

**Engineer: If SECTION 09 97 13.02 is applicable to your project, the following change MUST stay in the Supplementary**

**SECTION 09 97 13.02 – LIQUID-EPOXY LININGS AND COATINGS –SUBPARAGRAPH 3.5.C**

**ADD:**

6. Holiday testing voltage: Set holiday testing voltage in accordance with the following equation, where 't' is equal to the maximum measured coating thickness on the area being tested. ENGINEER approval of holiday testing voltage is required prior to testing:
- a.  $1,250\sqrt{t}$ .

## DIVISION 10

*Include the following for a schedule listing the products in this Section. Coordinate with the products in Part 2 – Products.*

### SECTION 10 14 23 – INTERIOR PANEL SIGNS, PART 3

ADD:

#### 3.3 SIGN SCHEDULE

Location	Sign Size (inches)	Content
Men's Toilets	[ x by x ]	"MEN" and accessible symbol
Women's Toilets	[ x by x ]	"WOMEN" and accessible symbol
Unisex Toilets	[ x by x ]	"TOILET" and accessible symbol
Room Signs	[ x by x ]	Room number, room name, and braille symbol
Safety Sign	[ x by x ]	[Fire extinguisher] [ ]
NFPA Sign	[ x by x ]	[NFPA four color chlorine symbol]

*Include the following for a schedule listing the products in this Section. Coordinate with the products in Part 2 – Products.*

### SECTION 10 14 60 – EXTERIOR SIGNS, PART 3

ADD:

#### 3.2 SIGN SCHEDULE

Count	Sign Size (inches)	Content
[ ]	[ x by x ]	[Stop sign]
[ ]	[ x by x ]	[No parking sign]
[ ]	[ x by x ]	Handicapped accessible parking sign

*Modify as required.*

### SECTION 10 51 00 – LOCKERS, PART 2, SUBPARAGRAPH 2.3

DELETE:

A. General: In accordance with the Contract Documents for style, size, and description.

*Modify as required.*

SUBSTITUTE:

A. General:

1. Style: [Single] [Double] [Triple] [Four] tier, [one] [two] person, [duplex] [ ].
2. Size: [12-inches by 15-inches] [18-inches by 24-inches] [ ].
3. Description: Unit type, each locker with an individual door and frame, and top, bottom, back, and shelves with common intermediate uprights separating units.

*Modify as required.*

**SECTION 10 51 00 – LOCKERS, PART 2, SUBPARAGRAPH 2.3**

**DELETE:**

C. Doors: *(In its entirety)*

**SUBSTITUTE:**

C. Doors:

1. Construction: 16-gauge steel, formed with a full channel shape on the lock side to fully conceal the lock bar, a channel formation on the hinge side, and a right angle formation across the top and the bottom.
  - a. Single tier doors more than [ ]-inches in height and [ ]-inches in width: Provide a diagonal reinforcing angle welded to the inner surface.
  - b. Doors for 3, 4, 5, and 6 openings high: 16-gauge steel formed with right angle flanges on all 4 sides.

**DIVISION 13**

*Specify Project Elevation.*

**SECTION 13 47 14 – IMPRESSED CURRENT CATHODIC PROTECTION, PART 1, SUBPARAGRAPH 1.7**

**DELETE:**

- B. Materials and equipment shall be designed and constructed for continuous operation at rated current, at Project elevation, 104°F ambient, and 95% relative humidity.

**SUBSTITUTE:**

- B. Materials and equipment shall be designed and constructed for continuous operation at rated current, at [ ] feet, 104°F ambient, and 95% relative humidity.

*Modify as required.*

**SECTION 13 47 14 – IMPRESSED CURRENT CATHODIC PROTECTION, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

- 2. Description: *(In its entirety)*
- 3. Assembly components: *(In its entirety)*

**SUBSTITUTE:**

- 2. Description:
  - a. [ ]
  - b. [ ]
  - c. [ ]
  - d. [ ]
  - e. [ ]
- 3. Assembly components:
  - a. [ ]
  - b. [ ]
  - c. [ ]
  - d. [ ]
  - e. [ ]
  - f. [ ]
  - g. [ ]
  - h. [ ]
  - i. [ ]
  - j. [ ]

*Modify as required.*

**SECTION 13 47 14 – IMPRESSED CURRENT CATHODIC PROTECTION, PART 2, SUBPARAGRAPH 2.2.D**

**DELETE:**

- 1. Install 25 type 2684Z anodes in each groundbed, spaced 10 feet to 15feet apart. Provide a minimum groundbed depth of 415-feet, active length shall be 265-feet, minimum, and inactive length shall be 145-feet, minimum.

**SUBSTITUTE:**

1. [REDACTED].

*Modify as required.*

**SECTION 13 47 14 – IMPRESSED CURRENT CATHODIC PROTECTION, PART 2, SUBPARAGRAPH 2.2.D.10.e**

**DELETE:**

- 4) Sufficient copper shorting straps and 0.01 ohm Holloway Type RS shunts to electrically bond each anode lead terminal to the rectifier positive lead bus bar as shown on the Drawings.

**SUBSTITUTE:**

- 4) [REDACTED].

*Select casing type.*

**SECTION 13 47 14 – IMPRESSED CURRENT CATHODIC PROTECTION, PART 2, SUBPARAGRAPH 2.2.D.21**

**DELETE:**

- b. Material: *(In its entirety)*

**SUBSTITUTE:**

- b. Material:
  - 1) Standard weight [REDACTED], minimum Schedule [REDACTED].
  - 2) [REDACTED] casing: In accordance with [REDACTED].
  - 3) Good condition, durable, and watertight.
  - 4) Non-toxic, resistant to water and soil corrosiveness.
  - 5) Meet local authority well drilling standards and withstand installation, grouting, and operating stresses.

*Modify as required.*

**SECTION 13 47 14 – IMPRESSED CURRENT CATHODIC PROTECTION, PART 2, SUBPARAGRAPH 2.2.D.21**

**DELETE:**

- c. Nominal wall thickness for 6-inch or larger diameter steel casing: 1/4-inch thick.

**SUBSTITUTE:**

- c. Nominal wall thickness for [REDACTED]-inch or larger diameter steel casing: [REDACTED]-inch thick.
-

## DIVISION 22

**Engineer: If SECTION 22 00 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 22 00 00 – PLUMBING, PART 1, SUBPARAGRAPH 1.2.E

**DELETE:**

1. 60 – Drinking Water Treated Chemicals

**SUBSTITUTE:**

1. 60 – Drinking Water Treated Chemicals – Health Effects

**Engineer: If SECTION 22 00 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 22 00 00 – PLUMBING, PART 2, SUBPARAGRAPH 2.1.J

**DELETE:**

1. EIM WB Series

**SUBSTITUTE:**

1. EIM/Bettis WB Series

**Engineer: If SECTION 22 11 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 22 11 19 – DOMESTIC WATER PIPING SPECIALTIES, SUBPARAGRAPH 1.1

**DELETE:**

- B. Related Sections *(In their entirety)*

**SUBSTITUTE:**

- B. Related Sections:
  1. SECTION 01 60 00 – MATERIAL AND EQUIPMENT
  2. SECTION 01 74 19 – CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
  3. SECTION 22 05 00 – COMMON WORK RESULTS FOR PLUMBING
  4. SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS
  5. SECTION 26 05 26 – GROUNDING AND BONDING
  6. SECTION 33 14 21 - BACKFLOW PREVENTION ASSEMBLIES

**Engineer: If SECTION 22 11 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 22 11 19 – DOMESTIC WATER PIPING SPECIALTIES, SUBPARAGRAPH 2.1.A

**DELETE:**

1. As specified in SECTION 22 11 00.

**SUBSTITUTE:**

1. As specified in SECTION 33 14 21.

**Engineer: If SECTION 22 11 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 22 11 19 – DOMESTIC WATER PIPING SPECIALTIES, SUBPARAGRAPH 2.1**

**DELETE:**

- B. Water PRVs: *(In their entirety)*

**Engineer: If SECTION 22 11 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 22 11 19 – DOMESTIC WATER PIPING SPECIALTIES, SUBPARAGRAPH 2.2**

**DELETE:**

- C. BFPAs: As specified in SECTION 22 11 00.

**SUBSTITUTE:**

- C. BFPAs: As specified in SECTION 33 14 21.

**Engineer: If SECTION 22 11 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 22 11 19 – DOMESTIC WATER PIPING SPECIALTIES, SUBPARAGRAPH 2.2**

**DELETE:**

- D. Water PRVs: *(In their entirety)*

**Engineer: If SECTION 22 11 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 22 11 19 – DOMESTIC WATER PIPING SPECIALTIES**

**DELETE:**

- Footers *(In their entirety)*

**SUBSTITUTE:**

**SECTION 22 11 19  
DOMESTIC WATER PIPING SPECIALTIES**

## DIVISION 23

**Engineer: If SECTION 23 05 93 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 23 05 93 – HVAC SYSTEMS TESTING, ADJUSTING, AND BALANCING, PART 3, SUBPARAGRAPH 3.2.A.5.b

**ADD:**

- 3) At least one air path from fan to final branch duct termination shall have all dampers fully open in each system.
- 4) Achieve final air quantities by adjusting fan speed.

### SECTION 23 09 00 – HVAC CONTROLS, PART 1, SUBPARAGRAPH 1.4.A.2

**ADD:**

- f. Design system and equipment to perform under the following conditions:
  - 1) Outside design ambient temperature conditions:
    - a) Summer: [ ] dry bulb/[ ] wet bulb °F.
    - b) Winter: -[ ] dry bulb °F.
  - 2) Indoor temperature:
    - a) Summer maximum: [ ]°F.
    - b) Winter minimum: [ ]°F.
  - 3) Altitude: [ ] feet above mean sea level.
  - 4) Seismic: UBC Zone 1.

**Engineer: If SECTION 23 31 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 23 31 00 – DUCTWORK AND ACCESSORIES, PART 2, SUBPARAGRAPH 2.2

**DELETE:**

- E. Hanger Rod, Straps, Half and Full Rounds: ASTM A 36 galvanized steel and applicable to attaching method and supports.

**SUBSTITUTE:**

- E. Hanger Rod, Straps, Half and Full Rounds: ASTM A 36 galvanized steel and applicable to attaching method and supports. Below grade and exterior ductwork supports shall match ductwork material.



## DIVISION 26

---

### *Specify the Project Elevation.*

#### **SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL, PART 1, SUBPARAGRAPH 1.6**

##### **DELETE:**

- A. Materials and equipment shall be designed and constructed for continuous operation, at rated current and voltage, at the Project elevation of 6,000 feet, 104°F ambient and 95% relative humidity. The Equipment Manufacturer shall submit a certified letter in the Shop Drawing Submittal stating the equipment provided meets this requirement.

##### **SUBSTITUTE:**

- A. Materials and equipment shall be designed and constructed for continuous operation, at rated current and voltage, at [ ] feet, 104°F ambient and 95% relative humidity. The Equipment Manufacturer shall submit a certified letter in the Shop Drawing Submittal stating the equipment provided meets this requirement.
- 

### *Modify as required.*

#### **SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 1, SUBPARAGRAPH 1.3**

##### **DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

##### **SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

### *Modify as required.*

#### **SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.E.2**

##### **DELETE:**

- b. Rated for 277/480 V or 120/208 V, three-phase, four-wire operation as shown on the Drawings.

##### **SUBSTITUTE:**

- b. Rated for [ ] V, [ ]-phase, [ ]-wire operation as shown on the Drawings.

### *Modify as required.*

#### **SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.E**

##### **DELETE:**

- 3. Short-circuit current equipment rating: Fully rated; series connected unacceptable. Minimum of 22,000 A rms symmetrical. Rating shall apply to the panelboard as a complete unit with short-circuit

current rating equal to or greater than the integrated equipment rating shown on the panel schedule or on the plans.

**SUBSTITUTE:**

3. Short-circuit current equipment rating: Fully rated; series connected unacceptable. Minimum of [ ] A rms symmetrical. Rating shall apply to the panelboard as a complete unit with short-circuit current rating equal to or greater than the integrated equipment rating shown on the panel schedule or on the plans.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.E.4**

**DELETE:**

- a. In accordance with NEMA 250, Type 12, industrial use.

**SUBSTITUTE:**

- a. In accordance with NEMA 250, Type [ ], industrial use.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.F**

**DELETE:**

2. Rating: Three-phase, 480 VAC primary, 15 kVA transformer, 120/208 VAC secondary.

**SUBSTITUTE:**

2. Rating: [ ]-phase, [ ] VAC primary, [ ] kVA transformer, [ ] VAC secondary.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.F**

**DELETE:**

5. Short-circuit current equipment rating: Fully rated; series connected not acceptable. Rating: 22,000 A rms symmetrical.

**SUBSTITUTE:**

5. Short-circuit current equipment rating: Fully rated; series connected not acceptable. Rating: [ ] A rms symmetrical at [ ] VAC.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.G**

**DELETE:**

2. Minimum interrupt rating: 65,000 A.

**SUBSTITUTE:**

2. Minimum interrupt rating: [ ] A.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.G**

**DELETE:**

7. Enclosure: In accordance with NEMA 250, Type 12, industrial use.

**SUBSTITUTE:**

7. Enclosure: In accordance with NEMA 250, Type [REDACTED], industrial use.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.H**

**DELETE:**

2. Minimum interrupt rating: 65,000 A.

**SUBSTITUTE:**

2. Minimum interrupt rating: [REDACTED] A.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.H**

**DELETE:**

7. Enclosure: NEMA 250, Type 12, industrial use.

**SUBSTITUTE:**

7. Enclosure: NEMA 250, Type [REDACTED], industrial use.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.I**

**DELETE:**

1. Disconnects shall be provided with NEMA 3R secondary enclosed circuit breaker disconnect/safety switches. Circuit breakers shall be provided with adjustable LSIG electronic trip units when shown on the Drawings.

**SUBSTITUTE:**

1. Disconnects shall be provided with NEMA [REDACTED] secondary enclosed circuit breaker disconnect/safety switches. Circuit breakers shall be provided with adjustable LSIG electronic trip units when shown on the Drawings.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.I**

**DELETE:**

11. Fuse mountings shall reject Class H fuses and accept only the current-limiting fuses specified.

**SUBSTITUTE:**

11. Fuse mountings shall reject Class [ ] fuses and accept only the current-limiting fuses specified.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.M.2**

**DELETE:**

a. Lights: Full voltage 120 VAC and 125 VDC, high-visibility LED, push-to-test type.

**SUBSTITUTE:**

a. Lights: Full voltage [ ] and [ ] VDC, high-visibility LED, push-to-test type.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.M.4.a**

**DELETE:**

2) Rating: 10 A continuous at 125 VDC.

**SUBSTITUTE:**

2) Rating: [ ] A continuous at 125 VDC.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.R**

**DELETE:**

1. 120 VAC and 125 VDC relays.

**SUBSTITUTE:**

1. [ ] VAC and [ ] VDC relays.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.R**

**DELETE:**

6. Coil voltage: 110 VDC or 120 VAC.

**SUBSTITUTE:**

6. Coil voltage: [ ].

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.T**

**DELETE:**

8. Enclosure: In accordance with NEMA 250, Type 12, dust-tight, drip-tight, industrial use, suitable for outdoor installations.

**SUBSTITUTE:**

8. Enclosure: In accordance with NEMA 250, Type [REDACTED], dust-tight, drip-tight, industrial use, suitable for outdoor installations.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.U**

**DELETE:**

2. Contact rating: 10 A minimum at 120 VAC.
3. Coil voltage: 125 VDC or 120 VAC.

**SUBSTITUTE:**

2. Contact rating: [REDACTED].
3. Coil voltage: [REDACTED].

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.V**

**DELETE:**

1. Panelboard transformers shall be totally enclosed non-ventilated NEMA 3R type with copper windings. Transformers shall be provided weathershield kits and insulation pads to reduce noise.

**SUBSTITUTE:**

1. Panelboard transformers [REDACTED] shall be totally enclosed non-ventilated NEMA 3R type with copper windings. Transformers shall be provided weathershield kits and insulation pads to reduce noise.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2, SUBPARAGRAPH 2.2.V**

**DELETE:**

12. The transformer enclosure shall be made of heavy gauge steel and finished utilizing a continuous process of de-greasing, cleaning, and phosphatizing, followed by electrostatic deposition of a polymer polyester powder coating and baking. The enclosure construction shall be ventilated, NEMA two drip proof, with lighting holes. Ventilation openings shall be protected against falling dirt and debris. Provide enclosure weathershield(s) where located either outdoors or within the vicinity of a moisture prone area.

**SUBSTITUTE:**

12. The transformer enclosure shall be made of heavy gauge steel and finished utilizing a continuous process of de-greasing, cleaning, and phosphatizing, followed by electrostatic deposition of a polymer polyester powder coating and baking. The enclosure construction shall be ventilated, NEMA [REDACTED] drip proof, with lighting holes. Ventilation openings shall be protected against falling dirt and debris. Provide enclosure weathershield(s) where located either outdoors or within the vicinity of a moisture prone area.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 2,  
SUBPARAGRAPH 2.2.BB**

**DELETE:**

4. Capacity, EUH 5 kW electric coil, arranged for 480 V, 3-phase elements.

**SUBSTITUTE:**

4. Capacity, EUH [ ] kW electric coil, arranged for 480 V, 3-phase elements.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 3,  
SUBPARAGRAPH 3.3.B.3**

**DELETE:**

- b. Devices: 48-inches above floor or match existing.
- c. Thermostat: 54-inches above floor or match existing.

**SUBSTITUTE:**

- b. Devices: [ ]-inches above floor or match existing.
- c. Thermostat: [ ]-inches above floor or match existing or match minimum height required by building code.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 3,  
SUBPARAGRAPH 3.3.C**

**DELETE:**

3. Install in conduit runs at least every 150-feet or after the equivalent of three right-angle bends.

**SUBSTITUTE:**

3. Install in conduit runs at least every [ ]-feet or after the equivalent of three right-angle bends.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 3,  
SUBPARAGRAPH 3.3.I.1**

**DELETE:**

- b. Mounting: In accordance with NEMA 250, Type 4X enclosure.
- c. Mounting height: 4-feet above floor or finished grade.

**SUBSTITUTE:**

- b. Mounting: In accordance with NEMA 250, Type [ ] enclosure.
- c. Mounting height: [ ]-feet above floor or finished grade.

*Modify as required.*

**SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS, PART 3, SUBPARAGRAPH 3.3.L**

**DELETE:**

1. Furnish zinc-rich primer; paint cut ends prior to installation. Provide caps on the ends from the floor, the walkway, or the pad to 7-feet above. Provide caps on bolts and all-thread on the bottom of the channel.

**SUBSTITUTE:**

1. Furnish zinc-rich primer; paint cut ends prior to installation. Provide caps on the ends from the floor, the walkway, or the pad to [ ]-feet above. Provide caps on bolts and all-thread on the bottom of the channel.

---

*Modify as required.*

**SECTION 26 05 13 – MEDIUM-VOLTAGE CABLES, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 05 13 – MEDIUM-VOLTAGE CABLES, PART 1, SUBPARAGRAPH 1.3.C.8**

**DELETE:**

- d. For cables and conductor sizes for pulling lengths longer than 100-feet.

**SUBSTITUTE:**

- d. For cables and conductor sizes for pulling lengths longer than [ ]-feet.

*Modify as required.*

**SECTION 26 05 13 – MEDIUM-VOLTAGE CABLES, PART 2, SUBPARAGRAPH 2.3.C.2**

**DELETE:**

- d. Exterior stress cones shall be four-skirt type.

**SUBSTITUTE:**

- d. Exterior stress cones shall be [ ]-skirt type.

*Modify as required.*

**SECTION 26 05 13 – MEDIUM-VOLTAGE CABLES, PART 3, SUBPARAGRAPH 3.2.A**

**DELETE:**

1. When ambient temperature is below 32°F cable shall not be installed. When ambient temperature is below 50°F, cable reels shall be stored at 70°F for at least 1 day before installation.

**SUBSTITUTE:**

1. When ambient temperature is below [ ]°F cable shall not be installed. When ambient temperature is below [ ]°F, cable reels shall be stored at 70°F for at least 1 day before installation.

*Modify as required.*

**SECTION 26 05 13 – MEDIUM-VOLTAGE CABLES, PART 3, SUBPARAGRAPH 3.2.B**

**DELETE:**

7. Exterior stress cones shall be four skirt type.

**SUBSTITUTE:**

7. Exterior stress cones shall be [ ]-skirt type.

---

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 1, SUBPARAGRAPH 1.3.C.11**

**DELETE:**

- c. For cables and conductors larger than #2/0 AWG and pulling lengths longer than 100 feet.
- d. For cable and conductor sizes for pulling lengths longer than 200 feet.
- e. Fiber cable pulling calculations for pulling lengths longer than 100 feet.

**SUBSTITUTE:**

- c. For cables and conductors larger than [ ] AWG and pulling lengths longer than 100-feet.
- d. For cable and conductor sizes for pulling lengths longer than [ ] feet.
- e. Fiber cable pulling calculations for pulling lengths longer than [ ] feet.

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 2, SUBPARAGRAPH 2.2.C**

**DELETE:**

7. Type 6 – #18 AWG, multi-twisted, shielded triads with a common, overall shield instrumentation cable: Designed for use as instrumentation, process control, and computer cable, in accordance with ICEA/NEMA S 73 532/WC 57:

**SUBSTITUTE:**

7. Type 6 – [ ] AWG, multi-twisted, shielded triads with a common, overall shield instrumentation cable: Designed for use as instrumentation, process control, and computer cable, in accordance with ICEA/NEMA S 73 532/WC 57:



*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 2, SUBPARAGRAPH 2.2.E.1.a**

**DELETE:**

- 1) 4 twisted pairs shielded, #23 AWG solid bare, annealed copper conductors.

**SUBSTITUTE:**

- 1) [ ] twisted pairs shielded, [ ] AWG solid bare, annealed copper conductors.

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 2, SUBPARAGRAPH 2.2.F**

**DELETE:**

2. Rated 3,000 A continuous, three-phase, four-wire, 600 V, internal ground. The minimum available short-circuit current at the input end shall be 65,000 A rms symmetrical.

**SUBSTITUTE:**

2. Rated [ ] A continuous, three-phase, four-wire, 600 V, internal ground. The minimum available short-circuit current at the input end shall be [ ] A rms symmetrical.

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 2, SUBPARAGRAPH 2.2.F**

**DELETE:**

6. Plug-in busway shall be identical to feeder construction and performance except it shall have dead-front hinged cover type plug outlets positioned for feeders to the electrical equipment. Outlets shall be usable simultaneously.

**SUBSTITUTE:**

6. Plug-in busway shall be identical to feeder construction and performance except it shall have dead-front hinged cover type plug outlets positioned for feeders to [ ]. Outlets shall be usable simultaneously.

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 2, SUBPARAGRAPH 2.2.F.7**

**DELETE:**

- e. Operating switch type plugs shall have a positive quick-make, quick-break interrupter. Circuit breaker plugs shall have true rms electronic sensing and an interrupting rating of at least 65,000 A rms, with interchangeable rating plugs.

**SUBSTITUTE:**

- e. Operating switch type plugs shall have a positive quick-make, quick-break interrupter. Circuit breaker plugs shall have true rms electronic sensing and an interrupting rating of at least [ ] A rms, with interchangeable rating plugs.

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 2, SUBPARAGRAPH 2.3.B.2**

**DELETE:**

- a. Runs longer than 150-feet when busway is not free to move at ends of run.

**SUBSTITUTE:**

- a. Runs longer than [ ]-feet when busway is not free to move at ends of run.

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 3, SUBPARAGRAPH 3.6**

**DELETE:**

- C. Electrical Tests for Conductors No. 6 and Larger:

**SUBSTITUTE:**

- C. Electrical Tests for Conductors No. [ ] and Larger:

*Modify as required.*

**SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, PART 3, SUBPARAGRAPH 3.6.C.1**

**DELETE:**

- d. Investigate values less than 50 megohms.

**SUBSTITUTE:**

- d. Investigate values less than [ ] megohms.

---

*Modify as required.*

**SECTION 26 05 26 – GROUNDING AND BONDING, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 05 26 – GROUNDING AND BONDING, PART 3, SUBPARAGRAPH 3.1**

**DELETE:**

- D. Ground cable shall have a minimum cover of 30 inches below finished grade.
- E. Ground cable near the base of a structure shall be installed no closer than 24 inches to the structure.

**SUBSTITUTE:**

- D. Ground cable shall have a minimum cover of [ ] inches below finished grade.
- E. Ground cable near the base of a structure shall be installed no closer than [ ] inches to the structure.

*Modify as required.*

**SECTION 26 05 26 – GROUNDING AND BONDING, PART 3, SUBPARAGRAPH 3.2.A**

**DELETE:**

- 5. Bolt connections to equipment ground bus. Cable connections to bus bar shall be made with compression one hole or two-hole lugs.

**SUBSTITUTE:**

5. Bolt connections to equipment ground bus. Cable connections to bus bar shall be made with compression [REDACTED].

*Modify as required.*

**SECTION 26 05 26 – GROUNDING AND BONDING, PART 3, SUBPARAGRAPH 3.2.E**

**DELETE:**

3. The following shall be permanently and effectively bonded to the ground grid with a #6 AWG copper conductor: Equipment, enclosures, metallic structures, metal sheathing, exposed metal vertical structures, stairs, railings, hand rails, fences, fence/wall poles, gates, door frames, window frames, tanks, vessels, skids, etc.

**SUBSTITUTE:**

3. The following shall be permanently and effectively bonded to the ground grid with a [REDACTED] AWG copper conductor: Equipment, enclosures, metallic structures, metal sheathing, exposed metal vertical structures, stairs, railings, hand rails, fences, fence/wall poles, gates, door frames, window frames, tanks, vessels, skids, etc.

*Modify as required.*

**SECTION 26 05 26 – GROUNDING AND BONDING, PART 3, SUBPARAGRAPH 3.2.F**

**DELETE:**

2. Connect noncurrent-carrying metal parts, hatches, stairs, and any metallic raceway grounding bushings with #6 AWG copper conductor.

**SUBSTITUTE:**

2. Connect noncurrent-carrying metal parts, hatches, stairs, and any metallic raceway grounding bushings with [REDACTED] AWG copper conductor.

*Modify as required.*

**SECTION 26 05 26 – GROUNDING AND BONDING, PART 3, SUBPARAGRAPH 3.3.B.1**

**DELETE:**

- b. Main ground electrode system resistance to ground shall be no greater than 5 ohms.

**SUBSTITUTE:**

- b. Main ground electrode system resistance to ground shall be no greater than [REDACTED] ohms.

---

*Modify as required.*

**SECTION 26 05 33 – RACEWAYS, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [REDACTED] days after receipt. Resubmittals will be subject to the same review time.

**Engineer: If SECTION 26 05 33 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 26 05 33 – RACEWAYS, PART 2, SUBPARAGRAPH 2.1**

**DELETE:**

- C. Polyolefin Polymer-Coated RGS Conduit: *(In its entirety)*

**Engineer: If SECTION 26 05 33 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 26 05 33 – RACEWAYS, PART 2, SUBPARAGRAPH 2.1.L.1**

**DELETE:**

- c. Gafco Green, AF Series

**Engineer: If SECTION 26 05 33 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 26 05 33 – RACEWAYS, PART 2, SUBPARAGRAPH 2.1.L.2**

**DELETE:**

- c. Gafco Green, AF Series

**Engineer: If SECTION 26 05 33 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 26 05 33 – RACEWAYS, PART 2, SUBPARAGRAPH 2.3.A**

**DELETE:**

- 3. Polyolefin polymer-coated RGS conduit: *(In its entirety)*

*Modify as required.*

**SECTION 26 05 33 – RACEWAYS, PART 3, SUBPARAGRAPH 3.1**

**DELETE:**

- H. Avoid passageway and access obstructions. Conduits installed horizontally shall allow headroom of at least 7-feet except in areas where headroom cannot be maintained because of other considerations, as determined by the ENGINEER.

**SUBSTITUTE:**

- H. Avoid passageway and access obstructions. Conduits installed horizontally shall allow headroom of at least [ ]-feet except in areas where headroom cannot be maintained because of other considerations, as determined by the ENGINEER.

*Modify as required.*

**SECTION 26 05 33 – RACEWAYS, PART 3, SUBPARAGRAPH 3.2.E**

**DELETE:**

- 1. Provide floor support along conduits at 5-foot intervals using stainless steel Unistrut floor stands. Conduits shall be a minimum of 12-inches off the finished floor. Support from structural members only, at intervals not exceeding NFPA 70 requirements, and in any case not exceeding 10-feet. Do not support from piping, pipe supports, or other raceways. No drilling into roof decking without written approval from the ENGINEER.

**SUBSTITUTE:**

1. Provide floor support along conduits at [ ]-foot intervals using stainless steel Unistrut floor stands. Conduits shall be a minimum of [ ]-inches off the finished floor. Support from structural members only, at intervals not exceeding NFPA 70 requirements, and in any case not exceeding 10-feet. Do not support from piping, pipe supports, or other raceways. No drilling into roof decking without written approval from the ENGINEER.

*Modify as required.*

**SECTION 26 05 33 – RACEWAYS, PART 3, SUBPARAGRAPH 3.2.F**

**DELETE:**

1. Install concealed raceways with a minimum of bends in the shortest practical distance. Bends shall not exceed 270 degrees between pulling points. Pull boxes shall be provided for straight runs not to exceed 200 feet.

**SUBSTITUTE:**

1. Install concealed raceways with a minimum of bends in the shortest practical distance. Bends shall not exceed 270 degrees between pulling points. Pull boxes shall be provided for straight runs not to exceed [ ] feet.

*Modify as required.*

**SECTION 26 05 33 – RACEWAYS, PART 3, SUBPARAGRAPH 3.2.G**

**DELETE:**

2. Provide expansion/deflection joints for 50°F maximum temperature variation.

**SUBSTITUTE:**

2. Provide expansion/deflection joints for [ ]°F maximum temperature variation.

*Modify as required.*

**SECTION 26 05 33 – RACEWAYS, PART 3, SUBPARAGRAPH 3.2.L**

**DELETE:**

1. Grade: Maintain minimum grade of 4-inches in 100-feet, either from one manhole, handhole, or pull box to the next, or from a high point between them, depending on surface contour.

**SUBSTITUTE:**

1. Grade: Maintain minimum grade of [ ]-inches in [ ]-feet, either from one manhole, handhole, or pull box to the next, or from a high point between them, depending on surface contour.

**Engineer: If SECTION 26 05 33 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 26 05 33 – RACEWAYS, PART 3, SUBPARAGRAPH 3.2.L**

**DELETE:**

10. Concrete Encasement: *(In its entirety)*

**SUBSTITUTE:**

10. Concrete Encasement:
  - a. Class A concrete as specified in SECTION 03 30 00 when under roadways or subjected to vehicle loads; otherwise utilize Class B concrete.

- b. Contains 3 lbs of red oxide per 94 lb sack of cementitious material.
- 

*Modify as required.*

### **SECTION 26 05 70 – ELECTRICAL SYSTEMS ANALYSIS, PART 1, SUBPARAGRAPH 1.3.C**

#### **DELETE:**

1. Provide hardcopies and an electronic copy of the ESA in ESA EasyPower version 10 or newer. Provide one read-only copy and one read/writable copy to the OWNER via the DW approved dropbox.

#### **SUBSTITUTE:**

1. Provide hardcopies and an electronic copy of the ESA in ESA EasyPower version [REDACTED]. Provide one read-only copy and one read/writable copy to the OWNER via the DW approved dropbox.

*Modify as required.*

### **SECTION 26 05 70 – ELECTRICAL SYSTEMS ANALYSIS, PART 1, SUBPARAGRAPH 1.3.C**

#### **DELETE:**

11. Load flow and voltage drop study: An initial study shall be submitted 30 days prior to energizing, startup, or commissioning of equipment.
12. PF correction study: An initial study shall be submitted 30 days prior to energizing, startup, or commissioning of equipment.

#### **SUBSTITUTE:**

11. Load flow and voltage drop study: An initial study shall be submitted [REDACTED] days prior to energizing, startup, or commissioning of equipment.
12. PF correction study: An initial study shall be submitted [REDACTED] days prior to energizing, startup, or commissioning of equipment.

*Modify as required.*

### **SECTION 26 05 70 – ELECTRICAL SYSTEMS ANALYSIS, PART 1, SUBPARAGRAPH 1.3.D.4.b**

#### **DELETE:**

- 1) Complete ESA in ESA EasyPower version 10.0 or newer. Provide one read-only copy and one read/writable copy of the completed EasyPower ESA to the OWNER via the DW approved dropbox. Any software library revisions which deviate from standard and are used for the creation or modification of the EasyPower ESA shall be identified through written correspondence to the OWNER. Any revised library files shall be copied and provided via the DW approved dropbox.

#### **SUBSTITUTE:**

- 1) Complete ESA in ESA EasyPower version [REDACTED]. Provide one read-only copy and one read/writable copy of the completed EasyPower ESA to the OWNER via the DW approved dropbox. Any software library revisions which deviate from standard and are used for the creation or modification of the EasyPower ESA shall be identified through written correspondence to the OWNER. Any revised library files shall be copied and provided via the DW approved dropbox.

*Modify as required.*

### **SECTION 26 05 70 – ELECTRICAL SYSTEMS ANALYSIS, PART 1, SUBPARAGRAPH 1.4.A.2**

#### **DELETE:**

- a. Studies shall be performed in ESA Easypower version 10 or newer.

**SUBSTITUTE:**

- a. Studies shall be performed in ESA Easypower version [ ] .

*Modify as required.*

**SECTION 26 05 70 – ELECTRICAL SYSTEMS ANALYSIS, PART 1, SUBPARAGRAPH 1.4.G.7**

**DELETE:**

- i. PF measurements shall be performed to verify the study result. The measurements shall be conducted over a 7-day period.

**SUBSTITUTE:**

- i. PF measurements shall be performed to verify the study result. The measurements shall be conducted over a [ ]-day period.

---

*Modify as required.*

**SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS, PART 3, SUBPARAGRAPH 3.2.B**

**DELETE:**

2. Electrical tests for conductors, No. 6 and larger:

**SUBSTITUTE:**

2. Electrical tests for conductors, No. [ ] and larger:

*Modify as required.*

**SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS, PART 3, SUBPARAGRAPH 3.2.B.2.a**

**DELETE:**

- 4) Investigate values less than 100 megohms.

**SUBSTITUTE:**

- 4) Investigate values less than [ ] megohms.

*Modify as required.*

**SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS, PART 3, SUBPARAGRAPH 3.2.E**

**DELETE:**

1. General: Inspection and testing limited to motors rated 1/2 hp and larger. Visual and mechanical inspection:

**SUBSTITUTE:**

1. General: Inspection and testing limited to motors rated [ ] hp and larger. Visual and mechanical inspection:

*Modify as required.*

**SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS, PART 3, SUBPARAGRAPH 3.2.G**

**DELETE:**

1. General: Inspection and testing limited to circuit breakers rated 100 amperes and larger and to motor circuit protector breakers rated 50 A and larger.

**SUBSTITUTE:**

1. General: Inspection and testing limited to circuit breakers rated [ ] amperes and larger and to motor circuit protector breakers rated [ ] A and larger.

*Modify as required.*

**SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS, PART 3, SUBPARAGRAPH 3.2.H.2.a**

**DELETE:**

- 2) The main ground electrode system's resistance to ground shall be no greater than 1 ohm.

**SUBSTITUTE:**

- 2) The main ground electrode system's resistance to ground shall be no greater than [ ] ohms.

*Modify as required.*

**SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS, PART 3, SUBPARAGRAPH 3.2.I.2**

**DELETE:**

- c. Current injection through overload unit at 300% of motor full-load current and monitor trip time:

**SUBSTITUTE:**

- c. Current injection through overload unit at [ ]% of motor full-load current and monitor trip time:

*Modify as required.*

**SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS, PART 3, SUBPARAGRAPH 3.2.I.2.c**

**DELETE:**

- 2) Investigate values in excess of 120 seconds.

**SUBSTITUTE:**

- 2) Investigate values in excess of [ ] seconds.

---

*Modify as required.*

**SECTION 26 09 00 – CONTROL AND PROTECTION EQUIPMENT, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.



**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 09 00 – CONTROL AND PROTECTION EQUIPMENT, PART 2, SUBPARAGRAPH 2.2.A.2.a**

**DELETE:**

- 26) The relay power supply shall be 125 VDC, unless otherwise shown on the Drawings.

**SUBSTITUTE:**

- 26) The relay power supply shall be [ ], unless otherwise shown on the Drawings.

*Modify as required.*

**SECTION 26 09 00 – CONTROL AND PROTECTION EQUIPMENT, PART 2, SUBPARAGRAPH 2.2.B.2**

**DELETE:**

- x. The relay power supply shall be 125 VDC, unless otherwise shown on the Drawings.

**SUBSTITUTE:**

- x. The relay power supply shall be [ ], unless otherwise shown on the Drawings.

*Modify as required.*

**SECTION 26 09 00 – CONTROL AND PROTECTION EQUIPMENT, PART 2, SUBPARAGRAPH 2.2.G.3**

**DELETE:**

- e. Operating power: 125 VDC, unless otherwise shown on the Drawings.

**SUBSTITUTE:**

- e. Operating power: [ ], unless otherwise shown on the Drawings.

*Modify as required.*

**SECTION 26 09 00 – CONTROL AND PROTECTION EQUIPMENT, PART 2, SUBPARAGRAPH 2.2.I**

**DELETE:**

6. SES-AM shall be maintained two position selector switch with pistol grip handle and a minimum of four spare contacts. SES-RSL and 65C-RSL shall be spring return type with pistol grip handles. Contacts shall be rated a minimum of 3 A at 125 VDC.

**SUBSTITUTE:**

6. SES-AM shall be maintained two position selector switch with pistol grip handle and a minimum of four spare contacts. SES-RSL and 65C-RSL shall be spring return type with pistol grip handles. Contacts shall be rated a minimum of 3 A at [ ].

*Use if 48 70 00 is not required for your project.*

**SECTION 26 09 00 – CONTROL AND PROTECTION EQUIPMENT, PART 3, SUBPARAGRAPH 3.1**

**DELETE:**

- G. Field adjust trip settings of protective devices and SPs as specified in SECTION 26 05 70, SECTION 26 08 00, and SECTION 48 70 00.

**SUBSTITUTE:**

- G. Field adjust trip settings of protective devices and SPs as specified in SECTION 26 05 70 and SECTION 26 08 00.

*Modify as required.*

**SECTION 26 12 13 – PAD-MOUNTED TRANSFORMERS, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 12 13 – PAD-MOUNTED TRANSFORMERS, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

- 1. Rating:

kVA	High-Voltage (HV) Phase/Line (V)	HV minimum BIL (kV)	Low-Voltage (LV) Line (V)	LV minimum BIL (kV)
3,000	13,200D	150	4,160Y/2,400	75

**SUBSTITUTE:**

- 1. Rating:

kVA	High-Voltage (HV) Phase/Line (V)	HV minimum BIL (kV)	Low-Voltage (LV) Line (V)	LV minimum BIL (kV)
[ ]	[ ]	[ ]	[ ]	[ ]

*Modify as required.*

**SECTION 26 12 13 – PAD-MOUNTED TRANSFORMERS, PART 2, SUBPARAGRAPH 2.2.A.8**

**DELETE:**

- b. The grounding transformer shall be separately mounted, dry type, air-cooled single-phase transformer with class B insulation. It shall be rated for the charging current of the system on which it is applied and have the same on-time rating as the resistor of the same system. The transformer shall be rated for 2,400 V primary, single-phase operation with a 240 V secondary; system shall be rated for a minimum

20 kVA, continuous duty, capable of limiting ground current between 2 A and 10 A, depending on capacitive charging current at the Project site.

**SUBSTITUTE:**

- b. The grounding transformer shall be separately mounted, dry type, air-cooled single-phase transformer with class B insulation. It shall be rated for the charging current of the system on which it is applied and have the same on-time rating as the resistor of the same system. The transformer shall be rated for [ ] V primary, single-phase operation with a [ ] V secondary; system shall be rated for a minimum 20 kVA, continuous duty, capable of limiting ground current between [ ] A and [ ] A, depending on capacitive charging current at the Project site.

*Modify as required.*

**SECTION 26 12 15 – SECONDARY SUBSTATION TRANSFORMERS, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 12 15 – SECONDARY SUBSTATION TRANSFORMERS, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

- 1. Rating:

kVA	High-Voltage (HV) Phase/Line (V)	HV minimum BIL (kV)	Low-Voltage (LV) Line (V)	LV minimum BIL (kV)
300	4,160D	60	480Y/277	30

**SUBSTITUTE:**

- 1. Rating:

kVA	High-Voltage (HV) Phase/Line (V)	HV minimum BIL (kV)	Low-Voltage (LV) Line (V)	LV minimum BIL (kV)
[ ]	[ ]	[ ]	[ ]	[ ]

*Modify as required.*

**SECTION 26 12 15 – SECONDARY SUBSTATION TRANSFORMERS, PART 2, SUBPARAGRAPH 2.2.A.5**

**DELETE:**

- d. The Transformer Manufacturer shall provide 600 A non-load-break elbow terminators for each bushing.

**SUBSTITUTE:**

- d. The Transformer Manufacturer shall provide [ ] A non-load-break elbow terminators for each bushing.

*Modify as required.*

**SECTION 26 12 15 – SECONDARY SUBSTATION TRANSFORMERS, PART 2, SUBPARAGRAPH 2.2.A.9**

**DELETE:**

- h. Provide warning signs marked DANGER – 4,160 V – KEEP OUT.

**SUBSTITUTE:**

- h. Provide warning signs marked DANGER – [ ] V – KEEP OUT.

---

*Modify as required. Ensure Project schedule has enough time to accommodate specified review times.*

**SECTION 26 13 23 – MEDIUM-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 13 23 – MEDIUM-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

2. The ratings for the integrated switchgear assembly shall be: *(In its entirety)*

**SUBSTITUTE:**

2. The ratings for the integrated switchgear assembly shall be:
- a. Nominal: [ ] kV.
  - b. Maximum: [ ] kV.
  - c. BIL: [ ] kV.
  - d. Main bus continuous: [ ] amperes.
  - e. Short-circuit ratings:
    - 1) Rms symmetrical: [ ] amperes.
    - 2) 3-phase symmetrical at rated nominal voltage: [ ] MVA.
    - 3) Duty-cycle fault-closing, rms asymmetrical: [ ] amperes.

*Modify as required.*

**SECTION 26 13 23 – MEDIUM-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.E.2**

**DELETE:**

- a. The load interrupter switch shall be a 5 kV, three-pole, two-position, gang-operated, bottom-hinged, stationary load-break type, mounted on a rigid, welded-steel frame. The incoming load interrupter switch shall provide for bottom entry, side busbar exit. The tie breaker load interrupter switch shall provide for top entry, side busbar exit. The transformer load interrupter switch shall provide for bottom entry, side busbar exit. The main switch blades shall be high conductivity, hard drawn copper. Mechanical linkages shall be porcelain or epoxy, with leakage and flashover distances equal to the mounting insulators. The circuit interrupting arc shall be completely contained and vented within the arc chutes. The load-break switches shall meet the following: *(In its entirety)*

**SUBSTITUTE:**

- a. The load interrupter switch shall be a [ ] kV, three-pole, two-position, gang-operated, bottom-hinged, stationary load-break type, mounted on a rigid, welded-steel frame. The incoming load interrupter switch shall provide for bottom entry, side busbar exit. The tie breaker load interrupter switch shall provide for top entry, side busbar exit. The transformer load interrupter switch shall provide for bottom entry, side busbar exit. The main switch blades shall be high conductivity, hard drawn copper. Mechanical linkages shall be porcelain or epoxy, with leakage and flashover distances equal to the mounting insulators. The circuit interrupting arc shall be completely contained and vented within the arc chutes. The load-break switches shall meet the following:
- 1) [ ] A stationary switch, fused.
  - 2) Fused/unfused amperes rating in a vented enclosure: [ ] A.
  - 3) Maximum rated voltage: [ ] kV.
  - 4) Minimum short-circuit interrupting capacity in symmetrical, fused, at [ ] V: [ ] kA.
  - 5) Momentary rating, asymmetrical, fused: [ ] kA.
  - 6) Fault closing current, fused, rms, asym: [ ] kA.
  - 7) BIL: [ ] kV.
  - 8) Minimum dielectric strength: [ ] kV.

*Modify as required.*

**SECTION 26 13 23 – MEDIUM-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.F.1**

**DELETE:**

- a. Control power shall be 120 VAC, provided from an internal source; control power shall be protected by current-limiting fuses within the controllers.

**SUBSTITUTE:**

- a. Control power shall be [ ] VAC, provided from an internal source; control power shall be protected by current-limiting fuses within the controllers.

---

*Modify as required. Ensure Project schedule has enough time to accommodate specified review times.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

- A. The medium-voltage metal-clad switchgear includes all accessories in accordance with the Contract Documents.

**SUBSTITUTE:**

- A. The medium-voltage metal-clad switchgear includes [ ] and all accessories in accordance with the Contract Documents.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.B**

**DELETE:**

3. The switchgear shall be 5 kV class, with a maximum design voltage of 5 kV. The equipment shall operate on a service voltage of 4.16 kV, 3-phase, 3-wire, 60 Hz.

**SUBSTITUTE:**

3. The switchgear shall be [ ] kV class, with a maximum design voltage of [ ] kV. The equipment shall operate on a service voltage of [ ] kV, 3-phase, [ ]-wire, 60 Hz.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.3**

**DELETE:**

- A. Medium-Voltage Metal-Clad Switchgear, 4.76 kV, for use on 4.16 kV: *(In its entirety)*

**SUBSTITUTE:**

- A. Medium-Voltage Metal-Clad Switchgear, [ ] kV, for use on [ ] kV:

1. General:

- a. The group of indoor switchgear shall include:

- 1) [ ] A, three-phase, main bus.
- 2) Ground bus.

- b. The Drawings show the locations of necessary PT drawers, with fused draw-out type PTs.

- c. Each feeder section cell shall contain, as a minimum, the following:

- 1) Unless designated as a space provision, one vacuum circuit breaker, rated as detailed below.
- 2) One MOC auxiliary switch 6 stage.
- 3) One TOC switch, four stage.
- 4) Two sets of three CTs single secondary, ratios as shown on the Drawings, with single ration primary.
- 5) One space heater, [ ] VAC.
- 6) One thermostat.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.3.A.2**

**DELETE:**

- d. Circuit breaker compartments shall be designed to house 4.76 kV removable-element circuit breakers. Stationary primary disconnect contacts shall be silver-plated copper. Grounded metal safety shutters shall isolate primary connections in compartment when breaker is withdrawn from connected position.

**SUBSTITUTE:**

- d. Circuit breaker compartments shall be designed to house [ ] kV removable-element circuit breakers. Stationary primary disconnect contacts shall be silver-plated copper. Grounded metal safety shutters shall isolate primary connections in compartment when breaker is withdrawn from connected position.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.3.A.2.f.2)a)**

**DELETE:**

- (4) Two-position spring return actuator. Sized to fully open and close damper in conditions between -22°F through 122°F, 180 in/lb minimum torque, 120 VAC, fail closed.

**SUBSTITUTE:**

- (4) Two-position spring return actuator. Sized to fully open and close damper in conditions between -22°F through 122°F, 180 in/lb minimum torque, [ ] VAC, fail closed.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.3.A.2.f.2)b)**

**DELETE:**

- (3) Electrical: 120/1/60.

**SUBSTITUTE:**

- (3) Electrical: [ ].

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.3.A.2.f.2)**

**DELETE:**

- d) Unit heaters: Provide a self-contained electric-resistant unit heat: *(In its entirety)*

**SUBSTITUTE:**

- d) Unit heaters: Provide a self-contained electric-resistant unit heat:
  - (1) Capacity: [ ] kW.
  - (2) Electrical: [ ] V/[ ]-phase/60 Hz.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.3.A**

**DELETE:**

3. Main bus: Rated 1,200 A, tin-plated copper. Bus bars shall have a continuous current rating based on temperature rise and documented by design tests. Joints will be tin-plated with at least two bolts per joint. Bus bars will be braced to withstand magnetic stresses developed by currents equal to main power circuit front panels. Bus bars shall have fluidized bed epoxy flame retardant and non-hydroscopic insulation with a continuous current rating.

**SUBSTITUTE:**

3. Main bus: Rated [ ] A, tin-plated copper. Bus bars shall have a continuous current rating based on temperature rise and documented by design tests. Joints will be tin-plated with at least two bolts per joint. Bus bars will be braced to withstand magnetic stresses developed by currents equal to main power circuit front panels. Bus bars shall have fluidized bed epoxy flame retardant and non-hydroscopic insulation with a continuous current rating.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.3.A.5**

**DELETE:**

- a. The vacuum circuit breakers shall be:
  - 1) Nominal voltage class: 4.16 kV.
  - 2) Rated maximum voltage: 4.76 kV.
  - 3) Rated continuous current: 1,200 A.
  - 4) Rated short-circuit current at maximum voltage: 50 kA.
  - 5) Rated interrupting time: Three cycles.
  - 6) Maximum symmetrical interrupting capability: 50 kA.
  - 7) Short-time, 3 second, current carrying capability: 50 kA.
  - 8) Closing and latching capability, peak: 130 kA.
- b. The circuit breaker shall be three-pole, single throw, mechanically and electrically trip-free, with position indicator, operation counter, auxiliary switches, primary and secondary disconnecting devices, and mechanical interlocks to prevent making or breaking load current on the primary disconnects.
- c. Circuit breakers shall be able to be racked from one position to another with the compartment door closed. There shall be three distinct positions: Connected, test, and disconnect. The circuit breakers shall be equipped with a stored energy operator. The control voltages shall be:
  - 1) Spring charging motor: 120 VAC.
  - 2) Spring release, close, coil: 120 VAC.
  - 3) Trip coil: 120 VAC.
- d. The source of control power shall be the 120 VAC or as shown on the Drawings.

**SUBSTITUTE:**

- a. The vacuum circuit breakers shall be:
  - 1) Nominal voltage class: [ ] kV.
  - 2) Rated maximum voltage: [ ] kV.
  - 3) Rated continuous current: [ ] A.
  - 4) Rated short-circuit current at maximum voltage: [ ] kA.
  - 5) Rated interrupting time: [ ] cycles.
  - 6) Maximum symmetrical interrupting capability: [ ] kA.
  - 7) Short-time, 3 second, current carrying capability: [ ] kA.
  - 8) Closing and latching capability, peak: [ ] kA.



- b. The circuit breaker shall be three-pole, single throw, mechanically and electrically trip-free, with position indicator, operation counter, auxiliary switches, primary and secondary disconnecting devices, and mechanical interlocks to prevent making or breaking load current on the primary disconnects.
- c. Circuit breakers shall be able to be racked from one position to another with the compartment door closed. There shall be three distinct positions: Connected, test, and disconnect. The circuit breakers shall be equipped with a stored energy operator. The control voltages shall be:
  - 1) Spring charging motor: [ ] VAC.
  - 2) Spring release, close, coil: [ ] VAC.
  - 3) Trip coil: [ ] VAC.
- d. The source of control power shall be the [ ] VAC or as shown on the Drawings.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.3.A**

**DELETE:**

- 8. Accessories, 4.76 kV:

**SUBSTITUTE:**

- 8. Accessories, [ ] kV:

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.4.A**

**DELETE:**

- 1. Control power shall be 120 VAC or 125 VDC as specified in this Section and as shown on the Drawings, provided from an external source, control power shall be protected by current-limiting fuses within the switchgear

**SUBSTITUTE:**

- 1. Control power shall be [ ] VAC or [ ] VDC as specified in this Section and as shown on the Drawings, provided from an external source, control power shall be protected by current-limiting fuses within the switchgear

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.4.B**

**DELETE:**

- 6. The estimated size and rating of the neutral grounding resistor 1.6 ohms, 111.8 continuous current, 20 kVA. Submit the actual neutral grounding resistor sizing calculations for approval.

**SUBSTITUTE:**

- 6. The estimated size and rating of the neutral grounding resistor [ ] ohms, [ ] continuous current, [ ] kVA. Submit the actual neutral grounding resistor sizing calculations for approval.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.4.B**

**ADD:**

9. The estimated size and rating of the neutral grounding resistor is [ ] ohms, [ ] continuous current, and [ ] kVA. Submit the actual neutral grounding resistor sizing calculations for approval.

*Modify as required.*

**SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 2, SUBPARAGRAPH 2.4.C**

**DELETE:**

2. The power cells shall be wired with an appropriate size of power circuit conductor in accordance with NFPA 70 such that it will handle full amperage capacity at the maximum voltage rating of the cable. The power wire shall be type XLPE rated at 5,000 V.

**SUBSTITUTE:**

2. The power cells shall be wired with an appropriate size of power circuit conductor in accordance with NFPA 70 such that it will handle full amperage capacity at the maximum voltage rating of the cable. The power wire shall be type XLPE rated at [ ] V.

---

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.1.B**

**DELETE:**

1. General Electric, Multilin 369-HI-R-M-00OE

**SUBSTITUTE:**

1. General Electric, Multilin [ ]

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

2. Equipment suitable for four,160 V, three-phase, high-resistance grounded-wye electrical system having an available short-circuit current at line terminals of 50,000 A rms symmetrical. Designed, tested, and assembled in accordance with NEMA ICS 3 and UL 347.

**SUBSTITUTE:**

2. Equipment suitable for [ ] V, three-phase, high-resistance grounded-wye electrical system having an available short-circuit current at line terminals of 50,000 A rms symmetrical. Designed, tested, and assembled in accordance with NEMA ICS 3 and UL 347.

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.A**

**ADD:**

8. The medium-voltage motor control shall include [ ].

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.D**

**DELETE:**

2. 5 kV insulated main bus with boots on main bus splices between sections.
3. Horizontal bus: Isolated, three-phase with rating of 1,000 A.
4. Vertical bus: Insulated, three-phase with rating of 800 A.

**SUBSTITUTE:**

2. [ ] kV insulated main bus with boots on main bus splices between sections.
3. Horizontal bus: Isolated, [ ]-phase with rating of [ ] A.
4. Vertical bus: Insulated, [ ]-phase with rating of [ ] A.

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.D**

**DELETE:**

6. Bus bracing: 50,000 A rms asymmetrical.

**SUBSTITUTE:**

6. Bus bracing: [ ] A rms asymmetrical.

*Modify as required.*

## **SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.E**

### **DELETE:**

2. Contactors: Electrically operated, three-pole, single-break type in accordance with NEMA ICS 2, Section 324, and UL 347. *(In its entirety)*
3. Disconnect switch: *(In its entirety)*
4. Power fuses: *(In its entirety)*

### **SUBSTITUTE:**

2. Contactors: Electrically operated, three-pole, single-break type in accordance with NEMA ICS 2, Section 324, and UL 347.
  - a. Vacuum type:
    - 1) Fused, magnetically held fixed contactor.
    - 2) Rated [ ] kV, [ ] amperes, [ ] kVA BIL rating. Combination fuse and contactor interrupting rating: [ ] MVA, [ ]-phase symmetrical at [ ] V.
    - 3) Main contacts:
      - a) Weld-resistant, copper alloy.
      - b) Constructed for low chopping currents.
      - c) Three-phase interrupting capacity of 50 MVA rms symmetrical.
  - b. Auxiliary contacts:
    - 1) Rated 10 A, 600 V.
    - 2) Ten normally open; four normally closed.
3. Disconnect switch:
  - a. Fixed, mounted, nonfused, nonload-break, externally operated quick-make, quick-break in accordance with IEEE C37.30.1.
  - b. Rated [ ] kV, [ ] A, [ ] kV BIL.
  - c. Switch contacts barriered and visible through viewing window.
  - d. Lockable operating handle.
4. Power fuses:
  - a. Fixed power fuse holders in the power cell.
  - b. UL recognized fuses.
  - c. Nominal voltage rating of [ ] V.
  - d. Minimum of [ ] kA rms symmetrical interrupting current.
  - e. Current-limiting fuses: Under fault conditions, the fuse shall start limiting current within the first 1/4 cycle and interrupt within the first 1/2 cycle.
  - f. Fast-acting fuses.
  - g. Selected for coordination with other system protective devices.
  - h. Sufficient capacity to carry starting and full load currents.
  - i. Minimum of [ ] kA rms symmetrical interrupting capacity.

*Modify as required.*

## **SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.E**

### **DELETE:**

7. Synchronous motor rating: 1,000 hp, 900 rpm, 113 A, 4,000 V, three-phase, 60 Hz, 1.0 PF, DC excitation: 37.3 field amperes, 125 field volts.

### **SUBSTITUTE:**

7. Synchronous motor rating: [ ] hp, [ ] rpm, [ ] A, [ ] V, three-phase, 60 Hz, 1.0 PF, DC excitation: [ ] field amperes, [ ] field volts.

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.E.10**

**DELETE:**

- a. Space heater rated for 120 V, sized for prevention of condensation in each vertical section.

**SUBSTITUTE:**

- a. Space heater rated for [ ] V, sized for prevention of condensation in each vertical section.

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.E.11**

**DELETE:**

- d. Rating: 5 kV.

**SUBSTITUTE:**

- d. Rating: [ ] kV.

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.E.11**

**DELETE:**

- n. The 4.16 kV motor controller CTs shall be selected so that the full load secondary currents will lie between approximately 2.5 A and 4.0 A. The motor controller shall be provided with three conventional bar (wound) type CTs, one for each phase. Motor controllers shall use conventional bar (wound) type CTs, except for the GFCT which shall be donut (window) type CTs 50 to 0.025A, model number HGF-5-Ground Fault CT. The appropriate power termination, including single crimp lugs and hardware shall be provided to connect the customer's load cables to the CTs

**SUBSTITUTE:**

- n. The [ ] kV motor controller CTs shall be selected so that the full load secondary currents will lie between approximately 2.5 A and 4.0 A. The motor controller shall be provided with three conventional bar (wound) type CTs, one for each phase. Motor controllers shall use conventional bar (wound) type CTs, except for the GFCT which shall be donut (window) type CTs 50 to 0.025A, model number HGF-5-Ground Fault CT. The appropriate power termination, including single crimp lugs and hardware shall be provided to connect the customer's load cables to the CTs

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.E.11.n.2)**

**DELETE:**

- a) Voltage class: *(In its entirety)*
- b) BIL. *(In its entirety)*
- c) Momentary (short-circuit) current rating withstands the let through of the largest fuse. *(In its entirety)*

**SUBSTITUTE:**

- a) Voltage class:
  - (1) Bar: [ ] kV.
  - (2) Donut: [ ]0 V.
- b) BIL.
  - (1) Bar: [ ] kV.
  - (2) Donut: [ ] kV.
- c) Momentary (short-circuit) current rating withstands the let through of the largest fuse.
  - (1) Secondary current rating: 5 A.
  - (2) Maximum continuous sec. current (bar and donut): [ ] A.

*Modify as required.*

**SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.E.13.b**

**DELETE:**

- 1) 4,160 V/120 V, single-phase, three-wire with 60 kV BIL rating with two, two 1/2% taps above, and two, 2 1/2% taps below normal voltage.

**SUBSTITUTE:**

- 1) Four, [ ] V, single-phase, three-wire with [ ] kV BIL rating with two, 2 1/2% taps above, and two, 2 1/2% taps below normal voltage.

---

*Modify as required.*

**SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.C**

**DELETE:**

- 1. Service: 480 V, three-phase, four-wire, 60 Hz.

**SUBSTITUTE:**

- 1. Service: [ ] V, [ ]-phase, [ ]-wire, 60 Hz.

*Modify as required.*

**SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.D.3**

**DELETE:**

- a. Provide and install close coupled low-voltage power circuit breakers (52STS) mounted in separate metal-enclosed weatherproof in accordance with NEMA 3R compartment within terminal compartment.

**SUBSTITUTE:**

- a. Provide and install close coupled low-voltage power circuit breakers ([ ]) mounted in separate metal-enclosed weatherproof NEMA 3R compartment within terminal compartment.

*Modify as required.*

**SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.D.21**

**DELETE:**

- a. The 52STS main breaker shall have a nominal trip rating of 700 A rating for a 1,500 A sensor.

**SUBSTITUTE:**

- a. The [ ] main breaker shall have a nominal trip rating of [ ] A rating for a [ ] A sensor.

*Modify as required.*

**SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.D.21**

**DELETE:**

- k. Control voltage/power of 110 VAC to 130 VAC shall be provided.

**SUBSTITUTE:**

- k. Control voltage/power of [ ] VAC to [ ] VAC shall be provided.

*Modify as required.*

**SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.D.23**

**DELETE:**

- e. Time delay relays: Electro-pneumatic type, either on-delay or off-delay as required, with calibrated timing head and 20 A contacts (120 VAC, resistive).

**SUBSTITUTE:**

- e. Time delay relays: Electro-pneumatic type, either on-delay or off-delay as required, with calibrated timing head and 20 A contacts ([ ] VAC, resistive).

*Modify as required.*

**SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.D.24**

**DELETE:**

- g. Provide warning signs marked DANGER – 480 VOLTS KEEP OUT ON EACH REAR COMPARTMENT DOOR.

**SUBSTITUTE:**

- g. Provide warning signs marked DANGER – [ ] VOLTS KEEP OUT on each compartment door.
- 

*Modify as required.*

**SECTION 26 24 19 – LOW-VOLTAGE MOTOR CONTROL, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 24 19 – LOW-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.B.3.a**

**DELETE:**

- 1) 600 A minimum rated bus, three-phase, tin plated copper, extending the entire width of the control center rated as indicated.

**SUBSTITUTE:**

- 1) [ ] A minimum rated bus, 3 phase, tin plated copper, extending the entire width of the control center rated as indicated.

*Modify as required.*

**SECTION 26 24 19 – LOW-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.B.3.b**

**DELETE:**

- 1) Three phase, tin plated copper, full height of section, rated a minimum of 300 A.

**SUBSTITUTE:**

- 1) Three phase, tin plated copper, full height of section, rated a minimum of [ ] A.



*Modify as required.*

**SECTION 26 24 19 – LOW-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.B.6.d**

**ADD:**

- 9) Main protective device for [ ] UL labeled as suitable for service entrance.

*Modify as required.*

**SECTION 26 24 19 – LOW-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.B.10**

**DELETE:**

- d. The ATS will include an insulated neutral bus, and a ground bus. The normal and alternate source breaker elements shall be coordinated with the Engine Generator Manufacturer. Minimum sizes, to be approved by the ENGINEER, shall be 100% rated breakers with interchangeable overcurrent trip elements. The breaker ratings of the ATS shall be coordinated with the Engine Generator Supplier and approved by the ENGINEER. The ATS shall operate at 480/277 V, 60 Hz, three-pole, three-phase, four wire, and have as minimums, a 200 A frame and 42,000 A interrupting capacity, unless otherwise shown on the Drawings.

**SUBSTITUTE:**

- d. The ATS will include an insulated neutral bus, and a ground bus. The normal and alternate source breaker elements shall be coordinated with the Engine Generator Manufacturer. Minimum sizes, to be approved by the ENGINEER, shall be 100% rated breakers with interchangeable overcurrent trip elements. The breaker ratings of the ATS shall be coordinated with the Engine Generator Supplier and approved by the ENGINEER. The ATS shall operate at [ ] V, 60 Hz, [ ]-pole, [ ]-phase, [ ] wire, and have as minimums, a [ ] A frame and 42,000 A interrupting capacity, unless otherwise shown on the Drawings

---

*Modify as required.*

**SECTION 26 29 23 – VARIABLE FREQUENCY DRIVES, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 29 23 – VARIABLE FREQUENCY DRIVES, PART 2, SUBPARAGRAPH 2.1.C**

**DELETE:**

1. GE Multilin 369-HI-R-M-000-E with 1A secondary Ground Fault CT (GFCT)

**SUBSTITUTE:**

1. GE Multilin 369-[ ] with 1A secondary Ground Fault CT (GFCT)

*Modify as required.*

**SECTION 26 29 23 – VARIABLE FREQUENCY DRIVES, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

7. Input voltage: 460 VAC +10% or -5%.
8. Output voltage: 0 V to 480 V, 3-phase, 0 to 66 Hz, minimum.

**SUBSTITUTE:**

7. Input voltage: [ ] VAC +10% or -5%.
8. Output voltage: 0 V to [ ] V, 3-phase, 0 to 66 Hz, minimum.

*Modify as required.*

**SECTION 26 29 23 – VARIABLE FREQUENCY DRIVES, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

- B. Rectifier: three-phase, eighteen-pulse full wave diode bridge rectifier to provide a constant DC voltage to the drive's DC bus.

**SUBSTITUTE:**

- B. Rectifier: [ ]-phase, [ ]-pulse full wave diode bridge rectifier to provide a constant DC voltage to the drive's DC bus.

---

*Modify as required.*

**SECTION 26 29 24 – VARIABLE FREQUENCY DRIVES LESS THAN 50 HP, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 29 24 – VARIABLE FREQUENCY DRIVES LESS THAN 50 HP, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

7. Input voltage: 480 V within 10%, three phase, 60 Hz.
8. Output voltage: 0 V to 480 V, three-phase, 0 Hz to 66 Hz, minimum.

**SUBSTITUTE:**

7. Input voltage: [ ] V within 10%, [ ] phase, 60 Hz.
8. Output voltage: 0 V to [ ] V, [ ]-phase, 0 Hz to 66 Hz, minimum.

*Modify as required.*

**SECTION 26 29 24 – VARIABLE FREQUENCY DRIVES LESS THAN 50 HP, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

11. Equipment short-circuit rating: Suitable for connection to the system with maximum source three-phase, bolted fault, a minimum short-circuit available of 42,000 A rms symmetrical at 480 V.

**SUBSTITUTE:**

11. Equipment short-circuit rating: Suitable for connection to the system with maximum source three-phase, bolted fault, a minimum short-circuit available of 42,000 A rms symmetrical at [ ] V.
- 

*Modify as required.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 1, SUBPARAGRAPH 1.3.C.3**

**DELETE:**

- h. Universal remote panel-mounted annunciator.

**SUBSTITUTE:**

- h. [ ].

*Specify the Project Elevation.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 1, SUBPARAGRAPH 1.8**

**DELETE:**

- A. Environmental Requirements: Materials and equipment shall be designed and constructed for continuous operation, at rated current and voltage, at 6,000 feet above mean sea level, -30°F (exterior and non-environmentally controlled areas) to 104°F ambient temperature and 95% relative humidity. The Equipment Manufacturer shall submit a certified letter in the Shop Drawing submittal stating the equipment provided meets this requirement.

**SUBSTITUTE:**

- A. Environmental Requirements: Materials and equipment shall be designed and constructed for continuous operation, at rated current and voltage, at [ ] feet above mean sea level, -30°F (exterior and non-environmentally controlled areas) to 104°F ambient temperature and 95% relative humidity. The Equipment Manufacturer shall submit a certified letter in the Shop Drawing submittal stating the equipment provided meets this requirement.

*Modify as required.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 2, SUBPARAGRAPH 2.1**

**DELETE:**

- D. Universal Remote Panel-Mounted Annunciator: *(In its entirety)*

**SUBSTITUTE:**

- D. [ ].

*Modify as required.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 2, SUBPARAGRAPH 2.2.A.1**

**DELETE:**

- a. 125 kW minimum rating at altitude as indicated on the plans:
  - 1) It is the Manufacturer's responsibility to properly size the engine generator based upon site conditions and actual loads. Increases in size as a result of Manufacturer sizing shall be at no additional costs to the OWNER, including any and all conduit and wire size changes.
- b. 277 V/480 V, grounded wye, three-phase.
- c. Four-wire.

**SUBSTITUTE:**

- a. [ ] kW minimum rating at altitude as indicated on the plans:
  - 1) It is the Manufacturer's responsibility to properly size the engine generator based upon site conditions and actual loads. Increases in size as a result of Manufacturer sizing shall be at no additional costs to the OWNER, including any and all conduit and wire size changes.
- b. [ ] V, grounded wye, [ ]-phase.
- c. [ ]-wire.

*Modify as required.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 2, SUBPARAGRAPH 2.2.A.1**

**DELETE:**

- i. Minimum altitude 6,000-feet above mean sea level. Minimum outside air ambient operating temperature -30°F.

**SUBSTITUTE:**

- i. Minimum altitude [ ]-feet above mean sea level. Minimum outside air ambient operating temperature -30°F.

*Modify as required.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 2, SUBPARAGRAPH 2.2.D.4**

**DELETE:**

- h. 12 VDC or 24 VDC positive engagement solenoid shift-starting motor.

**SUBSTITUTE:**

- h. [ ] positive engagement solenoid shift-starting motor.

*Modify as required.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 2, SUBPARAGRAPH 2.2.D.5**

**DELETE:**

- a. Satisfactory performance on a natural gas as delivered by Xcel Energy at the site is a requirement. A heating value of 829 btu/cf and a specific gravity of 0.67 are typical for Denver. Confirm the heating value and specific gravity of the natural gas on-site.

**SUBSTITUTE:**

- a. Satisfactory performance on a natural gas as delivered by [ ] at the site is a requirement. A heating value of [ ] btu/cf and a specific gravity of [ ] are typical for [ ]. Confirm the heating value and specific gravity of the natural gas on-site.

*Modify as required.*

**SECTION 26 32 13 – ENGINE DRIVEN GENERATOR, PART 2, SUBPARAGRAPH 2.2.M**

**DELETE:**

1. Weather protective enclosure with sound attenuation of 50 dBA at the property line.

**SUBSTITUTE:**

1. Weather protective enclosure with sound attenuation of [ ] dBA at the property line.
- 

*Modify as required.*

**SECTION 26 32 19 – SYNCHRONOUS GENERATORS, PART 1, SUBPARAGRAPH 1.4**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.
- 

*Modify as required.*

**SECTION 26 32 20 – GENERATOR EXCITATION EQUIPMENT, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 32 20 – GENERATOR EXCITATION EQUIPMENT, PART 2, SUBPARAGRAPH 2.1.B**

**DELETE:**

1. Basler Electric Company, Model DECS-250 Generator Excitation System

**SUBSTITUTE:**

1. Basler Electric Company, Model [ ] Generator Excitation System

*Modify as required.*

**SECTION 26 32 20 – GENERATOR EXCITATION EQUIPMENT, PART 2, SUBPARAGRAPH 2.2.F**

**DELETE:**

2. Remote control is provided using external switches wired back to the digital excitation system and RS 485 serial communication using a Modbus protocol to allow the operation of the functions below from a remote computer including:

**SUBSTITUTE:**

2. Remote control is provided using external switches wired back to the digital excitation system and [ ] communication using a Modbus protocol to allow the operation of the functions below from a remote computer including:

*Modify as required.*

**SECTION 26 32 20 – GENERATOR EXCITATION EQUIPMENT, PART 2, SUBPARAGRAPH 2.2.H**

**DELETE:**

1. Components of the excitation system shall be mounted in a formed 11 gauge sheet steel NEMA 1 enclosure. The cubicle shall be rigid and self-supporting with enclosed panels on rear.

**SUBSTITUTE:**

1. Components of the excitation system shall be mounted in a formed 11 gauge sheet steel NEMA [ ] enclosure. The cubicle shall be rigid and self-supporting with enclosed panels on rear.

*Modify as required.*

**SECTION 26 32 20 – GENERATOR EXCITATION EQUIPMENT, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

- M. Control Power: 125 VDC and 120 VAC shall be provided for electronic circuits. In the event of loss of one of the control power sources, the other source shall be used to keep the excitation system operating.

**SUBSTITUTE:**

- M. Control Power: [ ] shall be provided for electronic circuits. In the event of loss of one of the control power sources, the other source shall be used to keep the excitation system operating.

*Modify as required.*

**SECTION 26 32 20 – GENERATOR EXCITATION EQUIPMENT, PART 3, SUBPARAGRAPH 3.1**

**DELETE:**

- A. This Section describes a digital excitation system, for use on a brushless exciter type synchronous generator. The digital excitation system shall be designed to work with the brushless exciter and shall be complete with controls, limiters, and protection to safeguard the generator. The generator excitation system shall be provided with a user friendly Windows-based software program for easy setup and commissioning of the excitation system, as well as Ethernet communications using Modbus protocol for control, metering and annunciation.
- B. The rating information, to be verified with the Generator Manufacturer: *(In its entirety)*

**SUBSTITUTE:**

- A. This Section describes a digital excitation system, for use on a brushless exciter type synchronous generator. The digital excitation system shall be designed to work with the brushless exciter and shall be complete with controls, limiters, and protection to safeguard the generator. The generator excitation system shall be provided with a user friendly Windows-based software program for easy setup and commissioning of the excitation system, as well as [ ] communications using Modbus protocol for control, metering and annunciation.
- B. The rating information, to be verified with the Generator Manufacturer:
1. Generator rating: [ ] kVA, [ ] VAC, 60 Hz, [ ] PF, [ ] rpm. Exciter field rating:
    - a. Field amperes at rated load: [ ] ADC.
    - b. Rated excitation volts: [ ] VDC.
    - c. Minimum field amperes: [ ] ADC.
    - d. Minimum field volts, cold: [ ] VDC.
    - e. Resistance at 25°C: [ ] ohms.
    - f. Minimum field flashing amperes: [ ] ADC.
    - g. Maximum field flashing amperes: [ ] ADC.
    - h. Maximum current during forcing: [ ] ADC.
  2. Generator prime mover type: [ ].

---

*Modify as required.*

### **SECTION 26 33 00 – DC POWER SYSTEM, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

### **SECTION 26 33 00 – DC POWER SYSTEM, PART 1, SUBPARAGRAPH 1.3.E**

**DELETE:**

1. Furnish, box, tag, and clearly mark on exterior, identify each item with the Manufacturer's name, description, and part number for shipment and long-term storage, and deliver prior to 75% of the Substantial Completion date the following extra materials: *(In its entirety)*

**SUBSTITUTE:**

1. 1.Furnish, box, tag, and clearly mark on exterior, identify each item with the Manufacturer's name, description, and part number for shipment and long-term storage, and deliver prior to 75% of the Substantial Completion date the following extra materials:
  - a. [ ].
  - b. [ ].
  - c. Fuses: Provide four of each type and each current rating. Battery Thermometer.

*Modify as required.*

### **SECTION 26 33 00 – DC POWER SYSTEM, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

2. 8-hour discharge rate of not less than 100 A to an end voltage of 1.75 V per cell at 104°F. A minimum of sixty cells shall be furnished.

**SUBSTITUTE:**

2. 8-hour discharge rate of not less than [ ] A to an end voltage of 1.75 V per cell at [ ]°F. A minimum of [ ] cells shall be furnished.

*Modify as required.*

## **SECTION 26 33 00 – DC POWER SYSTEM, PART 2, SUBPARAGRAPH 2.2**

### **DELETE:**

- B. Battery Rack: *(In its entirety)*

### **SUBSTITUTE:**

- B. Battery Rack:
  1. The batteries shall be arranged for installation in [ ]-tier, powder coated “painted”, battery racks. Connections between cells shall be provided.
    - a. The racks shall meet UBC seismic requirements for Zone [ ].
    - b. The battery racks shall stand alone, requiring only floor anchoring. The racks shall have two coats of acid-resistant paint.

*Modify as required.*

## **SECTION 26 33 00 – DC POWER SYSTEM, PART 2, SUBPARAGRAPH 2.2.C**

### **DELETE:**

2. Verify the size of the battery chargers and submit the calculations with the Shop Drawing Submittal. The minimum size chargers provided shall be not less than 300 A each. Each charger shall be completely self-contained in a NEMA Type 1 cabinet. The cabinet shall have a hinged front cover containing the indicating meters, AC and DC circuit breakers, float voltage adjustment, and AC “power on” indicating light. SPDs, rectifiers and required supply voltage transformers shall be contained within the charger cabinet. Overvoltage/undervoltage alarm contact shall be furnished for wiring to the generator control panel.

### **SUBSTITUTE:**

2. Verify the size of the battery chargers and submit the calculations with the Shop Drawing Submittal. The minimum size chargers provided shall be not less than [ ] A each. Each charger shall be completely self-contained in a NEMA Type [ ] cabinet. The cabinet shall have a hinged front cover containing the indicating meters, AC and DC circuit breakers, float voltage adjustment, and AC “power on” indicating light. SPDs, rectifiers and required supply voltage transformers shall be contained within the charger cabinet. Overvoltage/undervoltage alarm contact shall be furnished for wiring to the generator control panel.

*Modify as required.*

## **SECTION 26 33 00 – DC POWER SYSTEM, PART 2, SUBPARAGRAPH 2.2.D**

### **DELETE:**

2. Circuit breakers shall be thermal-magnetic, bolt-on, individually front replaceable, and shall indicate on, off, and tripped. Breakers shall be two-pole common trip, rated 14,000 AIC at 125 VDC.

### **SUBSTITUTE:**

2. Circuit breakers shall be thermal-magnetic, bolt-on, individually front replaceable, and shall indicate on, off, and tripped. Breakers shall be two-pole common trip, rated [ ] AIC at 125 VDC.



*Modify as required.*

**SECTION 26 33 00 – DC POWER SYSTEM, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

- E. The DC disconnect shall be heavy duty, fused two-wire 250 VDC, NEMA Type 1 as shown on the Drawings and in accordance with the following:

**SUBSTITUTE:**

- E. The DC disconnect shall be heavy duty, fused two-wire 250 VDC, NEMA Type [ ] as shown on the Drawings and in accordance with the following:

---

*Modify as required.*

**SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 1, SUBPARAGRAPH 1.4.D.4**

**DELETE:**

- a. Front: 6-inches.
- b. Top: 6-inches.
- c. Rear: 28-inches.
- d. Side: 20-inches.

**SUBSTITUTE:**

- a. Front: [ ]-inches.
- b. Top: [ ]-inches.
- c. Rear: [ ]-inches.
- d. Side: [ ]-inches.

*Modify as required.*

**SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 2, SUBPARAGRAPH 2.3.A.1**

**DELETE:**

- a. Voltage input: 208 VAC.
- b. Input voltage requirements: Three-phase, four-wire, and ground.

**SUBSTITUTE:**

- a. Voltage input: [ ] VAC.
- b. Input voltage requirements: [ ], and ground.

*Modify as required.*

**SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 2, SUBPARAGRAPH 2.3.A.2**

**DELETE:**

- a. Voltage output: 208 VAC.
- b. Output voltage configuration: Three-phase, four-wire, and ground.
- c. Output capacity: 30 kVA. Rated load PF: 0.9 lagging.

**SUBSTITUTE:**

- a. Voltage output: [ ] VAC.
- b. Output voltage configuration: [ ], and ground.
- c. Output capacity: [ ] kVA. Rated load PF: 0.9 lagging.

*Modify as required.*

**SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 2, SUBPARAGRAPH 2.3.A.3.b.1)**

**DELETE:**

- a) 40 minutes back-up time on 15 kVA, 50% full load.

**SUBSTITUTE:**

- a) [ ] minutes back-up time on [ ] kVA, [ ]% full load.

*Modify as required.*

**SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 2, SUBPARAGRAPH 2.3.A.3**

**DELETE:**

- c. 20 minutes back-up time on 30 kVA, full load. DC voltage range: 216 V shutdown, 288 V nominal.

**SUBSTITUTE:**

- c. [ ] minutes back-up time on [ ] kVA, full load. DC voltage range: [ ] V shutdown, [ ] V nominal.

*Modify as required.*

**SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 2, SUBPARAGRAPH 2.3.A.4.c**

**DELETE:**

- 1) UPS: -4°F to 140°F.

**SUBSTITUTE:**

- 1) UPS: [ ]°F to [ ]°F.

*Modify as required.*

**SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 3, SUBPARAGRAPH 3.2.E.1**

**DELETE:**

- a. Description: The rectifier/charger shall consist of a solid-state three phase rectifier, DC to DC converter, chopper, output filter, and transient suppresser network to regulate and maintain DC power to the inverter.

**SUBSTITUTE:**

- a. Description: The rectifier/charger shall consist of a solid-state [ ] phase rectifier, DC to DC converter, chopper, output filter, and transient suppresser network to regulate and maintain DC power to the inverter.

---

*Modify as required.*

**SECTION 26 41 00 – LIGHTNING PROTECTION SYSTEM, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 41 00 – LIGHTNING PROTECTION SYSTEM, PART 2, SUBPARAGRAPH 2.1**

**DELETE:**

- A. National Lightning Protection Corporation: *(In its entirety)*

**SUBSTITUTE:**

- A. National Lightning Protection Corporation:
  - 1. Prevelectron 3 ESE Air Terminal, [ ]
  - 2. Digital Lightning Strike Counter, [ ]
  - 3. Lightning Protection Mast, [ ]

*Modify as required.*

**SECTION 26 41 00 – LIGHTNING PROTECTION SYSTEM, PART 2, SUBPARAGRAPH 2.2.B**

**DELETE:**

- 1. Copper conductors shall be twenty-eight strands of 14 gauge copper wire in a rope lay configuration with a net weight of 380 lbs/1,000-feet, minimum. Copper strip of equivalent capacity may be substituted.

**SUBSTITUTE:**

- 1. Copper conductors shall be [ ] strands of [ ] gauge copper wire in a rope lay configuration with a net weight of [ ] lbs/[ ]-feet, minimum. Copper strip of equivalent capacity may be substituted.

*Modify as required.*

## **SECTION 26 41 00 – LIGHTNING PROTECTION SYSTEM, PART 2, SUBPARAGRAPH 2.2.B**

### **DELETE:**

4. Every other column shall be grounded or at intervals not exceeding an average of 60 feet o.c.

### **SUBSTITUTE:**

4. Every other column shall be grounded or at intervals not exceeding an average of [ ] feet o.c.

*Modify as required.*

## **SECTION 26 41 00 – LIGHTNING PROTECTION SYSTEM, PART 2, SUBPARAGRAPH 2.2.B**

### **DELETE:**

5. Conductors shall be securely fastened to the structure at every 36-inches o.c. utilizing fasteners with corrosion resistance equal to that of the conductor.
6. Metal objects of induction situated within 15-feet of a lightning protection conductor or bonded metal body shall be interconnected to the lightning protection system.

### **SUBSTITUTE:**

5. Conductors shall be securely fastened to the structure at every [ ]-inches o.c. utilizing fasteners with corrosion resistance equal to that of the conductor.
6. Metal objects of induction situated within [ ]-feet of a lightning protection conductor or bonded metal body shall be interconnected to the lightning protection system.

*Modify as required.*

## **SECTION 26 41 00 – LIGHTNING PROTECTION SYSTEM, PART 2, SUBPARAGRAPH 2.2.B.6**

### **DELETE:**

- b. Ungrounded metal bodies shall be interconnected to the lightning protection system via a secondary conductor no smaller than #6 AWG copper.

### **SUBSTITUTE:**

- b. Ungrounded metal bodies shall be interconnected to the lightning protection system via a secondary conductor no smaller than [ ] AWG copper.

*Modify as required.*

## **SECTION 26 41 00 – LIGHTNING PROTECTION SYSTEM, PART 2, SUBPARAGRAPH 2.3.A**

### **DELETE:**

1. The ground system shall have no more than 10 ohms of resistance.
2. Ground terminations. *(In its entirety)*

### **SUBSTITUTE:**

1. The ground system shall have no more than [ ] ohms of resistance.
2. Ground terminations:
  - a. Ground rods: 3/4-inch by 10-foot copper-clad, [ ] per down lead.
  - b. Ground plates: 20-gauge copper 2 square feet in area, [ ] per down lead, encased in San Earth(r) conductive concrete.
  - c. Electrolytic ground electrodes, one per down lead, may be used in lieu of or in combination with ground rods and plates to achieve the 10 ohm resistance requirement.
  - d. Ground loop: [ ] strand copper encased in San Earth(r) conductive concrete.

*Modify as required.*

**SECTION 26 41 00 – LIGHTNING PROTECTION SYSTEM, PART 2, SUBPARAGRAPH 2.3.A**

**DELETE:**

4. Connections to ground rods, ground plates, electrolytic ground electrodes, or ground loop conductors shall be made at a point not less than 24-inches away from foundation walls and 18-inches below grade.

**SUBSTITUTE:**

4. Connections to ground rods, ground plates, electrolytic ground electrodes, or ground loop conductors shall be made at a point not less than [ ]-inches away from foundation walls and [ ]-inches below grade.

---

*Modify as required.*

**SECTION 26 43 00 – LOW-VOLTAGE SURGE PROTECTIVE DEVICES, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

**Engineer: If SECTION 26 43 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 26 43 00 – LOW-VOLTAGE SURGE PROTECTIVE DEVICES, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

4. Design SPD devices for the specific type and voltage of the electrical service. Single-phase and three-phase wye-configured systems shall have L-N, L-G, and N-G protection. Grounded delta-configured systems shall have L-L and L-G protection.

**SUBSTITUTE:**

4. Design SPD devices for the specific type, voltage, and grounding configuration of the electrical service including:
  - a. Single-phase and three-phase wye-configured systems: L-N, L-G, and N-G protection.
  - b. Grounded delta-configured systems: L-L and L-G protection.
  - c. High Resistance Grounding (HRG) applications: rated for HRG use with a L-G rating which exceeds the system L-L voltage.

---

*Modify as required.*

**SECTION 26 50 00 – LIGHTING, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Modify as required.*

**SECTION 26 50 00 – LIGHTING, PART 2, SUBPARAGRAPH 2.2.G**

**DELETE:**

1. Power pack: Self-contained, 120 V/277 V, dual voltage transformer, inverter/charger, sealed nickel cadmium battery, and indicator switch in accordance with UL 924.

**SUBSTITUTE:**

1. Power pack: Self-contained, [ ], dual voltage transformer, inverter/charger, sealed nickel cadmium battery, and indicator switch in accordance with UL 924.

*Modify as required.*

**SECTION 26 50 00 – LIGHTING, PART 2, SUBPARAGRAPH 2.2.H**

**DELETE:**

1. Power pack: Self-contained, 120 V/277 V, dual voltage transformer, transient/surge protection, solid-state inverter/charger, sealed nickel cadmium battery, and indicator switch in accordance with UL 924.

**SUBSTITUTE:**

1. Power pack: Self-contained, [ ], dual voltage transformer, transient/surge protection, solid-state inverter/charger, sealed nickel cadmium battery, and indicator switch in accordance with UL 924.

---

*Modify as required.*

**SECTION 26 70 00 – MOTORS, PART 1, SUBPARAGRAPH 1.3**

**DELETE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 30 days after receipt. Resubmittals will be subject to the same review time.

**SUBSTITUTE:**

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than [ ] days after receipt. Resubmittals will be subject to the same review time.

*Specify the Project Elevation.*

**SECTION 26 70 00 – MOTORS, PART 1, SUBPARAGRAPH 1.6**

**DELETE:**

- A. Environmental Requirements: Materials and equipment shall be designed and constructed for continuous operation, at rated current and voltage, at 6,000 feet above mean sea level, -30°F (exterior and non-environmentally controlled areas) to 104°F ambient temperature and 95% relative humidity. The Equipment Manufacturer shall submit a certified letter in the Shop Drawing Submittal stating the equipment provided meets this requirement.

**SUBSTITUTE:**

- A. Environmental Requirements: Materials and equipment shall be designed and constructed for continuous operation, at rated current and voltage, at [ ] feet above mean sea level, -30°F (exterior

and non-environmentally controlled areas) to 104°F ambient temperature and 95% relative humidity. The Equipment Manufacturer shall submit a certified letter in the Shop Drawing Submittal stating the equipment provided meets this requirement.

*Modify as required.*

## **SECTION 26 70 00 – MOTORS, PART 2, SUBPARAGRAPH 2.2**

### **DELETE:**

F. PFCCs: *(In its entirety)*

### **SUBSTITUTE:**

F. PFCCs:  
1. [ ]:  
2. [ ]:

*Modify as required.*

## **SECTION 26 70 00 – MOTORS, PART 2, SUBPARAGRAPH 2.2.K.1**

### **DELETE:**

b. 1 hp through 400 hp: Regreasable ball bearings in labyrinth sealed end bells with removable grease relief plugs.

### **SUBSTITUTE:**

b. [ ] hp through [ ] hp: Regreasable ball bearings in labyrinth sealed end bells with removable grease relief plugs.

*Modify as required.*

## **SECTION 26 70 00 – MOTORS, PART 2, SUBPARAGRAPH 2.2.M.3.e**

### **DELETE:**

1) Hermetically sealed, watertight, for continuous submergence up to 65 foot depth.

### **SUBSTITUTE:**

1) Hermetically sealed, watertight, for continuous submergence up to [ ] foot depth.

## DIVISION 27

*Modify as required*

### SECTION 27 00 00 – COMMUNICATIONS SYSTEMS, PART 1, SUBPARAGRAPH 1.3.E

#### DELETE:

1. Furnish, box, tag, and clearly mark on exterior, identify each item with the Manufacturer's name, description, and part number for shipment and long-term storage, and deliver prior to 75% of the Substantial Completion date the following extra materials: *(In its entirety)*

#### SUBSTITUTE:

1. Furnish, box, tag, and clearly mark on exterior, identify each item with the Manufacturer's name, description, and part number for shipment and long-term storage, and deliver prior to 75% of the Substantial Completion date the following extra materials:
  - a. Fiber optic to 10/100 base T media converter/Transceiver, Allied Telesyn AT-FS201-10: [REDACTED].
  - b. Ethernet SCADA hubs, [REDACTED]; Ethernet switch with 6 RJ-45 ports and [REDACTED] 100BASE-FX ports with ST type connectors, Phoenix Contact FL Switch SFN 6TX/2FX ST.
  - c. Provide the following spare patch cords:
    - 1) Part No. C2G 36500: [REDACTED].
    - 2) Part No. C2G 36501: [REDACTED].
    - 3) Part No. C2G 36502: [REDACTED].
    - 4) Part No. C2G 36515: [REDACTED].
    - 5) Part No. C2G 36516: [REDACTED].
    - 6) Part No. C2G 36517: [REDACTED].
    - 7) Part No. C2G 36521: [REDACTED].

*Modify as required*

### SECTION 27 00 00 – COMMUNICATIONS SYSTEMS, PART 2, SUBPARAGRAPH 2.2.E.2

#### DELETE:

- a. 10/100 BASE-T Ethernet ports (RJ-45) and two dual-purpose ports, each with a 10/100/1000BASE-T copper port and an SFP (small form-factor pluggable) module slot (LC type connectors).

#### SUBSTITUTE:

- a. [REDACTED] 10/100 BASE-T Ethernet ports (RJ-45) and [REDACTED] dual-purpose ports, each with a 10/100/1000BASE-T copper port and an SFP (small form-factor pluggable) module slot (LC type connectors).

*Modify as required*

### SECTION 27 00 00 – COMMUNICATIONS SYSTEMS, PART 2, SUBPARAGRAPH 2.2.G

#### DELETE:

3. 48-port, Category 6 patch panel with RJ-45, 8-position, eight-wire ports unless otherwise shown on the Drawings.
4. 24-port, Category 6 patch panel with 24 pre-installed RJ-45 6 channel compliant couplers.

#### SUBSTITUTE:

3. [REDACTED]-port, Category 6 patch panel with RJ-45, [REDACTED]-position, [REDACTED]-wire ports unless otherwise shown on the Drawings.
4. [REDACTED]-port, Category 6 patch panel with [REDACTED] pre-installed RJ-45 6 channel compliant couplers.



*Modify as required*

**SECTION 27 00 00 – COMMUNICATIONS SYSTEMS, PART 2, SUBPARAGRAPH 2.2.H**

**DELETE:**

4. 120 VAC/24 VDC.

**SUBSTITUTE:**

4. [REDACTED].

*Modify as required*

**SECTION 27 00 00 – COMMUNICATIONS SYSTEMS, PART 2, SUBPARAGRAPH 2.2.I.1.a**

**DELETE:**

- 2) Each cable shall contain the number of strands shown on the Drawings. If not shown on the Drawings, the cable shall contain twice the number of strands required to handle the specified communications functions. A minimum of 12 strands shall be in any cable.

**SUBSTITUTE:**

- 2) Each cable shall contain the number of strands shown on the Drawings. If not shown on the Drawings, the cable shall contain twice the number of strands required to handle the specified communications functions. A minimum of [REDACTED] strands shall be in any cable.

*Modify as required*

**SECTION 27 00 00 – COMMUNICATIONS SYSTEMS, PART 2, SUBPARAGRAPH 2.2.I.2**

**DELETE:**

- b. Where fiber optic cables are run through EHH, cables shall be supported on EHH walls by an ENGINEER-approved method. An additional 10-foot loop of spare fiber optic cable shall be installed in the EHH.

**SUBSTITUTE:**

- b. Where fiber optic cables are run through EHH, cables shall be supported on EHH walls by an ENGINEER-approved method. An additional [REDACTED]-foot loop of spare fiber optic cable shall be installed in the EHH.

## DIVISION 28

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*Modify as required*

### SECTION 28 00 00 – SECURITY SYSTEM, PART 2, SUBPARAGRAPH 2.2.A.4

**DELETE:**

- a. 12 VDC, IP PTZ cameras capable of rotating 180 degrees.

**SUBSTITUTE:**

- a. [ ] cameras capable of rotating 180 degrees.
- 

*Modify as required*

### SECTION 28 46 00 – FIRE ALARM SYSTEM, PART 2

**DELETE:**

- 2.1 APPROVED MANUFACTURERS *(In its entirety)*

**SUBSTITUTE:**

- 2.1 APPROVED MANUFACTURERS
  - A. Control Panel:
    - 1. [ ]
  - B. Manual Stations:
    - 1. [ ]
  - C. Smoke Detectors:
    - 1. [ ]
  - D. Duct Detectors:
    - 1. [ ]
  - E. Remote Test Stations:
    - 1. [ ]
  - F. Heat Detectors:
    - 1. [ ]
  - G. Horn/Strobe Combination:
    - 1. [ ]
    - 2. [ ]
  - H. Control Relay Module:
    - 1. [ ]
  - I. Addressable Monitor Module:
    - 1. [ ]

## DIVISION 31

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*Modify as required*

### SECTION 31 05 19 – GEOTEXTILES, PART 2, SUBPARAGRAPH 2.1.B

**DELETE:**

4. Exception: For geosynthetics required by the City of Denver in backfill in trench cuts, the following standards are required: *(In its entirety)*

**SUBSTITUTE:**

4. Exception: For geosynthetics required by the [ ] in backfill in trench cuts, the following standards are required:
    - a. Minimum grab tensile strength in accordance with ASTM D 4632: [ ].
    - b. Minimum water flow rate in accordance with ASTM D 4491: [ ] gpm/sf.
    - c. Minimum permeability in accordance with ASTM D 4491: [ ] cm/sec.
- 

*For pipelines in agricultural or grassland (rural) areas confirm with property owner and through testhole if necessary to actual depth of viable topsoil and specify for bidding and add appropriate note here. Delete text if not required.*

### SECTION 31 10 00 – SITE CLEARING, PART 3, SUBPARAGRAPH 3.1.C

**DELETE:**

2. Strip material containing roots, grasses, and other deleterious or organic matter generally found in the top 6-inches of undisturbed natural terrain from areas requiring excavation, grading, trenching, and subgrade preparation for foundations and embankment Work.

**SUBSTITUTE:**

2. [ ].
- 

*Check to ensure that the language shown matches the geotech report or any other design criteria.*

### SECTION 31 23 13 – SUBGRADE PREPARATION, PART 3, SUBPARAGRAPH 3.3

**DELETE:**

- A. Compaction: *(In its entirety)*

**SUBSTITUTE:**

- A. Compaction:
    1. [ ].
-

**Engineer: If SECTION 31 23 16 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 16 – EXCAVATION, PART 1, SUBPARAGRAPH 1.1.B**

**DELETE:**

2. SECTION 31 50 00 – EXCAVATION SUPPORT AND PROTECTION

**Engineer: If SECTION 31 23 16 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 16 – EXCAVATION, PART 1, SUBPARAGRAPH 1.3.A**

**DELETE:**

- A. Excavation Support: Install and maintain, as specified in SECTION 31 50 00, support to the sides of excavations and prevent the detrimental settlement and lateral movement of existing facilities, adjacent property, and completed Work.

**SUBSTITUTE:**

- A. Excavation Support: Design, install and maintain support to the sides of excavations to prevent the detrimental settlement and lateral movement of existing facilities, adjacent property, and completed Work in accordance with the Excavation Support Plan, as applicable.

**Engineer: If SECTION 31 23 16 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 16 – EXCAVATION, PART 1**

**ADD:**

1.4 SUBMITTALS

- A. Excavation Support Plan.
  1. For excavations where shoring boxes or other pre-engineered means of excavation support are not used, submit an Excavation Support Plan meeting the requirements of applicable state and local construction safety orders and federal requirements to provide temporary lateral support of surrounding soils and structures.
  2. Plan shall be prepared and sealed by a Professional Engineer registered in the State of Colorado.

**RENUMBER ACCORDINGLY**

---

*Modify as required*

**SECTION 31 23 22 – ZONED FILL, PART 2, SUBPARAGRAPH 2.2.A**

**ADD:**

- 2. Conforming to the following limits when tested by means of laboratory sieves in accordance with ASTM D 422.

Sieve Size	Total Passing by Sizes (Percentage by Weight)
2-inch	[ ]
3-inch	[ ]
No. 4	[ ]
No. 8	[ ]
No. 16	[ ]
No. 200	[ ]

- 3. A minimum plasticity index of [ ] and a maximum liquid limit of [ ].
- 4. Allowable soil classification system classifications: [ ].

**Engineer: If SECTION 31 23 22 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 22 – ZONED FILL, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

- E. Topsoil: Topsoil selectively excavated from site clearing Work as specified in SECTION 31 10 00 and excavated organics and peat having a maximum particle size of 3 inches, free from deleterious materials, and containing sufficient organics to support vegetative growth.

**SUBSTITUTE:**

- E. Topsoil: Natural, friable, sandy-loam, obtained from well-drained areas, free from objects larger than 1 1/2 inches, subsoil, roots, grass, weeds, foreign matter, hazardous or toxic substances, and deleterious materials that may be harmful to plant growth or hinder grading, planting, or maintenance.

---

**Engineer: If SECTION 31 23 23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 23 – FILL, PART 1, SUBPARAGRAPH 1.6.A**

**DELETE:**

- 6. The initial sampling of the imported material source is to be conducted or the importing of material to the Work site is to begin.

**SUBSTITUTE:**

- 6. The initial sampling of the imported material source is to be conducted before the importing of material to the Work site is to begin.

**Engineer: If SECTION 31 23 23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 23 – FILL, PART 2, SUBPARAGRAPH 2.1**

**DELETE:**

- G. Controlled Low Strength Material: As specified in SECTION 31 23 33.

**SUBSTITUTE:**

- G. Clay Cap: Relatively impervious clay material with more than 50% passing the No. 200 sieve and a maximum liquid limit of 50%.

**Engineer: If SECTION 31 23 23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 23 – FILL, PART 2, SUBPARAGRAPH 3.3.C.1**

**DELETE:**

- b. The upper 2 feet of backfill over the structure fill shall be made of a clay cap material (at least 50% passing the No. 200 sieve).

**SUBSTITUTE:**

- b. The upper 2 feet of backfill over the structure fill shall be made of clay cap material.

**Engineer: If SECTION 31 23 23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 23 – FILL, PART 2, SUBPARAGRAPH 3.3.C.1**

**DELETE:**

- d. Make an allowance for 6 inches of topsoil surfacing and slope for protection where required.

**SUBSTITUTE:**

- d. Make an allowance for 6 inches of topsoil surfacing and slope for protection where required for site restoration or as shown on the Drawings.

---

**Engineer: If SECTION 31 23 33 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 33 – TRENCH BACKFILL, PART 1, SUBPARAGRAPH 1.5.A**

**DELETE:**

- 4. Fill material appears deviate from the Specifications.
- 5. The initial sampling of the imported material source is to be conducted or the importing of material to the Work site is to begin.

**SUBSTITUTE:**

- 4. Fill material appears to deviate from the Specifications.
- 5. The initial sampling of the imported material source is to be conducted before the importing of material to the Work site is to begin.

**Engineer: If SECTION 31 23 33 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 31 23 33 – TRENCH BACKFILL, PART 3, SUBPARAGRAPH 3.3.B**

**DELETE:**

4. Place over the full width of the prepared trench bottom in equal lifts no greater than 8 inches thick when the required depth exceeds 8 inches.

**SUBSTITUTE:**

4. Place over the full width of the prepared trench bottom in equal lifts no greater than 8 inches thick.
-

## DIVISION 32

**Engineer: If SECTION 32 11 24 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 32 11 24 – RECYCLED ASPHALT AGGREGATE, PART 3, SUBPARAGRAPH 3.2.B

**DELETE:**

5. Compact material in minimum lifts of 8 inches.

**SUBSTITUTE:**

5. Compact material in maximum lifts of 8 inches.

**Engineer: If SECTION 31 12 16 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 32 12 16 – ASPHALT PAVING, PART 1, SUBPARAGRAPH 1.4.A

**DELETE:**

Placement Temperature Limitations		
Compacted Layer Thickness (T) (Inches)	Air and Surface Temperature Minimum (°F)	
	Top Layer of Pavement	Layers Below Top Layer
$T \leq 2$	60	50
$2 < T \leq 3$	50	40
$T > 3$	50	40

**SUBSTITUTE:**

Placement Temperature Limitations		
Compacted Layer Thickness (T) (Inches)	Air and Surface Temperature Minimum (°F)	
	Top Layer of Pavement	Layers Below Top Layer
$T \leq 2$	60	50
$2 < T \leq 3$	50	40
$T > 3$	45	35



## DIVISION 33

### SECTION 33 05 07 – TRENCHLESS INSTALLATION OF UTILITY PIPING, PART 1, SUBPARAGRAPH 1.7

#### DELETE:

- A. The anticipated geologic conditions are described in the GBR. Methods may include, but are not limited to, tunnel boring machine, microtunneling, auger boring, or open face manual excavation.

#### SUBSTITUTE:

- A. The anticipated geologic conditions are described in the GBR located [ ]. Methods may include, but are not limited to, tunnel boring machine, microtunneling, auger boring, or open face manual excavation.

**Engineer: If SECTION 33 05 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 33 05 19 – DUCTILE IRON PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 1, SUBPARAGRAPH 1.2

#### ADD:

- E. International Organization for Standardization (ISO):
1. 8179 – Ductile Iron Pipes – External Zinc-Based Coating

**Engineer: If SECTION 33 05 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 33 05 19 – DUCTILE IRON PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1

#### ADD:

- F. Bolt-Through Mechanical Joint Restraint:
1. In Fact Corporation, Foster Adaptor (4 inch to 20 inch)
  2. Star Pipe Products, Series 100 MJ x MJ Adapter (4 inch to 20 inch)

#### RENUMBER ACCORDINGLY

**Engineer: If SECTION 33 05 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### SECTION 33 05 19 – DUCTILE IRON PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1

#### ADD:

- I. DI Pipe with Zinc Coating:
1. American Cast Iron Pipe

### SECTION 33 05 19 – DUCTILE IRON PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.2.A.3

#### DELETE:

- b. In accordance with AWWA C115 suitable for the pressure specified.

**SUBSTITUTE:**

- b. In accordance with AWWA C115 suitable for [150] [ ] psi working pressure.

**Engineer: If SECTION 33 05 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 19 – DUCTILE IRON PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.2.A.6**

**ADD:**

- c. Coating: The exterior of the ductile iron pipe shall be coated with a layer of arc-sprayed zinc in accordance with ISO 8179. The mass of the zinc applied shall be 200g/m<sup>2</sup> of pipe surface area. A finishing layer topcoat shall be applied to the zinc. The coating system shall be in accordance with ISO 8179-1.

---

*The ENGINEER needs to specify the correct flanges for the Project. AWWA C207, Class D is the standard, for 150 psi applications, but E or F Flanges shall be used where necessary. Flanges may be either ring type flanges or hub type flanges, but all flanges supplied must be of the same type and class.*

**SECTION 33 05 24.23 – STEEL PIPE FOR WATER TRANSMISSION, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

2. Flanges shall be ring type, flat faced, and serrated in accordance with AWWA C207.

**SUBSTITUTE:**

2. Flanges shall be ring type, flat faced, and serrated in accordance with AWWA C207 Class [D], [E] [F].

*Several linings and coating options are specified, the ENGINEER should confirm all are acceptable for the Project.*

**SECTION 33 05 24.23 – STEEL PIPE FOR WATER TRANSMISSION PART 2, SUBPARAGRAPH 2.2.B**

**DELETE:**

2. Linings and coatings: Specials and fittings that cannot be mechanically lined and coated shall be lined and coated by hand-application using the same materials used for the pipe. Lining and coating applied in this manner shall provide protection equal to that specified for the pipe.

**SUBSTITUTE:**

2. Linings and coatings: Specials and fittings that cannot be mechanically lined and coated shall be lined and coated by hand-application using the same materials used for the pipe and in accordance with [AWWA C205] [AWWA C210]. Lining and coating applied in this manner shall provide protection equal to that specified for the pipe.

**Engineer: If SECTION 33 05 24.23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 24.23 – STEEL PIPE FOR WATER TRANSMISSION PART 3, SUBPARAGRAPH 3.2.A.3**

**DELETE:**

- a. General: (In its entirety)

**SUBSTITUTE:**

a. General:

- 1) Field welded joints shall be in accordance with AWWA C206.
- 2) Where exterior welds are called for, provide adequate space shall for the welding and inspection of the joint.
- 3) In laying welded steel pipe with buttstrap or lap joints, limit pipe deflection shall be limited to that which will produce a minimum lap of three times the thickness of the pipe, or 1-inch; whichever is greater, and which will not cause a weld to be closer than 1 inch to the nearest tangent of a bell radius.
- 4) Buttstraps, where required, shall be a minimum of 6 inches wide, the same thickness and material type as the pipe wall, and shall provide for a minimum lap at each pipe joint as described in AWWA C206.
- 5) Prior to the beginning of the welding procedure, any tack welds used to position the pipe during laying may be left in place if the conditions stated in AWWA C206 are met. Any annular space between the faying surfaces of the bell and spigot shall be equally distributed around the circumference of the joint by shimming, jacking, or other suitable means.
- 6) Immediately following pipe laying, the joints shall be finish-welded, tested if required, and the exterior joint spaces coated in accordance with the Contract Documents. Backfilled to at least 1 foot above the top of the previously laid pipe except for the last 100 feet, the joints of which shall be left open for subsequent field welding and coating.
- 7) Visual weld inspection, air testing, and application of water to weld shall not occur until after weld has cooled to ambient temperature. Air test double welded and single with seal welded lap joints in accordance with AWWA C206. Defects shall be removed, rewelded, and retested.
- 8) Each welding pass except the first one and the final one, may be peened to relieve shrinkage stresses; remove dirt, slag, and flux shall be removed before the succeeding bead is applied. Proposed methods for peening shall be included in welding procedure submittal.
- 9) In laying welded lap joints, spigots shall be laid ahead.
- 10) Remove all weld spatter prior to field joint coating or lining.

**Engineer: If SECTION 33 05 24.23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 24.23 – STEEL PIPE FOR WATER TRANSMISSION PART 3, SUBPARAGRAPH 3.2.A.3.b**

**DELETE:**

- 2) Field welded single lap joints may be made on the inside or the outside of the pipe at the CONTRACTOR's option.

**SUBSTITUTE:**

- 2) For pipes equal to or greater than 30-inches in diameter, field welded single lap joints shall be made on the inside of the pipe, unless otherwise approved by the ENGINEER. For pipes less than 30-inches in diameter, field welded single lap joints may be made on the inside or the outside of the pipe at the CONTRACTOR's option.

**Engineer: If SECTION 33 05 24.23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 24.23 – STEEL PIPE FOR WATER TRANSMISSION PART 3, SUBPARAGRAPH 3.3.A**

**ADD:**

8. Protect integrity of pipe coatings and linings adjacent to welding operations by placing fire blanket, or other adequate protection, extending a minimum of 36-inches both sides of weld. Repair any coating damage per Field Joint Coating requirements above.

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1.A**

**DELETE:**

4. North American Pipe Corporation

**SUBSTITUTE:**

4. Westlake Pipe & Fittings

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1.A**

**ADD:**

6. iPVC PPI America

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1.B**

**DELETE:**

1. North American Specialty Products: Certa-Lok RJ
2. North American Specialty Products: Certa-Lok RJIB

**SUBSTITUTE:**

1. Westlake Pipe & Fittings: Certa-Lok RJ
2. Westlake Pipe & Fittings: Certa-Lok RJIB

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1.D**

**DELETE:**

2. Star Pipe Products, StarGrip 4000 series and Series 4000G2 (4 inch to 12 inch only)

**SUBSTITUTE:**

2. Star Pipe Products:
  - a. StarGrip 4000
  - b. StarGrip 4000G2 (4 to 12 inch only)

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1.D**

**DELETE:**

7. The Ford Meter Box Company, UFR 15000 and UFR 1500R (4 inch to 6 inch only)

**SUBSTITUTE:**

7. The Ford Meter Box Company:
  - a. UFR 1500
  - b. UFR 1500R (4 to 8 inch only)

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1**

**ADD:**

- I. Bolt-Through Mechanical Joint Restraint:
  1. In Fact Corporation, Foster Adaptor (4 inch to 20 inch)
  2. Star Pipe Products, Series 100 MJ x MJ Adapter (4 inch to 20 inch)

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1.F**

**DELETE:**

6. North American Pipe: C900/RJ and C900/RJIB Certa-Lok

**SUBSTITUTE:**

6. Westlake Pipe & Fittings: C900/RJ and C900/RJIB Certa-Lok

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.1.E**

**DELETE:**

9. Sigma Pipe Products, Series 1100

**SUBSTITUTE:**

9. Sigma Pipe Products, PV-Lok PWP

**Engineer: If SECTION 33 05 31.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.**

**SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION, PART 2, SUBPARAGRAPH 2.2.A.1**

**DELETE:**

- a. Manufactured from an un-plasticized PVC compound having a minimum cell classification 12454 in accordance with ASTM D 1784.

**SUBSTITUTE:**

- a. Manufactured from an un-plasticized PVC compound sourced in the U.S.A. having a minimum cell classification 12454 in accordance with ASTM D 1784.

---

*Modify design criteria as required.*

**SECTION 33 05 39.41 – REINFORCED PIPE FOR SEWERS AND CULVERTS, PART 2, SUBPARAGRAPH 2.1.A**

**DELETE:**

1. Design criteria: *(In its entirety)*

**SUBSTITUTE:**

1. Design criteria:
  - a. [REDACTED]

---

*The ENGINEER is to review and determine that the callouts align. Verify using the following <https://www.codot.gov/business/apl/qualified-manufacturers-list.html>.*

**Engineer: If SECTION 33 05 61 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.**

**SECTION 33 05 61 – PRECAST MANHOLES AND BELOW-GRADE STRUCTURES, PART 2, SUBPARAGRAPH 2.1**

**DELETE:**

- A. Precast Concrete Manholes and Structures: *(In its entirety)*

**SUBSTITUTE:**

- A. Precast Concrete Manholes and Structures: Unless otherwise approved by the ENGINEER for a specific use, all concrete structures to be used shall be listed under the specific Manufacturer and production location on the Colorado Department of Transportation Qualified Manufacturers List - "Manufacturers of Pre-cast Concrete Structures."

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**Engineer: If SECTION 33 14 11 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.**

**33 14 11 – WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING**

**DELETE:**

- CPCS SECTION 33 14 11 *(In its entirety)*

**SUBSTITUTE:**

SECTION 33 14 11 (located in the Technical Specifications Appendix)

*Standard Pipe Joints are specified as 250 psi. This needs to be increased as required based on requirements of the specific Project.*

**SECTION 33 14 11 – WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING – GENERAL, PART 2, SUBPARAGRAPH 2.2.A**

**DELETE:**

1. Standard pipe joints shall be suitable for at least 250 psi water service and, regardless of type, designed to be self-centering.

**SUBSTITUTE:**

1. Standard pipe joints shall be suitable for at least [ ] psi water service and, regardless of type, designed to be self-centering.

*The ENGINEER is to determine with Operations if a hydrostatic test is required. If hydrostatic testing is not required use the following:*

**SECTION 33 14 11 – WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING – GENERAL, PART 3**

**DELETE:**

3.3 QUALITY CONTROL (In its entirety)

**SUBSTITUTE:**

3.3 QUALITY CONTROL

A. Disinfection of Waterlines:

1. General:
  - a. The OWNER shall identify the disinfection and testing procedures to be used for the pipeline and appurtenances. The water source for flushing (typically a nearby hydrant) will be identified.
  - b. The OWNER will take the water sample and perform the testing.
  - c. The CONTRACTOR shall provide access for the OWNER to perform the disinfection and testing.
  - d. Disinfection will occur after the pipe has been successfully pressure tested, unless otherwise noted.
  - e. Recycled waterlines are typically not disinfected; however, if contamination of the pipe occurs during shipment, storage, or installation, the OWNER will determine if disinfection is needed.
2. Disinfection process:
  - a. The OWNER will furnish the chemicals and hose equipment necessary for injection into a pipeline. Where required, the CONTRACTOR will provide a National Hose Thread adapter for connection to the OWNER's hoses.
  - b. Where areas of the Work are identified as spray-disinfected, this Work shall be done by the CONTRACTOR. Disinfect potable pipelines and fittings in accordance with AWWA C651 with an NSF 60 certified sodium hypochlorite solution.
3. Bacteriological testing process:
  - a. The OWNER will take the water sample for bacteriological testing.
  - b. When tested Monday through Thursday, the ENGINEER will notify the CONTRACTOR within 24 hours of the test results. When tested on a Friday, results will be available on Monday.
  - c. In the event of a failed test result, the CONTRACTOR shall re-clean the pipe and the OWNER will repeat the disinfection and testing process.
  - d. Final acceptance of the pipeline is contingent upon passing disinfection.

- B. Inspection of the Fabrication:
  - 1. No less than 14 days prior to the start of any phase of the pipe manufacture, notify the ENGINEER in writing of the manufacturing start date.
  - 2. During the manufacturing of the pipe, the ENGINEER shall be given access to areas where it is in process and shall be permitted to make inspections necessary to confirm compliance with the Contract Documents.
  - 3. The manufacturing of the pipe will be inspected by the OWNER at the OWNER's expense.
- C. Materials Testing:
  - 1. Ensure that the required material tests are performed. Coordinate the testing such that the ENGINEER may witness the tests, providing that the ENGINEER does not cause delays to the CONTRACTOR's schedule.
  - 2. The ENGINEER may request samples of any material, including lining and coating samples, for testing by the OWNER. Samples shall be furnished at no additional cost to the OWNER.
- D. CCTV Inspection:
  - 1. Employ the use of CCTV to record the quality of the interior of the pipe and ensure the pipe is clear of debris.
  - 2. If the video shows debris or damage, the CONTRACTOR is responsible for removing the debris and making repairs to the pipe.
  - 3. Potable pipelines: Equipment that will be in contact with the pipe shall be steam cleaned, rinsed with a 220 ppm hypochlorite solution, and rinsed with tap water prior to insertion.
  - 4. The video shall become part of the OWNER's records of the Work upon the Substantial Completion date.

*If hydrostatic testing is required specify the test pressure:*

**SECTION 33 14 11 – WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING – GENERAL, PART 3, SUBPARAGRAPH 3.3.A.3**

**DELETE:**

- a. Pipe shall be tested at 150 psi as measured at the lowest point in the test section.

**SUBSTITUTE:**

- a. Pipe shall be tested at [ ] psi as measured at the lowest point in the test section.

---

**Engineer: If SECTION 33 14 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 17 – WATER SERVICE LINES, PART 2, SUBPARAGRAPH 2.1.B.2**

**DELETE:**

- f. Romac Industries, Model Style SST, 4 inch to 20 inch

**SUBSTITUTE:**

- f. Romac Industries, Model Style SST, 4 inch to 24 inch

**Engineer: If SECTION 33 14 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 17 – WATER SERVICE LINES, PART 2, SUBPARAGRAPH 2.1.B.2**

**ADD:**

- h. Romac Industries, Model Style SST III, 4 inch to 30 inch



**Engineer: If SECTION 33 14 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 17 – WATER SERVICE LINES, PART 2, SUBPARAGRAPH 2.1**

**DELETE:**

- D. Meter Yolks (Copper Setters): *(In its entirety)*

**SUBSTITUTE:**

- D. Meter Yolks (Copper Setters):
1. A.Y. McDonald, Model 737-318WXCC33, 3/4 inch
  2. A.Y. McDonald, Model 737-418WXCC 44, 1 inch
  3. A.Y. McDonald, Model 720-B612WWFF 665, 1 1/2 inch, Bypass
  4. A.Y. McDonald, Model 720-612WWFF 660, 1 1/2 inch, No Bypass - IRR Meters
  5. A.Y. McDonald, Model 720-B712WWFF 775, 2 inch, Bypass
  6. A.Y. McDonald, Model 720-712WWFF 770, 2 inch, No Bypass – IRR Meters
  7. The Ford Meter Box Company, Model V83W-22-33-NL, 3/4 inch
  8. The Ford Meter Box Company, Model V84-W-22-44-NL, 1 inch
  9. The Ford Meter Box Company, Model VBB76-12B-11-66-NL, 1 1/2 inch, Bypass
  10. The Ford Meter Box Company, Model VBB76-12-11-66-NL, 1 1/2 inch, No Bypass – IRR Meters
  11. The Ford Meter Box Company, Model VBB77-12B-11-77-NL, 2 inch, Bypass
  12. The Ford Meter Box Company, Model VBB77-12-11-77-NL, 2 inch, No Bypass – IRR Meters
  13. Mueller Company, Model B-2489N, 3/4 inch
  14. Mueller Company, Model B-2489N, 1 inch
  15. Mueller Company, Model B-2423N, 1 1/2 inch, 2 inch, Bypass
  16. Mueller Company, Model B-2422-00N, 1 1/2 inch, 2 inch, No Bypass – IRR Meters

**Engineer: If SECTION 33 14 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 17 – WATER SERVICE LINES, PART 2, SUBPARAGRAPH 2.1.E**

**DELETE:**

2. Cambridge Brass, Model 302NL Series, 3/4 inch to 1 inch

**SUBSTITUTE:**

2. Cambridge Brass, Model 302NL Series, 3/4 inch to 2 inch

**Engineer: If SECTION 33 14 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 17 – WATER SERVICE LINES, PART 2, SUBPARAGRAPH 2.1.H**

**DELETE:**

3. Mueller Company, Compression Connection, Model H-15403N, 3/4 inch to 2 inch

**SUBSTITUTE:**

3. A.Y. McDonald, Compression Connection, Model 74758Q, 3/4 inch to 2 inch.
4. The Ford Meter Box Company, Model C44-33-Q-NL, 3/4 inch by 3/4 inch
5. The Ford Meter Box Company, Model C44-44-Q-NL, 1 inch by 1 inch
6. Mueller Company, Compression Connection, Model H-15403N, 3/4 inch to 2 inch

**Engineer: If SECTION 33 14 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 17 – WATER SERVICE LINES, PART 2, SUBPARAGRAPH 2.1.N**

**DELETE:**

1. Concrete: *(In its entirety)*

**SUBSTITUTE:**

1. Concrete:
  - a. Copeland Precast, Inc.
  - b. Oldcastle Precast
  - c. Forterra Precast
2. Plastic:
  - a. Bingham & Taylor, Model MMPE 2412
  - b. Bingham & Taylor, Model MMPE 2418
  - c. Bingham & Taylor, Model MMP 2430
  - e. Sigma Corporation, Model RMP 202442-FB-W
  - f. Sigma Corporation, Model RMP202448 FB DW

**Engineer: If SECTION 33 14 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 17 – WATER SERVICE LINES, PART 2, SUBPARAGRAPH 2.2.A.1**

**DELETE:**

- b. AWWA C800 using lead free copper alloy UNS No. C89520.

**SUBSTITUTE:**

AWWA C800 using lead free copper alloy UNS No. C89520 or C87850 (Domestic).

**Engineer: If SECTION 33 14 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 17 – WATER SERVICE LINES, PART 2, SUBPARAGRAPH 2.2.G**

**DELETE:**

1. Buna N sealing elements.

**SUBSTITUTE:**

1. EPDM sealing elements.
2. Installation only allowed inside structures; direct bury is prohibited.

---

**Engineer: If SECTION 33 14 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 19 – VALVES FOR WATER UTILITY PIPING, PART 1, SUBPARAGRAPH 1.1.B**

**ADD:**

3. SECTION 33 14 11 – WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING – GENERAL

**Engineer: If SECTION 33 14 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 14 19 – VALVES FOR WATER UTILITY PIPING, PART 2, SUBPARAGRAPH 2.1**

**DELETE:**

- B. Type V125 Resilient-Seated Gate Valve: *(In its entirety)*

**SUBSTITUTE:**

- B. Type V125 Resilient-Seated Gate Valve:
1. American Flow Control/American Cast Iron Pipe Company
  2. Clow
  3. EJ
  4. Kennedy
  5. Mueller
  6. U.S. Pipe and Foundry Company

**Engineer:** *If SECTION 33 14 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:*

**SECTION 33 14 19 – VALVES FOR WATER UTILITY PIPING, PART 2, SUBPARAGRAPH 2.2.C.1.c**

**DELETE:**

- 3) Supplied with 2-inch square wrench nuts. Valves installed in the recycled water system shall have EPDM seats.

**SUBSTITUTE:**

- 3) Supplied with 2-inch square wrench nuts.  
4) Valves shall have an elastomeric encapsulated gate disc with twin seal design. Valves installed in the recycled water system shall have EPDM encapsulated gate disc with twin seal design.

**RENUMBER ACCORDINGLY**

**SECTION 33 14 19 – VALVES FOR WATER UTILITY PIPING, PART 2, SUBPARAGRAPH 2.2.C.7.a**

**DELETE:**

- 8) Maximum operating pressure: 150 psig.

**SUBSTITUTE:**

- 8) Maximum operating pressure: [ ] psig.

**Engineer:** *If SECTION 33 14 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:*

**SECTION 33 14 19 – VALVES FOR WATER UTILITY PIPING, PART 2, SUBPARAGRAPH 2.3.H**

**ADD:**

2. Valve boxes shall be as specified in SECTION 33 14 11.

**Engineer:** *If SECTION 33 14 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:*

**SECTION 33 14 19 – VALVES FOR WATER UTILITY PIPING, PART 2, SUBPARAGRAPH 2.3.I**

**ADD:**

2. Valve boxes shall be as specified in SECTION 33 14 11.

**Engineer: If SECTION 33 14 20 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### **SECTION 33 14 20 – FIRE HYDRANTS, PART 1, SUBPARAGRAPH 1.2**

**DELETE:**

- C. National Fire Protection Association (NFPA):
  - 1. NFPA 1963 – Standard for Fire Hose Connections
- D. NSF/ANSI:

**SUBSTITUTE:**

- C. National Association of Pipe Fabricators (NAPF):
  - 1. 500-03 – Surface Preparation Standard for Ductile Iron Pipe and Fittings in Exposed Locations Receiving Special External Coatings and/or Special Internal Linings
- D. National Fire Protection Association (NFPA):
  - 1. NFPA 1963 – Standard for Fire Hose Connections
- E. NSF International/American National Standards Institute (NSF/ANSI):
  - 1. 61 – Drinking Water System Components – Health Effects

**Engineer: If SECTION 33 14 20 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### **SECTION 33 14 20 – FIRE HYDRANTS, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

- H. Coatings: *(In its entirety)*

**SUBSTITUTE:**

- H. Finishes:
  - 1. Coat hydrants in accordance with AWWA C502 and the requirements specified in this Section.
  - 2. Coat the interior of the hydrant with epoxy in accordance with AWWA C550.
  - 3. Abrasive blast and clean ductile iron surfaces for coating in accordance with NAPF 500-03.
  - 4. Coat the exposed exterior surfaces of the hydrants with the following system:
    - a. Epoxy primer: 8-12 mils, DFT.
    - b. Polyurethane enamel topcoat: 4-8 mils, DFT. Color: Yellow, similar to Federal Color No. 13538.
    - c. Total coating system: 12-20 mils, DFT.
  - 5. Coat the hydrant shoe and connecting gland with fusion-bonded epoxy in accordance with AWWA C550, including exterior and interior surfaces.
  - 6. Exposed exterior surfaces below the ground line shall be coated with asphaltic coating in accordance with AWWA C502.
- I. Traffic Features: Hydrants shall be equipped with traffic features that include a breakaway flange or lug system with a shaft coupling.

---

**Engineer: If SECTION 33 15 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

### **SECTION 33 15 00 – RUBBER-SEATED BUTTERFLY VALVES, PART 2, SUBPARAGRAPH 2.1.B.1**

**DELETE:**

- c. EIM, Type WD

**SUBSTITUTE:**

- c. EIM/Bettis, Type WD

**Engineer: If SECTION 33 15 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 15 00 – RUBBER-SEATED BUTTERFLY VALVES, PART 2, SUBPARAGRAPH 2.1.B.2.a**

**DELETE:**

- 2) EIM, Type WO

**SUBSTITUTE:**

- 2) EIM/Bettis, Type WO
- 

**Engineer: If SECTION 33 19 13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 19 13 – WATER METERS FOR SERVICE LINE INSTALLATIONS, PART 2, SUBPARAGRAPH 2.3.A.2**

**DELETE:**

- a. The AMR system: Itron Model 100W series ERT.

**SUBSTITUTE:**

- a. The AMR system: Itron Model 100W series ERT or OpenWay Riva 500W ERT Module.

**Engineer: If SECTION 33 19 13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:**

**SECTION 33 19 13 – WATER METERS FOR SERVICE LINE INSTALLATIONS, PART 3, SUBPARAGRAPH 3.1**

**DELETE:**

- B. Outside Meter Setting: *(In its entirety)*

**SUBSTITUTE:**

- B. Outside Meter Setting:
    - 1. Install outside meters with the inlet and outlet spuds in a horizontal position and housed in a concrete or approved composite meter pit or vault.
    - 2. Install meter installed in an approved coppersetter or yoke.
    - 3. Install coppersetters for 1 inch and smaller meters with the meter spuds located 18 inches below the meter pit lid to facilitate maintenance and replacement.
    - 4. The meter shall sit horizontally with the meter register pointing up.
    - 5. Install meters 3 inch and larger in concrete vaults.
    - 6. Deviations in installation height, spacing, pipe location, mounting supports, and other details need to be approved in advance in writing by the Meter Inspector.
- 

**SECTION 33 41 17 – SUBDRAINAGE PIPES, PART 2, SUBPARAGRAPH 2.1.A.3.a**

**DELETE:**

- 4) Minimum inlet area: 5 sq in/ft of pipe.

**SUBSTITUTE:**

- 4) Minimum inlet area: [ ] sq in/ft of pipe.

*Engineer to determine if “crown” or “invert”.*

**SECTION 33 41 17 – SUBDRAINAGE PIPES, PART 3, SUBPARAGRAPH 3.1.A.**

**ADD:**

2. Install drainage pipe with one row of slots oriented along the [ ] of the pipe.

**RENUMBER ACCORDINGLY**

***Engineer: If SECTION 33 41 17 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:***

**SECTION 33 41 17 – SUBDRAINAGE PIPES, PART 3, SUBPARAGRAPH 3.2**

**DELETE:**

- A. Toe Drain Pipe:

**SUBSTITUTE:**

- A. Subdrainage Pipe:

**DIVISION 40**

*Modify as required.*

**SECTION 40 05 59.23 – FABRICATED STAINLESS STEEL SLIDE GATES**

**DELETE:**

SUPPLEMENT A – FABRICATED SST SLIDE GATE SCHEDULE: *(In its entirety)*

**SUBSTITUTE:**

**SUPPLEMENT A – FABRICATED SST SLIDE GATE SCHEDULE**

Gate ID No.	Gate Size (clear opening width by height inches)	Design and Operating Head (feet) Seating/Unseating Condition	Mounting Configuration (flange or channel)	Frame Type (self-contained or conventional)	Upward or Downward Opening (weir gate)	Rising or Non-rising stem	Actuators
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

*Modify as required.*

**SECTION 40 41 00 – HEAT TAPE SYSTEMS, PART 2, SUBPARAGRAPH 2.2**

**DELETE:**

C. Connection System: *(In its entirety)*

**SUBSTITUTE:**

- C. Connection System:
  - 1. Rating: NEMA 250, Type 4 and FMG approved.
  - 2. Operating monitor light: Furnish with each circuit power connection kit to indicate when heat tracing is energized.
  - 3. Securing tape:
    - a. Plastic piping systems: [ ].
    - b. Metallic piping systems: [ ].

*Modify as required.*

**SECTION 40 41 00 – HEAT TAPE SYSTEMS, PART 2, SUBPARAGRAPH 2.2.D.4**

**DELETE:**

a. SP-ST, UL listed, rated 22 A, 120 VAC to 240 VAC.

**SUBSTITUTE:**

a. SP-ST, UL listed, rated [ ] A, [ ].

*Modify as required.*

**SECTION 40 41 00 – HEAT TAPE SYSTEMS, PART 2, SUBPARAGRAPH 2.3.A**

**DELETE:**

1. Type: Adjustable setting, 15°F to 140°F.

**SUBSTITUTE:**

1. Type: Adjustable setting, [ ]°F to 140°F.

*Modify as required.*

**SECTION 40 41 00 – HEAT TAPE SYSTEMS, PART 2, SUBPARAGRAPH 2.3.B**

**DELETE:**

4. Voltage: 208 VAC or 277 VAC.

**SUBSTITUTE:**

4. Voltage: [ ] VAC.

---

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 1, SUBPARAGRAPH 1.4.B**

**DELETE:**

4. Tests: Associated test plan Submittal completed. For FDT and PAT, a notice of the test schedule is required 4 weeks prior to the start of the test.

**SUBSTITUTE:**

4. Tests: Associated test plan Submittal completed. For FDT and PAT, a notice of the test schedule is required [ ] weeks prior to the start of the test.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 1, SUBPARAGRAPH 1.5.C.2**

**DELETE:**

- a. Submit within 30 days after the Pre-Construction Meeting.

**SUBSTITUTE:**

- a. Submit within [ ] days after the Pre-Construction Meeting.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 1, SUBPARAGRAPH 1.6.D.3**

**DELETE:**

- a. Training session duration: One instructor day.
- b. Number of training sessions: One.



**SUBSTITUTE:**

- a. Training session duration: [ ] instructor day.
- b. Number of training sessions: [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 1, SUBPARAGRAPH 1.6.D.4**

**DELETE:**

- a. Training session duration: One instructor day.
- b. Number of training sessions: One.

**SUBSTITUTE:**

- a. Training session duration: [ ] instructor day.
- b. Number of training sessions: [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 2, SUBPARAGRAPH 2.2.A.1.b**

**DELETE:**

- 2) Type: 600 V, Type THHN/THWN stranded copper.

**SUBSTITUTE:**

- 2) Type: 600 V, Type [ ] stranded copper.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 2, SUBPARAGRAPH 2.2.A.1**

**DELETE:**

- c. Analog signal circuits: *(In its entirety)*

**SUBSTITUTE:**

- c. Analog signal circuits:
  - 1) Type: [ ] V, Type 3 stranded copper, twisted shielded pairs.
  - 2) Size: # [ ] AWG, minimum.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 2, SUBPARAGRAPH 2.2.A.3**

**DELETE:**

- b. Each control panel and cabinet shall have a dedicated #6 AWG ground conductor from the ground grid to the grounding terminal, control panel, and cabinet. Control panel grounding:

**SUBSTITUTE:**

- b. Each control panel and cabinet shall have a dedicated # [ ] AWG ground conductor from the ground grid to the grounding terminal, control panel, and cabinet. Control panel grounding:

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 2,  
SUBPARAGRAPH 2.2.B.1**

**DELETE:**

- c. The graphic materials shall be cemented to the LCP front with 3M 300 series adhesive or as recommended by the Manufacturer and approved by the ENGINEER, to form the mimic bus.

**SUBSTITUTE:**

- c. The graphic materials shall be cemented to the LCP front with [ ] adhesive or as recommended by the Manufacturer and approved by the ENGINEER, to form the mimic bus.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 2,  
SUBPARAGRAPH 2.4.B**

**DELETE:**

9. Separate analog and DC circuits by at least 6-inches from AC power and control wiring, except at unavoidable crossover points and at device terminations. Separation methods and channels in cabinets and control panels, including concrete trough, shall be approved by the ENGINEER.

**SUBSTITUTE:**

9. Separate analog and DC circuits by at least [ ]-inches from AC power and control wiring, except at unavoidable crossover points and at device terminations. Separation methods and channels in cabinets and control panels, including concrete trough, shall be approved by the ENGINEER.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 2,  
SUBPARAGRAPH 2.4.F.1.b**

**DELETE:**

- 3) Panel lighting and service outlets: Put on separate 20 A 120 VAC branch circuit.

**SUBSTITUTE:**

- 3) Panel lighting and service outlets: [ ] 120 VAC branch circuit.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH A**

**DELETE:**

5. Power: 125 VDC input, with integral annunciator filtering.

**SUBSTITUTE:**

5. Power: [ ] input, with integral annunciator filtering.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH A.7**

**DELETE:**

- c. Voltage: 125 VDC or 120 VAC.

**SUBSTITUTE:**

- c. Voltage: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A**

**DELETE:**

- B. Carbon Monoxide Gas Monitoring System:

**SUBSTITUTE:**

- B. [REDACTED] Gas Monitoring System:

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH B.1**

**DELETE:**

- a. The carbon monoxide gas monitoring systems shall measure and provide the control and alarm indication in the event the gas level exceeds the limit SPs.

**SUBSTITUTE:**

- a. The [REDACTED] gas monitoring systems shall measure and provide the control and alarm indication in the event the gas level exceeds the limit SPs.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH B.3**

**DELETE:**

- c. Power requirements: The system shall operate on 110 VAC, 60 Hz.

**SUBSTITUTE:**

- c. Power requirements: The system shall operate on [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH C.2**

**DELETE:**

- a. Eaton D853 series with three-position selector switch.

**SUBSTITUTE:**

- a. [REDACTED].

**Engineer: If SECTION 40 50 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.**

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH C**

**DELETE:**

3. Enclosure: Rugged metal case designed for utility and industrial applications. *(In its entirety)*

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH D.8**

**DELETE:**

- a. Intermatic: FF Series.

**SUBSTITUTE:**

- a. Intermatic: [ ] Series.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH E.4**

**DELETE:**

- a. Automatic Timing and Controls, Series 305E; Eagle Signal, HP5 Series.

**SUBSTITUTE:**

- a. [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH F**

**DELETE:**

6. Power: 24 VDC.

**SUBSTITUTE:**

6. Power: [ ] VDC.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH F.7**

**DELETE:**

- a. Acromag, Model 361A.

**SUBSTITUTE:**

- a. [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH G**

**DELETE:**

6. Power: 24 VDC.

**SUBSTITUTE:**

6. Power: [ ] VDC.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH G.7**

**DELETE:**

- a. Moore Industries, Model ECT/4-20MA/4-20MA/24DC/-TX [DIN].

**SUBSTITUTE:**

- a. Moore Industries, Model [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH H.2**

**DELETE:**

- a. Stream fluid: Water with 5% solids. Electromagnetic flow meters used shall be provided and installed with isolation transformers.

**SUBSTITUTE:**

- a. Stream fluid: [ ]. Electromagnetic flow meters used shall be provided and installed with isolation transformers.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH H.3**

**DELETE:**

- a. Flow range: 0 to 5,000 gpm.

**SUBSTITUTE:**

- a. Flow range: 0 to [ ] gpm.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH H.5**

**DELETE:**

- b. Connection type: 150 lb ANSI raised-face flanges or wafer type depending on meter size, unless otherwise shown on the Drawings.

**SUBSTITUTE:**

- b. Connection type: [ ] pound ANSI raised-face flanges or wafer type depending on meter size, unless otherwise shown on the Drawings.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH H**

**DELETE:**

- 7. Power: 24 VDC, unless otherwise shown on the Drawings.

**SUBSTITUTE:**

- 7. Power: [ ] VDC, unless otherwise shown on the Drawings.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH H.8**

**DELETE:**

- a. Meter tube material: Type 316 SST, unless otherwise shown on the Drawings.
- b. Liner material: Teflon, unless otherwise shown on the Drawings.

**SUBSTITUTE:**

- a. Meter tube material: Type [ ], unless otherwise shown on the Drawings.
- b. Liner material: [ ], unless otherwise shown on the Drawings.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH H**

**DELETE:**

- 13. Isolate the meter flow tube and the transmitter from the ground.
- 14. Isolate the meter flow tube from piping and provide piping bonding jumper around the flow tube.
- 15. Provide an ENGINEER-approved, electrical conduit, non-conductive isolating section.
- 16. Provide and install a Manufacturer recommended isolating transformer on the input power to the flow meter.
- 17. Mount the transmitter on an insulating surface.
- 18. Install a GFI on the input to the isolating transformer.
- 19. Measure and verify that the impedance to ground at the flow tube is infinite.
- 20. Manufacturer and product:
  - a. Rosemount 8750W.

**SUBSTITUTE:**

- 13. [ ].
- 14. [ ].
- 15. [ ].
- 16. Provide and install a Manufacturer recommended isolating transformer on the input power to the flow meter.
- 17. [ ].
- 18. Install a GFI on the input to the isolating transformer.
- 19. [ ].

20. Manufacturer and product:  
a. Rosemount [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH J**

**DELETE:**

5. Signal interface: 4 mA to 20 mA DC.

**SUBSTITUTE:**

5. Signal interface: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH J**

**DELETE:**

7. Power: 120 VAC unless otherwise shown on the Drawings.

**SUBSTITUTE:**

7. Power: [REDACTED] unless otherwise shown on the Drawings.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH M**

**DELETE:**

5. Signal interface: 4 mA to 20 mA DC.

**SUBSTITUTE:**

5. Signal interface: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH M.7**

**DELETE:**

- a. Red Lion LD4A05P0.

**SUBSTITUTE:**

- a. Red Lion [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH N.2**

**DELETE:**

- d. Temperature range: Level element shall be capable of operating in the range of -40°C to 80°C.

**SUBSTITUTE:**

- d. Temperature range: Level element shall be capable of operating in the range of [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH N.8**

**DELETE:**

- a. Transducer: Vega PULS 64.  
b. Transmitter: Vega DIS176.

**SUBSTITUTE:**

- a. Transducer: [ ].  
b. Transmitter: [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A**

**DELETE:**

- P. Accumulator Level Control Switch: *(In its entirety)*

**SUBSTITUTE:**

- P. HPU System:
1. Accumulator Level Control Switch:
    - a. General:
      - 1) Provide a large SST tag.
      - 2) Function: Differential level control of pressurized accumulator tank.
      - 3) Type: Heavy duty, industrial type.
      - 4) Liquid: Hydraulic oil. Specific gravity equals 0.864, unless otherwise shown on the Drawings.
    - b. Performance:
      - 1) Differential level control of hydraulic oil accumulator tank level between a maximum oil level of 74 gallons and a minimum oil level of 54 gallons, unless otherwise indicated by the ENGINEER.
      - 2) Tandem operation (two switch mechanisms) providing the same functions as two single units. Adjustable calibration to give individual switching actions throughout the range of the float travel.
      - 3) Temperature: 0°F to 100°F minimum, or as required.
      - 4) Pressure: 250 psi minimum, or as required.
    - c. Features:
      - 1) Complete float and trim construction Type 316 stainless steel.
      - 2) Mounting: Side-mounted; coordinate mounting connection with the Accumulate Tank Manufacturer and the ENGINEER.
    - d. Signal interface:
      - 1) Switch: 2 DPST, arrangement.
      - 2) Contact: Rated 5 A continuous at 120 VAC.
    - e. Manufacturer and product:
      - 1) Magnetrol Level Control Model TF-63.
  2. Reservoir level switch:
    - a. General:
      - 1) Provide a large SST tag.
      - 2) Function: Full-size, multi-point liquid level switch.
      - 3) Type: Heavy-duty, industrial type.
      - 4) Liquid: ISO 46 hydraulic oil, specific gravity = 0.865.



- b. Performance:
  - 1) Level control of hydraulic oil reservoir tank level.
  - 2) Adjustable switching heights and actions throughout the range of the float travel.
  - 3) Temperature: 30°F minimum to 150°F maximum.
  - 4) Pressure: 50 psi minimum, or as required.
- c. Features:
  - 1) Complete float and trim construction Type 316 stainless steel.
  - 2) Mounting: Side-mounted; coordinate mounting connection and length with the Tank Manufacturer and the ENGINEER.
- d. Signal interface:
  - 1) Switch: 2 DPST, arrangement.
  - 2) Contact: Rated 5 A continuous at 120 VAC.
- e. Manufacturer and product:
  - 1) Madison M Series.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH R.1**

**DELETE:**

- e. SST sensing lines shall be provided and installed as recommended and required by the Annular Pressure Sensor Pressure Transmitter Manufacturer to provide a complete, fully functioning pressure sensing system.
- f. Coordinate annular pressure sensors and pressure transmitters' interface, connection, distance of sensing lines, and requirements with the Manufacturers and other Contractors to provide a complete, fully functioning pressure sensing system.

**SUBSTITUTE:**

- e. [REDACTED].
- f. [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH R.2**

**DELETE:**

- b. Maximum adjustable range: Such that the noted range shall lie between 40% and 80% of the maximum adjustable range.

**SUBSTITUTE:**

- b. Maximum adjustable range: Such that the noted range shall lie between [REDACTED]% and [REDACTED]% of the maximum adjustable range.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH R.3**

**DELETE:**

- h. Fill fluid: Silicone, unless otherwise shown on the Drawings.

**SUBSTITUTE:**

- h. Fill fluid: [REDACTED], unless otherwise shown on the Drawings.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH S.3**

**DELETE:**

- c. Case material: Phenolic plastic.

**SUBSTITUTE:**

- c. Case material: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH S.3**

**DELETE:**

- i. Case fill liquid: Glycerin.

**SUBSTITUTE:**

- i. Case fill liquid: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH T**

**DELETE:**

- 6. Enclosure: Die-cast aluminum NEMA 4X.

**SUBSTITUTE:**

- 6. Enclosure: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH U**

**DELETE:**

- 4. Enclosure: Die-cast aluminum NEMA 4X.

**SUBSTITUTE:**

- 4. Enclosure: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH V**

**DELETE:**

- 4. SST class 150 flanges.
- 5. Sleeve: Viton or as recommended by the Manufacturer for application.

**SUBSTITUTE:**

4. SST class [ ] flanges.
5. Sleeve: [ ] or as recommended by the Manufacturer for application.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH V.11**

**DELETE:**

- a. Red Valve Series 40.

**SUBSTITUTE:**

- a. Red Valve Series [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH W.6**

**DELETE:**

- a. Rosemount, Model 3144.

**SUBSTITUTE:**

- a. Rosemount, Model [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH X.3**

**DELETE:**

- e. Power supply: 24 VDC supply.

**SUBSTITUTE:**

- e. Power supply: [ ] VDC supply.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH X.4**

**DELETE:**

- a. Dwyer, RHP Series.

**SUBSTITUTE:**

- a. [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH Y.2**

**DELETE:**

- d. Coil voltage rating: 24 VAC.

**SUBSTITUTE:**

- d. Coil voltage rating: [ ] VAC.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH Y.4**

**DELETE:**

- a. IDEC, RTE-P1AF20.

**SUBSTITUTE:**

- a. [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH CC.2**

**DELETE:**

- c. Power: Individual power supplies shall be rated for 10 A output. A minimum of two power supplies shall be provided. The total number of power supplies provided shall be sized for actual loads with 50% spare capacity. Residual ripple: Less than 150 mV peak to peak.

**SUBSTITUTE:**

- c. Power: Individual power supplies shall be rated for [ ] A output. A minimum of two power supplies shall be provided. The total number of power supplies provided shall be sized for actual loads with 50% spare capacity. Residual ripple: Less than 150 mV peak to peak.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH CC.10**

**DELETE:**

- a. Phoenix Contact, QUINT-PS-100-240AC/24DC/10 with QUINT-DIODE/40 module.

**SUBSTITUTE:**

- a. Phoenix Contact, [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH DD.2**

**DELETE:**

- c. Power: 3,000 W minimum, sized for actual loads with 50% spare capacity.

**SUBSTITUTE:**

- c. Power: [ ] W minimum, sized for actual loads with 100% spare capacity.

**Engineer: If SECTION 40 50 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.**

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH DD**

**ADD:**

4. Absopulse, Model BAP Series

**Engineer: If SECTION 40 50 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.**

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH**

**DELETE:**

- EE. Absopulse, Model BAP Series Inverter, 125 VDC to 120 VAC

**SUBSTITUTE:**

- EE. Inverter, 125 VDC to 120 VAC

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH EE.2**

**DELETE:**

- c. Power: 500 VA minimum, sized for actual loads with 100% spare capacity.

**SUBSTITUTE:**

- c. Power: [ ] VA minimum, sized for actual loads with 100% spare capacity.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH EE.4**

**DELETE:**

- a. Philtek, Model PIV.

**SUBSTITUTE:**

- a. [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF.2**

**DELETE:**

- a. Lights: Full voltage 120 VAC high-visibility LED, push-to-test type.

**SUBSTITUTE:**

- a. Lights: Full voltage [ ] high-visibility LED, push-to-test type.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH GG.1.I**

**DELETE:**

- 1) The minimum UPS sizes shall be as follows:

Local Control Panel	Output Capacity	Runtimes Full Load / 1/2 Load
LCP-UPS	7,000 VA	12 / 33

I/O Voltage: 120 VAC single phase  
Voltage Regulation:  $\pm 3\%$  nominal regulation  
Frequency (Input): 60 Hz  $\pm$  to  $\pm 3$  Hz  
Operating Temperature: 0°C to 40°C  
Storage Temperature: -20°C to +60°C (-20°C to +40°C, unless battery is removed)

**SUBSTITUTE:**

- 1) The minimum UPS sizes shall be as follows:

Local Control Panel	Output Capacity	Runtimes Full Load / 1/2 Load
[REDACTED]	[REDACTED]	[REDACTED]

I/O Voltage: 120 VAC single phase  
Voltage Regulation:  $\pm 3\%$  nominal regulation  
Frequency (Input): 60 Hz  $\pm$  to  $\pm 3$  Hz  
Operating Temperature: 0°C to 40°C  
Storage Temperature: -20°C to +60°C (-20°C to +40°C, unless battery is removed)

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH GG.1**

**DELETE:**

- m. Operation: The UPS shall be comprised of an inverter, a precision battery float charger, a sealed, maintenance-free battery, a full-duplex RS232 computer interface port, and contained in a single compact package.

**SUBSTITUTE:**

- m. Operation: The UPS shall be comprised of an inverter, a precision battery float charger, a sealed, maintenance-free battery, [REDACTED], and contained in a single compact package.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH GG.2.a**

**DELETE:**

- 1) APC, SUA500PDR-S including the following options:

**SUBSTITUTE:**

- 1) [REDACTED] including the following options:

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH GG.2.a.1)**

**DELETE:**

- b) APC temperature sensor.

**SUBSTITUTE:**

- b) [ ] temperature sensor.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH GG.2.b**

**DELETE:**

- 1) Eaton, FERRUPS Model FE series with external bypass switch model BPE.
- 2) Eaton, 5P1000 with Network Card.

**SUBSTITUTE:**

- 1) [ ].
- 2) [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH HH**

**DELETE:**

- 2. ControlWave Micro PLC/RTU/PAC hybrid controller:

**SUBSTITUTE:**

- 2. [ ] hybrid controller:

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH HH.2**

**DELETE:**

- a. 8-slot panel-mount base, PSSM, Micro 150 CPU, System Controller with keylock, and watch dog.

**SUBSTITUTE:**

- a. [ ]-slot panel-mount base, PSSM, Micro 150 CPU, System Controller with keylock, and watch dog.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH HH.2**

**DELETE:**

- c. Communications: Two 10/100 Base T Ethernet port with RJ45 connectors and two serial communication ports, one RS 485, one RS 232

**SUBSTITUTE:**

- c. Communications: [ ] 10/100 Base T Ethernet port with RJ45 connectors and [ ] serial communication ports, [ ] RS 485, one RS 232

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH HH.2.m.1)**

**DELETE:**

- a) High density sixteen-point input.

**SUBSTITUTE:**

- a) High density [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH HH.2.m.2)**

**DELETE:**

- a) High density sixteen-point output with LEDs.

**SUBSTITUTE:**

- a) High density [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH HH.2.m.3)**

**DELETE:**

- a) Isolated eight-channel input.

**SUBSTITUTE:**

- a) Isolated [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH HH.2.m.4)**

**DELETE:**

- a) Isolated four-channel input.

**SUBSTITUTE:**

- a) Isolated [ ].



*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH HH**

**DELETE:**

4. Cable (RS-485, Coax, RJ-45) interface: Cables and devices required for the interconnection between the PLC ports and the specific system-required cable shall be provided and installed including, but not limited to, cables, connectors, patch panels, power supplies, communications ports, I/O racks, cables, etc.

**SUBSTITUTE:**

4. [ ] interface: Cables and devices required for the interconnection between the PLC ports and the specific system-required cable shall be provided and installed including, but not limited to, cables, connectors, patch panels, power supplies, communications ports, I/O racks, cables, etc.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH HH**

**DELETE:**

5. Manufacturer and products: *(In its entirety)*

**SUBSTITUTE:**

5. Manufacturer and products:
  - a. Hardware and software:
    - 1) Emerson/Bristol Babcock, [ ].
  - b. Input/output models:
    - 1) Discrete input:
      - a) Emerson/Bristol Babcock, [ ].
    - 2) Discrete output:
      - a) Emerson/Bristol Babcock, [ ].
    - 3) Analog input:
      - a) Emerson/Bristol Babcock, [ ].
    - 4) Analog output:
      - a) Emerson/Bristol Babcock, [ ].
  - c. Pre-manufactured remote termination modules:
    - 1) Emerson/Bristol Babcock, [ ].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH II**

**DELETE:**

2. The GCP common PLC (GCP-PLC) and shall be provided with the following, at a minimum:

**SUBSTITUTE:**

2. The [ ] and shall be provided with the following, at a minimum:

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH II.3.a**

**DELETE:**

- 1) High density twenty-point input.

**SUBSTITUTE:**

- 1) High density [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH II.3.b**

**DELETE:**

- 1) High density twenty-point input.

**SUBSTITUTE:**

- 1) High density [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH JJ.3**

**DELETE:**

- d. Xenon strobe lamp.

**SUBSTITUTE:**

- d. [REDACTED] strobe lamp.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH KK**

**DELETE:**

5. Power: 125 VDC or 120 VAC.

**SUBSTITUTE:**

5. Power: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH KK.6**

**DELETE:**

- a. Federal Signal Corp. 350-120VAC-WB with panel mount gasket kit and volume control kit.
- b. Federal Signal Corp. 450-125VDC-WB with panel mount gasket kit and volume control kit.

**SUBSTITUTE:**

- a. [REDACTED].
- b. [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH LL**

**DELETE:**

- 5. Power: 120 VAC.

**SUBSTITUTE:**

- 5. Power: [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH MM.2**

**DELETE:**

- a. Potentiometer resistance: 0 to 1,000 ohms, unless otherwise indicated or required.

**SUBSTITUTE:**

- a. Potentiometer resistance: 0 to [REDACTED] ohms, unless otherwise indicated or required.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH MM.4**

**DELETE:**

- b. Output: 4 mA to 20 mA DC for load impedance 0 to 1,200 ohms when configured as internally powered.

**SUBSTITUTE:**

- b. Output: 4 mA to 20 mA DC for load impedance 0 to [REDACTED] ohms when configured as internally powered.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH MM**

**DELETE:**

- 6. Power: 24 VDC, unless otherwise noted.

**SUBSTITUTE:**

- 6. Power: [REDACTED], unless otherwise noted.

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,  
SUBPARAGRAPH MM.7**

**DELETE:**

- a. Moore Industries, Model SPT/TPRG/PRG/U/[DIN].

**SUBSTITUTE:**

- a. Moore Industries, Model [REDACTED].

*Modify as required.*

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT B**

**DELETE:**

**SUPPLEMENT B  
INSTRUMENT LIST**

(Note: All required instruments are not listed)

<b>Unit Process</b>	<b>Tag Number</b>	<b>Component Code</b>	<b>Component Description</b>	<b>Design Characteristics</b>

**SUBSTITUTE:**

**SUPPLEMENT B  
INSTRUMENT LIST**

(Note: All required instruments are not listed)

Unit Process	Tag Number	Component Code	Component Description	Design Characteristics
[ ]	[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]	[ ]
[ ]	[ ]	[ ]	[ ]	[ ]

## DIVISION 48

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*Modify as required.*

### **SECTION 48 70 00 – GENERATOR STARTUP AND COMMISSIONING, PART 3, SUBPARAGRAPH 3.2.A.2**

**DELETE:**

- a. Tune automatic control loops.

**SUBSTITUTE:**

- a. [REDACTED].

*Modify as required.*

### **SECTION 48 70 00 – GENERATOR STARTUP AND COMMISSIONING, PART 3, SUBPARAGRAPH 3.2.B.3.a**

**DELETE:**

- 8) Demonstration of control in automatic at multiple setpoints.

**SUBSTITUTE:**

- 8) Demonstration of control in automatic at [REDACTED].

*Modify as required.*

### **SECTION 48 70 00 – GENERATOR STARTUP AND COMMISSIONING, PART 3, SUBPARAGRAPH 3.2.B.3.a**

**DELETE:**

- 11) Continuous uninterrupted off-line operation for 1 day.
- 12) Continuous uninterrupted on-line operation for 1 day.

**SUBSTITUTE:**

- 11) Continuous uninterrupted off-line operation for [REDACTED] day.
- 12) Continuous uninterrupted on-line operation for [REDACTED] day.

# SUPPLEMENTARY STANDARD DETAILS - CONTRACT

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**Engineer: If Standard Details are applicable to your project, the following change MUST stay in the Supplementary Standard Details**

## STANDARD DETAILS – TABLE OF CONTENTS

### DELETE:

Table of Contents *(In its entirety)*

### SUBSTITUTE:

Table of Contents *(located in the Standard Details Appendix)*

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## DIVISION 1

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**Engineer: If Detail 01050 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

### **DETAIL 01050 – ELECTRICAL AND CATHODIC PROTECTION LEGEN**

#### **DELETE:**

DETAIL 01050 *(In its entirety)*

#### **SUBSTITUTE:**

DETAIL 01050 *(located in the Standard Details Appendix)*

---



## DIVISION 3

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**Engineer:** *If Detail 03031 is applicable to your project, the following change MUST stay in the Supplementary Standard Details*

### **DETAIL 03031 – 6” PVC CENTER BULB WATERSTOP**

**DELETE:**

NOTE 2. THE INDICATED 3 D WATERSTOP JOINTS SHALL BE PRE-FABRICATED BY WATERSTOP MANUFACTURER.

**SUBSTITUTE:**

NOTE 2. ALL WATERSTOP JOINTS SHOWN ABOVE SHALL BE PRE-FABRICATED BY WATERSTOP MANUFACTURER.

---

**Engineer:** *If DETAIL 03100 is applicable to your project, the following change MUST stay in the Supplementary Standard Details*

### **DETAIL 03100 – HIGH ACCURACY SURVEY MONITORING STATION**

**DELETE:**

DETAIL 03100 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 03100 *(located in the Standard Details Appendix)*

## DIVISION 22

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**Engineer: If DETAIL 22010 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

### **DETAIL 22010 – WASHDOWN PIPING SCHEMATIC**

**DELETE:**

DETAIL 22010 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 22010 *(located in the Standard Details Appendix)*

**Engineer: If DETAIL 22014 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

### **DETAIL 22014 – 3” AND LARGER INSIDE BACKFLOW PREVENTION ASSEMBLY WITH OUTSIDE METER SETTING**

**ADD:**

DETAIL 22014 *(located in the Standard Details Appendix)*

**Engineer: If DETAIL 22015 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

### **DETAIL 22015 – INSIDE BACKFLOW PREVENTION ASSEMBLY FOR OUTSIDE SETTING OF 1 1/2” & 2” METER & BYPASS IN A MANHOLE**

**DELETE:**

DETAIL 22015 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 22015 *(located in the Standard Details Appendix)*

**Engineer: If DETAIL 22016 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

### **DETAIL 22016 – INSIDE SETTING FOR 1 1/2” & 2” METER & BYPASS W/ INSIDE BACKFLOW PREVENTION ASSY**

**DELETE:**

DETAIL 22016 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 22016 *(located in the Standard Details Appendix)*

---

## DIVISION 33

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**Engineer:** If DETAIL 33006 is applicable to your project, the following change MUST stay in the Supplementary Standard Details

### DETAIL 33006 – 4" AIR VALVE ASSEMBLY WITH 20" ACCESS MANHOLE (STEEL PIPE)

**DELETE:**

DETAIL 33006 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33006 *(located in the Standard Details Appendix)*

---

**Engineer:** If DETAIL 33206 is applicable to your project, the following change MUST stay in the Supplementary Standard Details

### DETAIL 33206 – PLAN, PROFILE & LOCATION FOR FIRE HYDRANTS, MAINS, & VALVES

**DELETE:**

DETAIL 33206 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33206 *(located in the Standard Details Appendix)*

---

**Engineer:** If DETAIL 33263 is applicable to your project, the following change MUST stay in the Supplementary Standard Details

### DETAIL 33263 –NATIONAL FIRE PROTECTION ASSOCIATION 13D RESIDETIAL SPRINKER SERVICE

**DELETE:**

DETAIL 33263 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33263 *(located in the Standard Details Appendix)*

---

**Engineer:** If DETAIL 33266 is applicable to your project, the following change MUST stay in the Supplementary Standard Details

### DETAIL 33266 – 2" & SMALLER NON-COPPER SERVICE LINE REPLACEMENT & INSIDE METER RELOCATION

**DELETE:**

DETAIL 33266 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33266 *(located in the Standard Details Appendix)*

---

**Engineer: If DETAIL 33270 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

**DETAIL 33270 – OUTSIDE SETTING FOR 1 1/2" & 2" METER W/ CHECK VALVE & BYPASS IN MANHOLE**

**DELETE:**

DETAIL 33270 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33270 *(located in the Standard Details Appendix)*

---

**Engineer: If DETAIL 33280 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

**DETAIL 33280 – OUTSIDE SETTING FOR 2" & SMALLER DOUBLE CHECK VALVE ASSEMBLY IN MANHOLE**

**DELETE:**

DETAIL 33280 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33280 *(located in the Standard Details Appendix)*

---

**Engineer: If DETAIL 33281 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

**DETAIL 33281 – OUTSIDE SETTING FOR 2 1/2" TO 10" DOUBLE CHECK VALVE ASSEMBLY IN VAULT**

**DELETE:**

DETAIL 33281 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33281 *(located in the Standard Details Appendix)*

---

**Engineer: If DETAIL 33282 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

**DETAIL 33282 – OUTSIDE SETTING FOR 2" & SMALLER REDUCED PRESSURE PRINCIPLE ASSY IN ENCLOSURE**

**DELETE:**

DETAIL 33282 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33282 *(located in the Standard Details Appendix)*

---

**Engineer: If DETAIL 33283 is applicable to your project, the following change MUST stay in the Supplementary Standard Details**

**DETAIL 33283 – OUTSIDE SETTING FOR 3" & LARGER REDUCED PRESSURE PRINCIPLE ASSY N-TYPE, ABOVE GROUND**

**DELETE:**

DETAIL 33283 *(In its entirety)*

**SUBSTITUTE:**

DETAIL 33283 *(located in the Standard Details Appendix)*

# TECHNICAL SPECIFICATIONS APPENDIX

**SECTION 01 71 23.16  
CONSTRUCTION SURVEYING**

**PART 1 GENERAL**

1.1 SUMMARY

- A. Section includes general information for construction surveying.
- B. Related sections:

- 1. SECTION 01 40 00 – QUALITY REQUIREMENTS

1.2 COORDINATION

A. SURVEY

- 1. The OWNER will provide Project Control for the Work in accordance with Paragraph 4.4 of the General Conditions.
  - 2. The ENGINEER will provide a location of all known utilities that were discovered during the design phase.
  - 3. Perform surveys necessary to lay out structures, pipeline alignments, grades, and elevations using the OWNER's provided Project Control.
  - 4. Provide access to the Work for ENGINEER to review or verify the CONTRACTOR-established lines, grades, and elevations by surveys.
  - 5. Reviews or surveys performed or requested by the ENGINEER shall not relieve the CONTRACTOR's responsibility for correct lines, grades, elevations, and structure layout.

B. Construction Layout:

- 1. Perform construction layout using qualified, competent personnel.
  - 2. Stake pipelines at horizontal PIs, structures such as valves, tees and reducers, grade changes, and at a maximum of 50-foot intervals.

C. Field Engineering: Perform quality control as specified in SECTION 01 40 00.

1.3 SUBMITTALS

- A. Survey Control and Project Control Form.
- B. Deposited/Recorded documents that reestablished Survey Control.

1.4 SITE CONDITIONS

A. Control Points:

- 1. Use of Project Control for construction surveying, other than those shown on the Drawings or furnished by or approved by the ENGINEER, is prohibited.
  - 2. Prior to beginning Work, the CONTRACTOR's Surveyor shall perform a survey to verify all Project Control and Survey Control as shown on the survey control diagram.
  - 3. Protect and preserve Project Control:
    - a. Report damaged or destroyed Project Control to the ENGINEER.
      - 1) The ENGINEER will re-establish Project Control damaged, moved, altered, or destroyed Project Control monuments.
    - b. Report potential errors in Project Control values to the ENGINEER.
      - 1) Discontinue the use of Project Control alleged to be in error until the accuracy of such points can be verified.
  - 4. Protect and preserve Survey Control:
    - a. Report damaged or destroyed Survey Control to the ENGINEER.
      - 1) Survey Control monuments disturbed during construction shall be resurveyed and restored by the CONTRACTOR and paid for by the CONTRACTOR in accordance with local jurisdiction guidelines and requirements.
      - 2) Prior to disturbing a Survey Control monument, notify the ENGINEER that the information required to reset the monument has been prepared, stamped, and signed by a Professional Land Surveyor registered in the State of Colorado.

B. Underground Facilities:

- 1. Protect and preserve all Underground Facilities within Owner's property throughout the Work.
    - a. The ENGINEER will mark all known utilities within the Work limits in the field prior to beginning Work.
    - b. The Contractor will mark all known utilities within the Work limits in the field throughout the project.
    - c. Maintain an updated digital location of all known utilities within the Work limits for the purpose of marking utilities in the field during the Work.
  - 2. Protect and preserve all Underground Facilities outside of OWNER's property throughout the Work.
    - a. Notify all underground facility owners within the Work limits prior to beginning Work.
  - 3. Report discovery of any unknown Underground Facilities within the Work limits to the ENGINEER.
  - 4. Report damaged or destroyed Underground Facilities within the Work limits to the ENGINEER.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 33 14 11**  
**WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING – GENERAL**

**PART 1 GENERAL**

**1.1 SUMMARY**

- A. Section includes general information, products, and execution for water utility transmission and distribution piping – general.
- B. Related Sections:
  - 1. SECTION 09 90 00 – PAINTING AND COATING
  - 2. SECTION 09 97 13.02 – LIQUID EPOXY LININGS AND COATINGS
  - 3. SECTION 09 97 13.04 – WAX TAPE COATINGS
  - 4. SECTION 13 47 13 – COMMON WORK RESULTS FOR CATHODIC PROTECTION
  - 5. SECTION 13 47 15 – GALVANIC CATHODIC PROTECTION
  - 6. SECTION 13 47 16 – ISOLATION AND BONDING FOR CATHODIC PROTECTION
  - 7. SECTION 33 14 17 – WATER SERVICE LINES

**1.2 REFERENCES**

- A. American Association of State Highway and Transportation Officials (AASHTO):
  - 1. HS-20 –
- B. American Water Works Association (AWWA):
  - 1. C111 – Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
  - 2. C200 – Steel Water Pipe, 6 In. (150 mm) and Larger
  - 3. C207 – Steel Pipe Flanges for Waterworks Service–Sizes 4 In. Through 144 In. (100 mm Through 3600 mm)
  - 4. C210 – Liquid Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines
  - 5. C213 – Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings
  - 6. C219 – Bolted, Sleeve-Type Couplings for Plain-End Pipe
  - 7. C227 – Bolted, Split-Sleeve Restrained and Nonrestrained Couplings for Plain-End Pipe
  - 8. C230 – Stainless-Steel Full-Encirclement Repair and Service Connection Clamps for 2-in. Through 12-in. (50-mm Through 300-mm) Pipe
  - 9. C550 – Protective Interior Coatings for Valves and Hydrants
  - 10. C651 – Disinfecting Water Mains
- C. ASTM International (ASTM):
  - 1. A 48 – Standard Specification for Gray Iron Castings
  - 2. A 193 – Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
  - 3. A 194 – Standard Specification for Carbon Steel, Alloy Steel, and Stainless Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
  - 4. A 536 – Standard Specification for Ductile Iron Castings
  - 5. D 2000 – Standard Classification System for Rubber Products in Automotive Applications
  - 6. F 436 – Standard Specification for Hardened Steel Washers Inch and Metric Dimensions
- D. City and County of Denver Wastewater Management Division:
  - 1. Standard Detail S350
- E. Denver Water (DW):
  - 1. Engineering Standards, Chapter 11 – Recycled System
- F. NSF International/American National Standards Institute (NSF/ANSI):
  - 1. 60 – Drinking Water Treatment Chemicals – Health Effects
  - 2. 61 – Drinking Water System Components – Health Effects
  - 3. 372 – Drinking Water System Components – Lead Content
- G. The Society for Protective Coatings/NACE International (SSPC/NACE):
  - 1. SSPC SP 10/NACE No. 2 – Near-White Blast Cleaning

**1.3 SUBMITTALS**

- A. Shop Drawings:
  - 1. General:
    - a. Pipe design information, including calculations and Drawings.
    - b. Check, correct, and sign Shop Drawings and data prior to submission. Unchecked Submittals will be rejected.
    - c. Indicate the Project name and the Contract number.
    - d. Pipe segment mark numbers.
    - e. Laying schedule corresponding to mark number.
  - 2. Certified drawings of valves and appurtenances: Provide certified dimensional drawings of valves, fittings, and appurtenances.

**1.4 QUALITY ASSURANCE**

- A. Pipe Design Criteria:
  - 1. The pipe, fittings, and specials shall be designed and manufactured to meet the strength requirements given and shall conform when laid with line and grades including outlets, connections, test bulkheads, and appurtenances as shown on the Drawings.
  - 2. Working pressure: 150 psi.
  - 3. Waterhammer pressure: 70 psi.
  - 4. Design cover: 10 feet or as shown on the Drawings, if greater.



5. Design live load: AASHTO HS-20 when cover is less than 10 feet, plus impact factor of 1.5 when less than 3 feet.
  6. Weight of the earth: 120 pcf.
- B. Do not manufacture pipe until required Shop Drawings and design calculations have been approved by the ENGINEER. No changes are permitted from the initial approved design unless unforeseen field conditions arise that make such changes necessary as determined by the ENGINEER.
  - C. Certifications:
    1. Provide certified test reports covering each material utilized in the Work sufficient to determine conformance with standard specifications for the particular pipe alternative including:
      - a. Mill certification of analyses and tests of steel.
      - b. Certified hydrostatic test reports.
      - c. Certification of compliance of materials with applicable AWWA standards, ASTM Specifications, and DW's Engineering Standards.
      - d. Certification of application of linings and coatings.
      - e. Certification of rubber gaskets.
    2. Expenses incurred in making samples for certification of tests shall be borne by the Manufacturer.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Handling:
    1. Pipes, fittings, and appurtenances shall be carefully handled and protected against damage to the lining and coating, impact shocks, and free fall as specified in this Section. Pipe handling equipment shall be approved by the ENGINEER.
    2. Inspect each pipe and fitting for damage. Pipe damaged while in the custody of the CONTRACTOR shall be repaired or replaced, as determined by the ENGINEER, by the CONTRACTOR at no additional expense to the OWNER. No pipe shall be installed where the coating or lining shows cracks that may be harmful as determined by the ENGINEER.
    3. Joint gaskets shall be stored in a cool location out of direct sunlight.
    4. Support stockpiled pipe on sand bags placed under the pipe. Provide sand bags of sufficient size to prevent the pipe from contacting the ground or any obstruction and allow for the proper use of slings. Securely cover pipe ends to prevent the entry of animals, water, dirt, mud, or any undesirable substance and prevent the drying out of the interior of the pipe.

## **PART 2 PRODUCTS**

### **2.1 APPROVED MANUFACTURERS**

- A. BSTC:
  1. Baker
  2. Dresser
  3. Smith-Blair
  4. Romac
  5. The Ford Meter Box Company
  6. JCM Industries
- B. BSSTC:
  1. Victaulic
- C. Coatings:
  1. Protecto Wrap Company, JS160H
  2. Rust preventive compound:
    - a. Houghton International, Rust Veto 344
- D. Dismantling Joints:
  1. JCM Industries, Model 309 with tie-rods
  2. Romac Industries, Style DJ 400
  3. Smith Blair, Model 975
- E. Gaskets:
  1. Durlon, Model 8600
  2. Garlock 3200
  3. Klingersil, Model C-4324 and C-6400
  4. Leader, Model 940
- F. CI Valve Boxes:
  1. Bingham & Taylor, CCO5 Series, CUL5 Series, and GRE5 Series
  2. EJ, 8560 Series and 6800 Series Drop Lid
  3. Sigma Corporation, VB630 Series
  4. Star Pipe Products, VB-0006 Series
- G. Restrained Coupling (CI, DI, and PVC pipe):
  1. HYMAX, GRIP, 4 inch to 12 inch
  2. Romac Industries, ALPHA, 4 inch to 12 inch
- H. Repair Clamps (CI, DI, AC and PVC pipe):
  1. Romac Industries, Model CL2, 4 inch to 12 inch
  2. Smith-Blair, Style 227, 4 inch to 12 inch

### **2.2 ACCESSORIES**

- A. Standard Pipe Joints:

1. Standard pipe joints shall be suitable for at least 250 psi water service and, regardless of type, designed to be self-centering.
  2. Bells and spigots shall have a smooth, close sliding fit at the self-centering surface. The joint shall be capable of symmetrical or asymmetrical joint closure and shall remain watertight under all conditions of water service.
  3. Joint assemblies shall be formed and accurately manufactured so that when the pipes are drawn together in the trench, they form a continuous watertight conduit with a smooth and uniform interior surface and provide for a slight movement of any pipe in the pipeline due to contraction, settlement, or lateral displacement.
  4. Maximum tolerances permitted in the construction of the joint shall be that stated in the Pipe Manufacturer's design as approved; however, in no case shall the tolerances exceed those required in AWWA C111 and AWWA C200.
  5. If the CONTRACTOR proposes to use a joint which has not been approved by the ENGINEER on a previous project, provide a detail drawing of joints to be used, for approval, 1 week prior to the submittal of the Bid or Proposal. The detail drawing shall show pertinent details, dimensions, and tolerances. Joints may be furnished only by a Manufacturer who has furnished pipe with joints of similar design for comparable working pressure that have been in successful service for a period of at least 5 years. Provide a list of installations on which a similar joint has been successfully used showing pipe diameter, wall thickness, and working pressure or field test pressure.
  6. Furnish joint materials, gaskets, and lubricants.
- B. Flanges:
1. Flange details shall be submitted with the Shop Drawings.
  2. Bolt holes in flanges shall straddle field vertical centerline.
  3. Insulated flanges shall have bolt holes 1/4 inch diameter greater than the bolt diameter.
  4. Shop coat machined faces of flanges with a rust-preventive compound.
- C. Gaskets for Flanges:
1. 1/8-inch ring type, compressed non-asbestos sheet packing, one-piece.
  2. Insulated gasket information: As specified in SECTION 13 47 16.
- D. Flange Bolts and Washers:
1. Studs are required unless they will not fit the application.
  2. All-threaded studs shall be in accordance with ASTM A 193, Grade B7 with heavy hex nuts in accordance with ASTM A 194, Grade 2H.
  3. Studs and bolts shall extend through the nut a minimum of 1/4 inch.
  4. Hardened steel washers shall be in accordance with ASTM F 436.
- E. BSTCs:
1. Plain ends for use with couplings shall be prepared in accordance with AWWA C219 for a distance of 12 inches from the ends of the pipe, with outside diameter not more than 1/64 inch smaller than the nominal outside diameter of the pipe.
  2. The center sleeve shall be made of steel and fabricated and tested by cold expansion in accordance with AWWA C219 to meet minimum design pressure of 150 psi. The weld of the center ring shall be air tested for porosity. End rings and the center sleeve shall be coated in accordance with AWWA C210 or AWWA C213 with a minimum DFT of 12 mils.
  3. End rings shall be contoured milled steel and fabricated and tested by cold expansion in accordance with AWWA C219.
  4. Gaskets shall be rubber compound material that will not deteriorate from age or exposure to air under normal storage or use conditions and shall be immune to attack by impurities normally found in water. Gaskets shall be in accordance with AWWA C219 and ASTM D 2000, except the durometer hardness shall be 74±5, the minimum elongation shall be 175%, and the tensile strength shall be 1,000 psi.
  5. Bolts and heavy hex nuts:
    - a. In accordance with AWWA C219.
    - b. Fabricated from high strength low alloy steel known in the industry as Cor-Ten, Usalloy, or Durabolt.
    - c. The Manufacturer shall supply information as to the torque to which the bolts shall be tightened.
  6. Where insulating couplings are required, both ends of the coupling shall have a wedge-shaped gasket which assembles over an insulating compound rubber sleeve to obtain insulation of coupling metal parts from the pipe.
- F. BSSTC (Non-Restrained):
1. Ends of pipe, including a distance from the end of the pipe to no less than the overall width of the coupling, shall be prepared in accordance with AWWA C227.
  2. The body shall be fabricated from steel in accordance with AWWA C227 to meet a minimum design pressure of 150 psi. The interior and exterior of the body shall be coated in accordance with AWWA C210 or AWWA C213 with a minimum DFT of 12 mils.
  3. Closure and sealing mechanisms shall be fabricated in accordance with AWWA C227.
  4. Gasket composition and physical requirements shall be in accordance with AWWA C227 and ASTM D 2000.
  5. Studs, nuts, and washers shall be in accordance with AWWA C227.
  6. BSSTC shall not be used when electrical isolation is required.
- G. Specials and Fittings for Access Manholes:
1. Access manholes with covers shall be 20 inches in diameter for pipelines 42 inches in diameter and smaller and 24 inches in diameter for pipelines greater than 42 inches in diameter.
  2. Access manholes, in addition to those shown on the Drawings that are needed by the CONTRACTOR to complete the installation of the pipe including the lining of joints, shall be provided at the CONTRACTOR's expense.

3. Additional manholes needed by the CONTRACTOR shall be provided with precast manholes for future access to the pipe.
- H. Protection of Pipe Lining: The Manufacturer shall provide PE material or other suitable bulkheads on the ends of the pipe and on special openings to keep the pipe clean and prevent the drying out of the lining. Bulkheads shall be substantial enough to remain intact during shipping and until the pipe is installed.
- I. Joint Restraint:
  1. Restrained joints shall be provided for the lengths shown on the Drawings for horizontal bends, line valves, and bulkheads.
  2. Joints that fall within 10 feet of vertical angle points that have a deflection greater than 6 degrees shall be restrained.
- J. Underground Utility Warning Tape for Recycled Pipe: In accordance with DW Engineering Standards Chapter 11.
- K. Dismantling Joint:
  1. Size and location as shown on the Drawings.
  2. Restrained flange to flange using tie-rods that are all-thread studs in accordance with ASTM A 193, Grade B7. Restraining gland systems are not acceptable.
  3. Pressure requirements equivalent or greater than pipe with a minimum design working pressure of 150 psi.
  4. Carbon steel for the outer body and inner body shall be in accordance with AWWA C200.
  5. Carbon steel for the flanges shall be in accordance with AWWA C207.
  6. Carbon steel for the end ring shall be in accordance with AWWA C219.
  7. DI for the outer body, inner body, flanges, and end ring shall be in accordance with ASTM A 563, Grade 65-45-12.
  8. Rubber gasket shall be in accordance with AWWA C219.
  9. Flanges:
    - a. Class shall match the mating pipe.
    - b. Hollow-back or segmented flanges are not acceptable.
    - c. Machined to a flat face with a serrated finish in accordance with AWWA C207.
  10. Minimum assembly tolerance: 2 inches.
  11. Ferrous surfaces, except machined or bearing surfaces, shall be prepared in accordance with SSPC SP10/NACE No. 2. These surfaces shall then be coated with liquid epoxy in two or more uniform coats or with fusion-bonded epoxy to a minimum DFT of 10 mils in accordance with AWWA C550. Machined flange faces shall be shop-coated with a rust-preventive compound; they shall not be painted or coated with the same coating as the body.
- L. CI Valve Boxes:
  1. Three-piece adjustable screw type with a 16-inch top section, 18-inch extension, 24-inch stem, and 30-inch bottom and base.
  2. Manufactured of gray CI in accordance with ASTM A 48, Class 35B. The use of an aluminum alloy as a casting material is not acceptable.
  3. Components shall be deburred and machined so that final dimensions are within  $\pm 0.0625$  inch of the specified dimensions.
  4. Components shall be provided with the Manufacturer's standard rust-preventive coating.
- M. Restrained Couplings:
  1. Meet or exceed AWWA C219, NSF 61, and NSF 372 standards.
  2. Pressure requirements equivalent or greater than pipe with a minimum design working pressure of 150 psi.
  3. DI for body casting and end rings shall be in accordance with ASTM A 536 Grade 65-45-12.
  4. Cast Steel for end rings shall be in accordance with ASTM A 216 WCB.
  5. Nuts and bolts: Type 304 or 316 stainless steel rolled thread and anti-galling coated.
  6. Gasket bridge and spherical spacers: Type 304 or 316 Stainless Steel.
  7. Must incorporate a grip restraining system compatible with different pipe materials.
  8. Gasket composition shall be NBR or EPDM in accordance with ASTM D 2000, NSF 61 and NSF 372.
  9. Ferrous surfaces, except machined or bearing surfaces, shall be prepared in accordance with SSPC SP10/NACE No. 2. These surfaces shall be coated with liquid epoxy in two or more uniform coats or with fusion-bonded epoxy to a minimum DFT of 10 mils in accordance with AWWA C550.
  10. Allowable pipe deflection permitted for installation of this coupling shall be up to 4-degrees per end.
- N. Repair Clamps:
  1. Designed and manufactured in accordance with AWWA C230, NSF 61 and NSF 372.
  2. Pressure requirements equivalent or greater than pipe with a minimum design working pressure of 150 psi.
  3. Components shall be suitable for exposure to chloraminated water.
  4. Gaskets shall be compounded from new materials in conformance with ASTM D 2000, and the shape of the cross-section of the gasket shall provide an adequate seal for the working pressure. Gaskets shall be shop glued to the groove provided in the body section.
  5. Band or shell shall be ASTM A 240, Type 304 Stainless Steel.
  6. Lugs shall be DI per ASTM A 536, Grade 65-45-12 of 80-55-06. Lugs shall have an epoxy coating for corrosion resistance.
  7. Bolts and nuts shall be high-strength, low alloy steel in accordance with AWWA C111.

## **PART 3 EXECUTION**

### **3.1 PREPARATION**

- A. Remove or smooth out any burrs, gouges, weld splatter, or other small defects prior to laying pipe and fittings.

- B. Before the placement of pipe in the trench, each pipe or fitting shall be thoroughly cleaned, with special attention to the joint area. The openings of pipes and fittings in the trench shall be closed during any interruption to the Work.
- 3.2 INSTALLATION
- A. Existing Pipe:
1. Anticipate the need to provide materials and Work effort to fit new pipe to existing pipe.
  2. Information provided on existing pipe, including inside and outside diameters, are design dimensions based on available data and may not represent exact diameters once pipe is exposed.
  3. Existing pipe may be found to be out of round once excavated.
- B. Pipe Laying:
1. General:
    - a. Pipe shall be laid directly on specified imported bedding material. Blocking of the pipe is not permitted.
    - b. Each section of pipe shall be laid in the order and position shown on the laying schedule.
    - c. Bell holes shall be formed at the ends of the pipe to prevent point loading at the bells or couplings. Excavations shall be made as needed to facilitate the removal of slings after the pipe is laid.
  2. Pipe cleaning: Keep the pipe interior free of debris.
  3. Frozen foundation: No pipe shall be installed upon frozen material or when the ENGINEER determines there is a danger of the material freezing. Do not lay pipe unless the trench will be backfilled before freezing occurs.
  4. Tolerance: Pipe shall be laid to the set line and grade within approximately  $\pm 1$  inch. On grades of zero slope, the intent is to lay to grade.
  5. Raising or lowering pipe: Where necessary to raise or lower pipe, the ENGINEER may change the alignment or the grades by the deflection of joints, by the use of bevel adapters, or by the use of additional fittings. The deflection of the joint shall not exceed the maximum deflection recommended by the Pipe Manufacturer. No joint shall be deflected any amount which, in the opinion of the ENGINEER, will be detrimental to its strength and water tightness.
  6. Laying on grades: Pipes shall generally be laid uphill on grades exceeding 10%. Pipe which is laid on a downhill grade shall be blocked and held in place until sufficient support is furnished by the following pipe to prevent movement.
  7. Pipe protection:
    - a. When pipe installation is not in progress, protect the ends of the installed pipeline and special openings with temporary, watertight fittings or appropriately sized pneumatic plugs designed for the type of joint and installed with Manufacturer guidelines.
    - b. Clean temporary fittings and pneumatic plugs prior to installation.
    - c. Protect installed capped and plugged pipe against buoyant forces by pipe bedding, backfill, or other temporary means.
- C. Pipeline Contaminant Prevention:
1. Whenever the pipe is left unattended, install temporary plugs (bulkheads or pneumatic) at openings. Temporary plugs shall be watertight, cleaned and disinfected, installed properly, and designed in a way that prevents human tampering or children, animals, and environmental contamination from entering the pipe.
  2. Properly install approved bulkheads or pneumatic plugs on pipe openings before storm events and before leaving the work site unattended.
    - a. Proper installation includes tightening MJ bolts or inflating pneumatic plugs in accordance with the Manufacturer's specifications.
  3. Debris shall be removed and the pipe interior cleaned prior to installing the bulkheads or pneumatic plugs.
  4. Bulkheads or pneumatic plugs shall be thoroughly cleaned with a detergent and disinfected with 100 mg/l NSF/ANSI 60 certified sodium hypochlorite solution (chlorine) using a swab or spray application method before installation.
    - a. Plugs shall be kept free from contamination during storage and cannot be used in recycled applications (e.g., sanitary sewer, storm water systems).
    - b. Do not clean plugs with solvents or other aggressive agents; these may damage plugs or contaminate the potable water main.
    - c. Follow the Manufacturer's installation and safety instructions.
  5. Report any known human tampering, flooding, or other contamination events to the OWNER immediately.
- D. Valves:
1. Operate each valve subsequent to installation to ensure proper operation.
  2. Valve stems shall be installed plumb and in the location shown on the Drawings.
  3. Buried valves shall be coated with wax tape in accordance with the Contract Documents.
  4. Adjustable supports shall be placed under buried valve flanges.
- E. Buried Flanged Joints:
1. Flange faces shall be thoroughly cleaned of foreign material, including rust-preventive compound, with a power wire brush.
  2. Gaskets shall be centered and the connecting flanges drawn up watertight without unnecessarily stressing the flanges.
  3. Nuts and all-thread shall be tightened in a progressive diametrically opposite sequence and torqued with a suitable, approved, and calibrated torque wrench.
  4. Clamping torque shall be applied to the nuts only.
  5. Flanges shall be wrapped in wax tape as specified in SECTION 09 97 13.04.

- F. Insulated Joints:
  1. Insulated joints and appurtenant features shall be provided by the CONTRACTOR where shown on the Drawings.
  2. Prevent electrical conductivity across the joint with insulators.
  3. After assembly, an electrical resistance test will be performed by the ENGINEER. If the resistance test indicates a short-circuit, remove the insulating units to inspect for damage. Replace damaged portions and reassemble the insulating joint at no extra cost to the OWNER. Retest the insulated joint to ensure proper insulation.
- G. Flexible Coupled Joints:
  1. General (BSTC and BSSTC):
    - a. Connecting pipe ends, couplings, and gaskets shall be clean and free of dirt and foreign matter with special attention being given to the contact surfaces of the pipe, gaskets, and couplings. The couplings shall be assembled and installed in conformance with the Manufacturer's instructions.
    - b. Wrenches used in bolting couplings shall be of a type and size recommended by the Manufacturer. Coupling bolts shall be tightened to secure a uniform annular space between the follower rings and the body of the pipe with bolts tightened approximately the same amount. Clamping torque shall be applied to the nut only.
    - c. Upon completion of the coupled joint on metallic pipe, the coupling and bare metal of the pipe shall be cleaned, primed, and protected as specified in this Section.
  2. BSTC:
    - a. Diametrically opposite bolts shall be tightened progressively and evenly. Final tightening shall be done with a suitable, approved, and calibrated torque wrench set for the torque recommended by the Coupling Manufacturer.
    - b. For non-insulated mechanical couplings on metallic pipe, the middle ring and one follower ring shall be bonded for electrical conductivity to both ends of the connecting pipes.
    - c. For insulated mechanical couplings, the middle ring and one follower ring shall be bonded to the connecting pipe end opposite the insulating rubber sleeve.
- H. Restrained Couplings:
  1. The restrained coupling shall be installed in accordance with the Manufacturer's installation instructions.
  2. Verify end rings are centered on the restrained coupling, if not, contact local distributor for return and replacement.
  3. During installation of restrained coupling, verify both pipe ends are not touching.
  4. Restrained coupling bolts shall be torqued to the Manufacturer's torque specification for coupling size.
- I. Repair Clamps:
  1. The repair clamp shall be installed in accordance with the Manufacturer's installation instructions.
  2. Bolts shall be torqued to the Manufacturer's specification. Over tightening may compromise the integrity of the water main.
- J. Joint Bonding:
  1. Except where otherwise shown on the Drawings, joints shall be bonded for electrical conductivity in accordance with the Contract Documents. The pipe shall be cleaned to bare bright metal at the point where the bond is installed.
  2. Damage to the pipe or pipe lining caused by the joint bonding shall be repaired at the CONTRACTOR's expense.
- K. CP: As specified in SECTION 13 47 13, SECTION 13 47 16, and SECTION 13 47 15.
- L. Underground Utility Warning Tape for Recycled Pipe: Install 12 inches above recycled water pipelines and appurtenances.
- M. Painting and Coatings:
  1. General: Metal except aluminum, brass, bronze, or copper shall be painted or coated.
  2. Metal exposed to atmospheric service environment shall be painted and coated as specified in SECTION 09 90 00.
  3. Buried and submerged metal shall be coated as specified in SECTION 09 97 13.02.
    - a. Rods, nuts, bolts, and other metallic assembly hardware shall be wax taped as specified in SECTION 09 97 13.04.
  4. Miscellaneous appurtenances:
    - a. Black steel vent pipe that is to be buried shall be given two coats of cold-applied 1200 mastic except for metal with shop-applied coating approved by the ENGINEER.
- N. Sanitary Sewer Crossings:
  1. In accordance with CPCS Detail 33215.
  2. Sanitary sewer crossings in the City and County of Denver shall be encased in accordance with Standard Detail S350.
  3. Sanitary sewer crossings outside of the City and County of Denver shall be encased in accordance with the applicable detail for the jurisdiction.
- O. Raising or Lowering Distribution Mains:
  1. As specified in this Section and DW's Engineering Standards.
  2. Reuse of existing material is not allowed.
  3. Pipeline replacement material shall be of the same type as existing pipeline with the following exceptions:
    - a. Use PVC or DI pipe and fittings for raising or lowering CI pipe.
    - b. Use PVC pipe and DI fittings for raising or lowering asbestos-cement pipe.
- P. Water Service Lines: Replace and repair in accordance with DW's Engineering Standards and as specified in SECTION 33 14 17.
- Q. Dismantling Joint:

1. Wax tape coat the flanges and rods as specified in SECTION 09 97 13.04.
  2. Do not modify the joint in any manner that would invalidate the Manufacturer's warranty.
- 3.3 QUALITY CONTROL
- A. Hydrostatic Test of Water Pipes:
    1. Preparation:
      - a. Pipe shall be cleaned of debris and foreign materials to the satisfaction of the ENGINEER.
      - b. No hydrostatic test shall be made on any portion of the pipeline until field-placed concrete has cured for 7 days.
      - c. Testing shall not begin until field-placed linings have cured as recommended by the Manufacturer.
    2. Testing responsibilities:
      - a. The OWNER will furnish the water, pump, and calibrated meter for testing, operate the testing equipment, run the test, maintain the required test pressures, and blow off the pipeline after testing.
      - b. Assist the OWNER with testing and investigate all possible leaks.
      - c. Furnish labor, necessary bulkheads, and miscellaneous materials to facilitate the filling and testing of the pipelines.
    3. Test procedures:
      - a. Pipe shall be tested at 150 psi as measured at the lowest point in the test section.
      - b. The test will be made from appropriate taps alongside the pipeline and the gauge pressure read at this point.
      - c. The pipeline will be filled by the OWNER at a rate which will not cause any surges or exceed the rate at which the air can be released through the air valves at a reasonable velocity. The air within the pipe shall be properly purged.
      - d. The test duration will be designated by the ENGINEER.
      - e. The rate at which the pipeline is blown off shall be under the control of the OWNER.
    4. Allowable leakage rates: The amount of leakage in all sections of the pipeline, including appurtenant parts, shall not exceed 10 gallons per inch of diameter per mile of pipe per day.
    5. Repair of leaks: Locate and repair leaks or other defects which may develop under test. Any section of the pipe which indicates defective material furnished by the OWNER shall be repaired by the CONTRACTOR at the expense of the OWNER. Joints made in the field are the responsibility of the CONTRACTOR.
    6. Restrained Couplings Leakage:
      - a. If any leakage is evident, reduce pressure in water pipe and increase bolt torque by the percentage recommended in the Manufacturer's installation guide.
    7. Repair Clamps:
      - a. Hydrostatic test shall be in accordance with AWWA C230.
  - B. Disinfection of Waterlines:
    1. General:
      - a. The OWNER shall identify the disinfection and testing procedures to be used for the pipeline and appurtenances. The water source for flushing (typically a nearby hydrant) will be identified.
      - b. The OWNER will take the water sample and perform the testing.
      - c. Provide access for the OWNER to perform the disinfection and testing.
      - d. Disinfection will occur after the pipe has been successfully pressure tested, unless otherwise noted.
      - e. Recycled waterlines are typically not disinfected; however, if contamination of the pipe occurs during shipment, storage, or installation, the OWNER will determine if disinfection is needed.
    2. Disinfection process:
      - a. The OWNER will furnish the chemicals and hose equipment necessary for injection into a pipeline. Where required, the CONTRACTOR will provide a National Hose Thread adapter for connection to the OWNER's hoses.
      - b. Where areas of the Work are identified as spray-disinfected, this Work shall be done by the CONTRACTOR. Disinfect potable pipelines and fittings in accordance with AWWA C651 with an NSF/ANSI 60 certified sodium hypochlorite solution.
    3. Bacteriological testing process:
      - a. The OWNER will take the water sample for bacteriological testing.
      - b. When tested Monday through Thursday, the ENGINEER will notify the CONTRACTOR within 24 hours of the test results. When tested on a Friday, results will be available on Monday.
      - c. In the event of a failed test result, re-clean the pipe and the OWNER will repeat the disinfection and testing process.
      - d. Final acceptance of the pipeline is contingent upon passing disinfection.
  - C. Inspection of the Fabrication:
    1. No less than 14 days prior to the start of any phase of the pipe manufacture, notify the ENGINEER in writing of the manufacturing start date.
    2. During the manufacturing of the pipe, the ENGINEER shall be given access to areas where it is in process and shall be permitted to make inspections necessary to confirm compliance with the Contract Documents.
    3. The manufacturing of the pipe will be inspected by the OWNER at the OWNER's expense.
  - D. Materials Testing:
    1. Ensure the required material tests are performed. Coordinate the testing such that the ENGINEER may witness the tests, providing the ENGINEER does not cause delays to the CONTRACTOR's schedule.

2. The ENGINEER may request samples of any material, including lining and coating samples, for testing by the OWNER. Samples shall be furnished at no additional cost to the OWNER.

E. CCTV Inspection:

1. Employ the use of CCTV to record the quality of the interior of the pipe and ensure the pipe is clear of debris.
2. If the video shows debris or damage, the CONTRACTOR is responsible for removing the debris and making repairs to the pipe.
3. Potable pipelines: Equipment that will be in contact with the pipe shall be steam cleaned, rinsed with a 220 ppm hypochlorite solution, and rinsed with tap water prior to insertion.
4. The video shall become part of the OWNER's records of the Work upon the Substantial Completion date.

**END OF SECTION**

# STANDARD DETAILS APPENDIX



DIVISION 13 – SPECIAL CONSTRUCTION (CONTINUED)

13032	BOLTED SLEEVE TYPE COUPLING BONDING INSULATED
13033	BOLTED SLEEVE TYPE COUPLING BONDING NON-INSULATED
13034	BOLTED SLEEVE TYPE COUPLING BONDING INSULATED
13040	EXOTHERMIC WELD CONNECTION
13041	CASING TEST STATION (INSULATED FLANGE OR COUPLING)
13042	CASING TEST STATION (NON-INSULATED FLANGE OR COUPLING)
13050	DEEP WELL GROUND BED
13051	RECTIFIER CONNECTION ONE-LINE
13060	TEST STATION ABOVE GRADE
13061	TEST STATION ABOVE GRADE WITH CONDUIT
13062	TEST STATION AT GRADE WITH CONDUIT
13063	TYPICAL CATHODIC PROTECTION TEST STATION
13064	TYPICAL CATHODIC PROTECTION TEST STATION WITHOUT ANODE
13080	METALLIC PIPE JOINT BONDING
13081	TERMINAL BOARD CARD
13090	CONDENSER ANODE INSTALLATION

DIVISION 22 – PLUMBING

22001	SUMP ASSEMBLY AND PIPING
22002	4" INLINE CLEANOUT
22003	OUTSIDE DROP MANHOLE CONNECTION
22004	SUMP DRAIN INTO EXISTING SANITARY SEWER MANHOLE
22005	TRACER WIRE INSTALLATION FOR PVC SUMP PUMP DRAIN
22006	SUMP PUMP DISCHARGE TO GRAVEL BED
22007	SUMP PUMP DISCHARGE TO EXISTING SANITARY SEWER
22010	WASHDOWN PIPING SCHEMATIC
22014	3" AND LARGER INSIDE BACKFLOW PREVENTION ASSEMBLY WITH OUTSIDE METER SETTING (ADDED OCTOBER 2023)
22015	INSIDE BACKFLOW PREVENTION ASSEMBLY FOR OUTSIDE SETTING OF 1 1/2" & 2" METER & BYPASS IN A MANHOLE
22016	INSIDE SETTING FOR 1 1/2" & 2" METER & BYPASS W/ INSIDE BACKFLOW PREVENTION ASSY
22017	INSIDE SETTING FOR 3" & LARGER METER
22018	INSIDE SETTING FOR EXISTING 3/4" & 1" METER WITH AUTOMATIC METER READING
22035	CONCRETE PEDESTAL VENT HOOD

DIVISION 23 – HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

23001	TYPICAL EXHAUST FAN
23002	TYPICAL INTAKE
23003	FILTER BOX
23010	PVC MOTORIZED DAMPER
23011	INLINE DAMPER INSTALLATION
23012	FLEXIBLE CONNECTION
23014	ROUND VOLUME DAMPER (UP TO 14")
23019	WALL MOUNTED HOSE RACK FOR 3/4" AND 1" HOSE
23020	INTERIOR HOSE BIB, HB-1
23021	NON-FREEZE WALL HYDRANT, HB-2
23022	WATER HEATER
23023	COOLING AND HEATING COIL CONNECTION
23030	OUTSIDE AIR INTAKE
23031	PROPELLER FAN MOUNT
23032	ROOF EXHAUST OR INTAKE
23038	SMALL PUMP SUPPORT
23040	WALL BRACKET
23041	DUCT SUPPORT - BRACKET SYSTEM

**SYMBOL**

**DESCRIPTION**

	LOW VOLTAGE CIRCUIT BREAKER – 20 AMPERE, 3 POLE (THERMAL MAGNETIC UNLESS INDICATED OTHERWISE)
	FUSE – RATING INDICATED
	DISCONNECT SWITCH – RATING INDICATED
	FUSED DISCONNECT SWITCH (3 POLE UNLESS INDICATED OTHERWISE)
	POLE MOUNTED CUTOUT WITH FUSIBLE LINK
	FUSED OR NONFUSED DISCONNECT SWITCH 3 POLE FUSED UNLESS INDICATED OTHERWISE
	POWER CIRCUIT BREAKER
	DRAWOUT POWER CIRCUIT BREAKER
	KIRK KEY INTERLOCK
	DISCONNECT (ROLLOUT, ETC)
	TERMINAL POINT (TERMINAL BLOCK OR DEVICE TERMINAL)
	TERMINAL BLOCK/POINT TO INTERFACE WITH "FIELD DEVICES"
	KNIFE-DISCONNECT TERMINAL BLOCK
	DENOTES CABLE NUMBER FOR INTERCONNECTION WIRING TERMINAL POINT TERMINAL BLOCK P – POWER C – CONTROL/COMMUNICATIONS A – SIGNAL
	NOT CONNECTED
	CONNECTED
	PANEL, TERMINAL BOX, PULL BOX, JUNCTION BOX, ETC
	EQUIPMENT, DEVICE, METER, PROTECTIVE RELAY, ETC.
	MOTOR, SQUIRREL CAGE INDUCTION, HORSEPOWER INDICATED
	LUMINAIRE, SEE SCHEDULE
	EXIT LIGHT

**SYMBOL**

**DESCRIPTION**

	EXPOSED CONDUIT OR HEAT TAPE SYSTEM
	CONCEALED CONDUIT OR HEAT TAPE SYSTEM
	GROUND CABLE
	GROUND ROD
	GROUND PIGTAIL OR LOOP
	EXOTHERMIC WELD CONNECTION
	* WALL SWITCH: 2 – DOUBLE POLE    P – PILOT LIGHT 3 – THREE WAY      K – KEY OPERATED 4 – FOUR WAY       D – DIMMER WP – WEATHERPROOF
	MANUAL MOTOR STARTER SWITCH, WITH HEATERS
	CONVENIENCE RECEPTACLE – DUPLEX UNLESS SPECIFIED OTHERWISE
	RECEPTACLE – 240V, 1Ø, AMPERAGE INDICATED
	INSTRUMENT, DEVICE, ETC
	VOICE
	DATA JACK
	JUNCTION BOX OR PULL BOX
	STRIP HEATER
	THERMOSTAT
	RELAY
	ELAPSED TIME METER
	FLASHING BEACON
	INDICATING LIGHT – LETTER INDICATES COLOR A – AMBER                    R – RED B – BLUE                     W – WHITE C – CLEAR                    Y – YELLOW G – GREEN SL – SYNCHRONIZING LIGHT
	INDICATING LIGHT, PUSH-TO-TEST, LETTER INDICATES COLOR
	POWER POLE
	GUY WIRE
	LIGHT POLE

**LEVEL SWITCH INDICATOR**

	LEVEL SWITCH HIGH HIGH
	LEVEL SWITCH HIGH
	LEVEL SWITCH LOW
	LEVEL SWITCH LOW LOW

DRAWN BY: MCMILLEN

CHKD BY: K ROSS/ *KR*

APPD BY: *[Signature]*

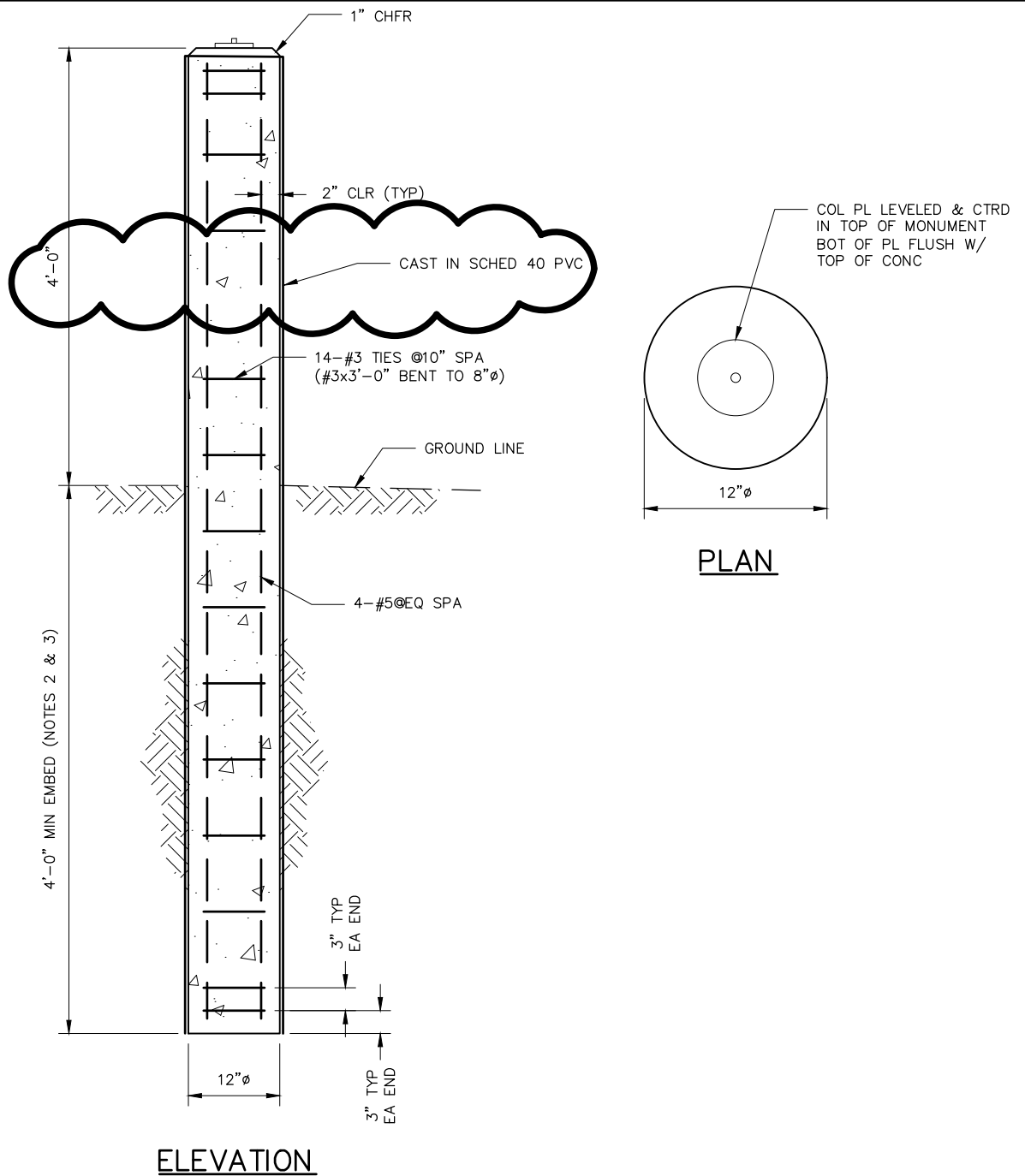
ORIGINATION DATE: JULY 2021

REVISION DATE: MAY 2023

**01050  
ELECTRICAL AND CATHODIC  
PROTECTION LEGEND**



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**NOTES:**

1. PROVIDE 30 INCH LAP SPLICE FOR VERTICAL BARS AS REQUIRED.
2. MINIMUM 12 INCH BELOW LOCAL JURISDICTIONAL FROST DEPTH.
3. IF A BOULDER OR BEDROCK IS ENCOUNTERED, ADHESIVE ANCHOR VERTICAL REINFORCEMENT WITH 8 INCH MINIMUM EMBEDMENT INTO ROCK.
4. CLASS D CONCRETE.
5. COLUMN PLATE: SECO PART# 1 510 001 – COLUMN PLATE.

DRAWN BY: VAICIKAUSKAS

CHKD BY: K ROSS/ *KR*

APPD BY: *[Signature]*

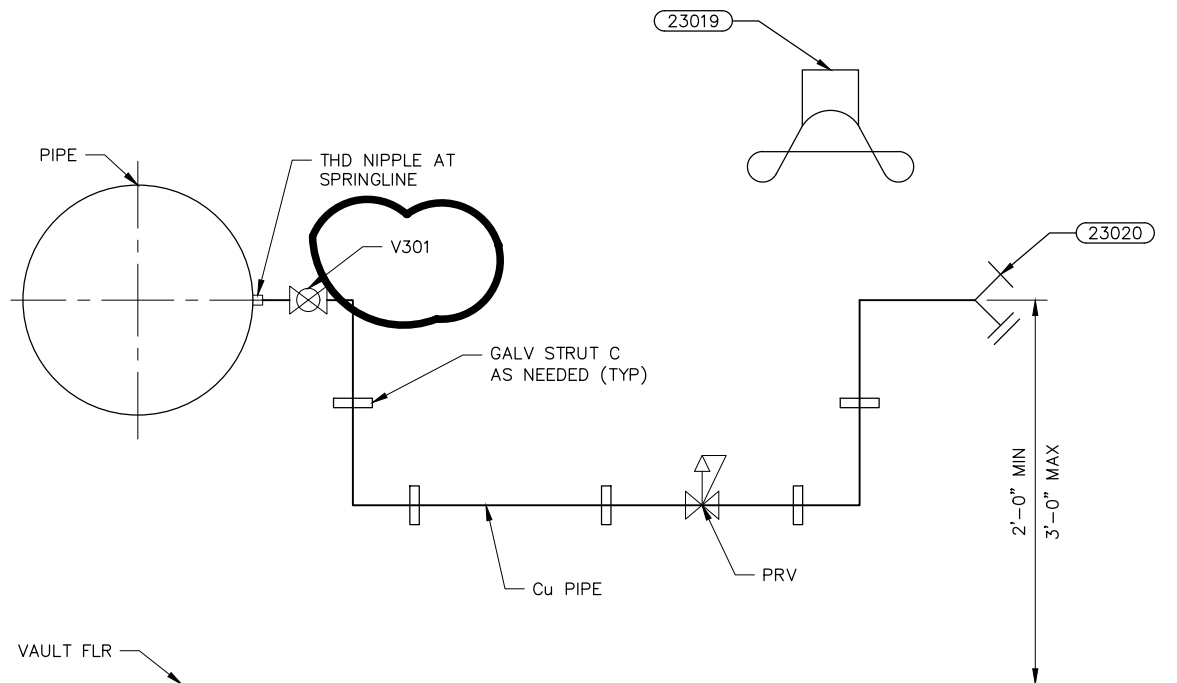
ORIGINATION DATE: JULY 2021

REVISION DATE: MAY 2023

**03100  
HIGH ACCURACY SURVEY  
MONITORING STATION**



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**NOTE:**

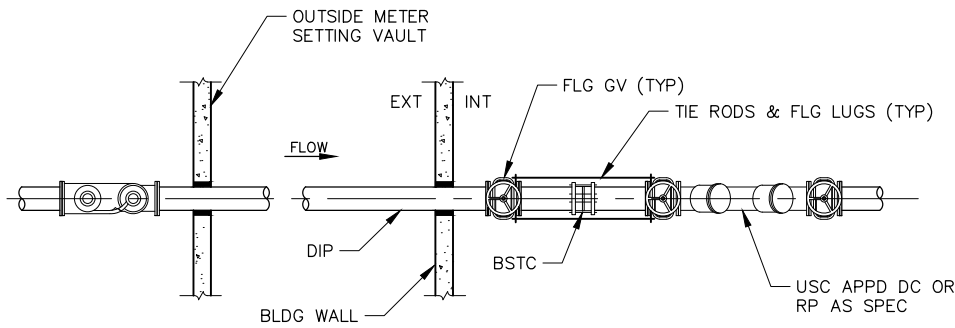
ROUTE COPPER PIPE BELOW ELECTRICAL PANELS AND CONDUIT IF NECESSARY.

DRAWN BY: BAIRE
CHKD BY: K ROSS/ <i>KR</i>
APPD BY: <i>[Signature]</i>
ORIGINATION DATE: JULY 2021
REVISION DATE: OCTOBER 2022

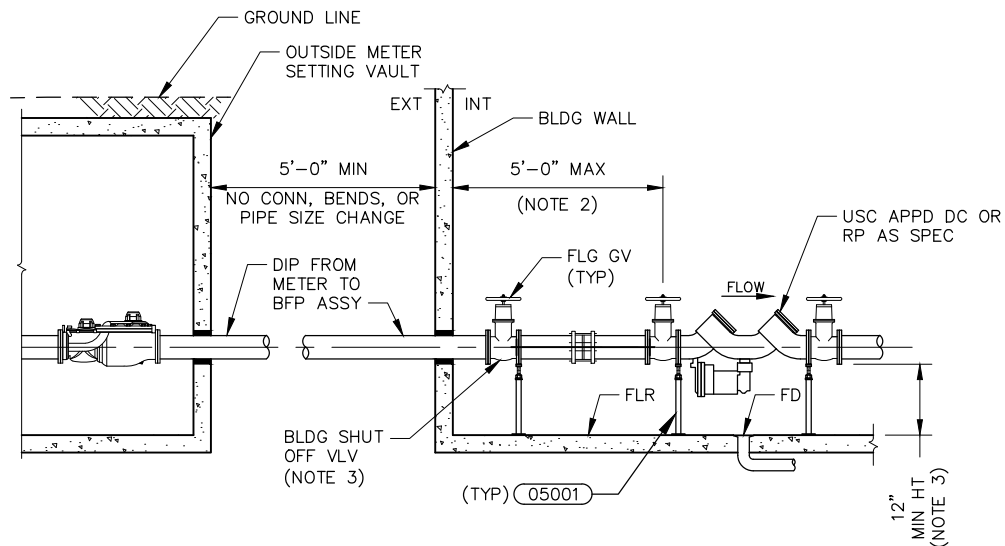
**22010  
WASHDOWN PIPING  
SCHEMATIC**



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**PLAN**



**ELEVATION**

**NOTES:**

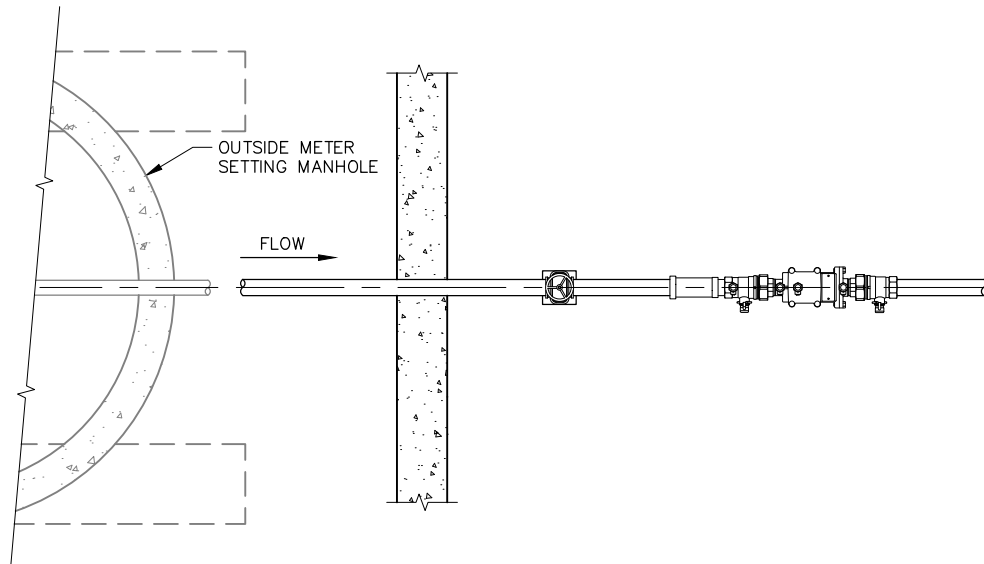
1. USC FCCHR APPROVED DOUBLE CHECK VALVE OR REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL BE DETERMINED BY THE DEGREE OF HAZARD POSED BY INTERNAL PLUMBING USE.
2. PLACEMENT OF BACKFLOW PREVENTION ASSEMBLY SHALL BE A MAXIMUM OF 5 FEET FROM THE INSIDE WALL OF BUILDING.
3. REFER TO LOCAL CODES AND MANUFACTURER REQUIREMENTS FOR INSTALLATION INSTRUCTIONS.
4. INSTALL STANDARD ADJUSTABLE SUPPORTS WITHIN 12 INCHES OF INLET AND OUTLET ISOLATION VALVES.
5. BACKFLOW PREVENTION ASSEMBLY SHALL BE THE SAME SIZE AS THE SERVICE LINE SIZE. UPSIZING THE BACKFLOW PREVENTION ASSEMBLY IS NOT ALLOWED.

DRAWN BY: <i>MCMILLEN</i>
CHKD BY: <i>K ROSS</i> / <i>KRK</i>
APPD BY: <i>[Signature]</i>
ORIGINATION DATE: <i>SEPTEMBER 2023</i>
REVISION DATE:

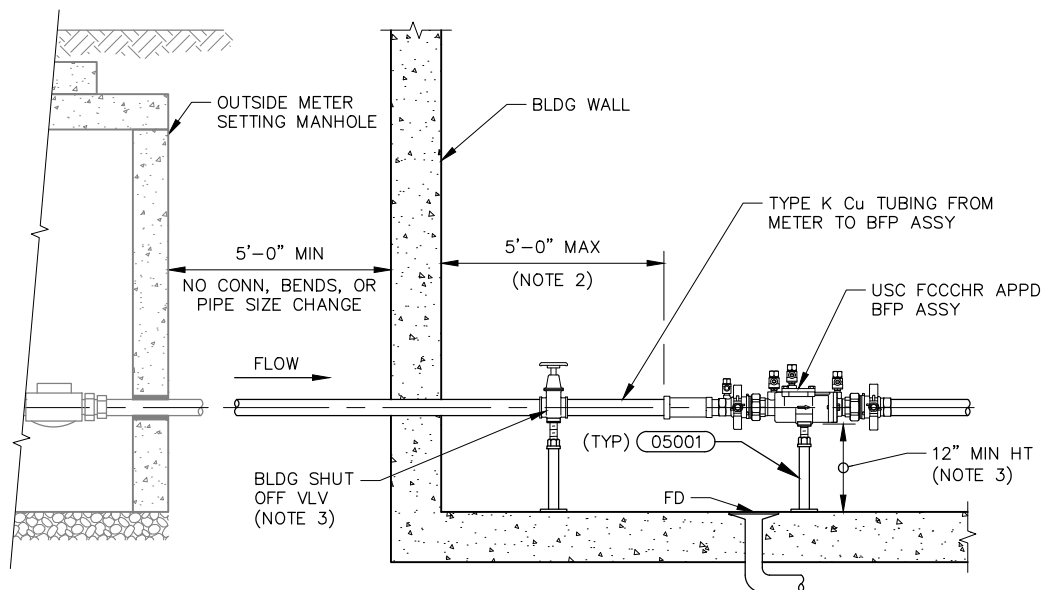
**22014**  
**3" AND LARGER INSIDE**  
**BACKFLOW PREVENTION**  
**ASSEMBLY WITH OUTSIDE**  
**METER SETTING**

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PLAN



ELEVATION

NOTES:

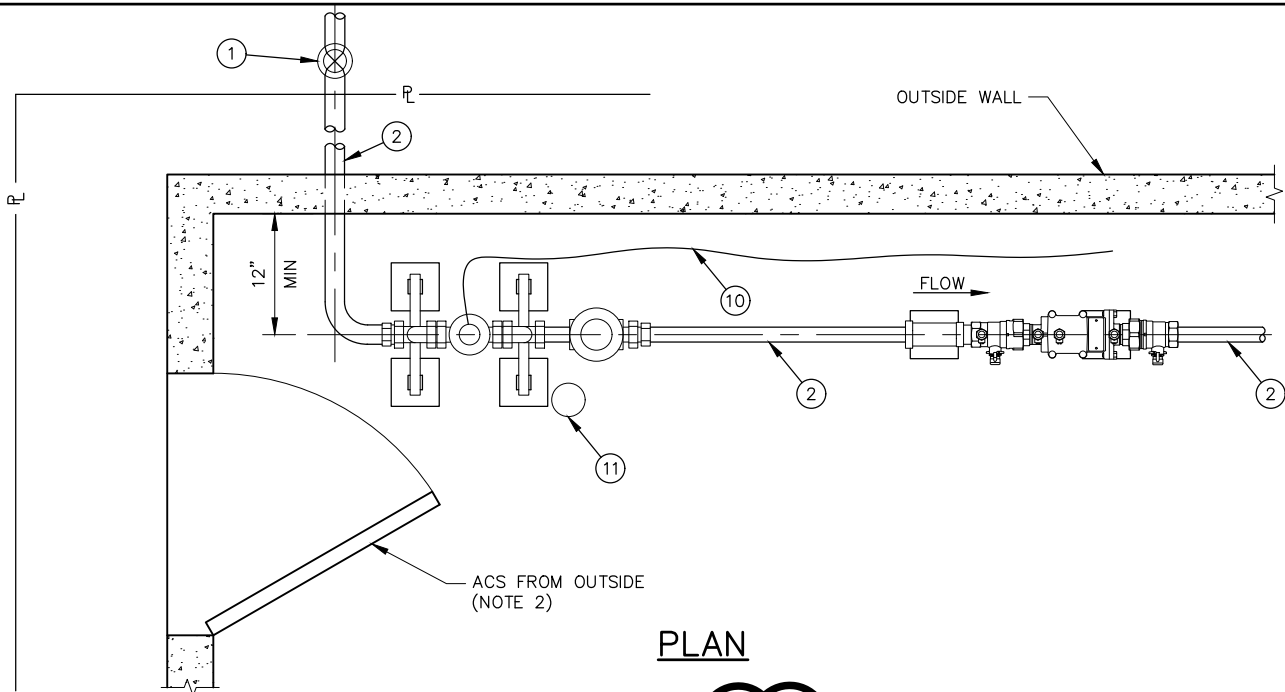
1. USC FCCCHR APPROVED DOUBLE CHECK VALVE OR REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL BE DETERMINED BY THE DEGREE OF HAZARD POSED BY INTERNAL PLUMBING USE.
2. PLACEMENT OF BACKFLOW PREVENTION ASSEMBLY SHALL BE A MAXIMUM OF 5 FEET FROM THE INSIDE WALL OF BUILDING.
3. REFER TO LOCAL CODES AND MANUFACTURER REQUIREMENTS FOR INSTALLATION INSTRUCTIONS.
4. INSTALL STANDARD ADJUSTABLE SUPPORTS WITHIN 12 INCHES OF INLET AND OUTLET ISOLATION VALVES.
5. BACKFLOW PREVENTION ASSEMBLY SHALL BE THE SAME SIZE AS THE SERVICE LINE SIZE. UPSIZING THE BACKFLOW PREVENTION ASSEMBLY IS NOT ALLOWED.

DRAWN BY: <i>BAIRES</i>
CHKD BY: <i>K ROSS/ [Signature]</i>
APPD BY: <i>[Signature]</i>
ORIGINATION DATE: <i>JULY 2021</i>
REVISION DATE: <i>NOVEMBER 2022</i>

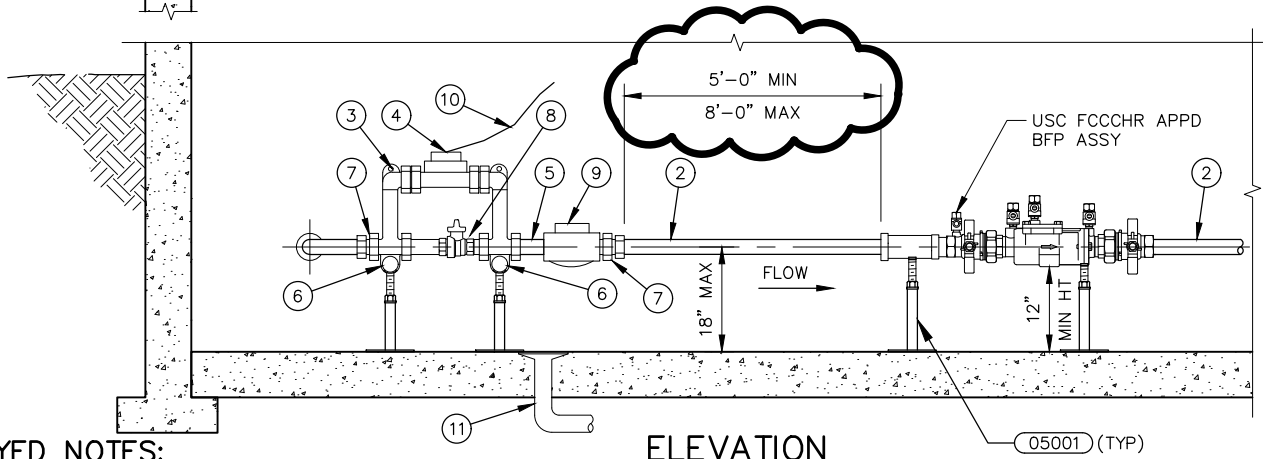
**22015**  
**INSIDE BACKFLOW PREVENTION**  
**ASSEMBLY FOR OUTSIDE SETTING**  
**OF 1 1/2" & 2" METER & BYPASS**  
**IN A MANHOLE**

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**PLAN**



**ELEVATION**

**KEYED NOTES:**

- ① CURB STOP
- ② TYPE "K" Cu TUBING
- ③ 2" COPPERSETTER/METER YOKE
- ④ METER W/ ENCODER REGISTER
- ⑤ 3" NIPPLE BTWN COPPERSETTER & CHKV (IF REQD)
- ⑥ 1"x 18" BSP-40
- ⑦ MIP TO FLARE CPLG FROM INLET SIDE OF COPPERSETTER & OUTLET SIDE OF CHKV
- ⑧ BY-PASS W/ VLV WILL BE 1" FOR 1 1/2" COPPERSETTERS & 1 1/2" OR 1 1/4" FOR 2" COPPERSETTERS
- ⑨ CHKV – NOT REQD WHERE A BFP ASSY IS INSTALLED. BUT MAY BE REQD IF DIST TO BFP ASSY IS MORE THAN 150' & ALLOWS EXCESSIVE WTR TO DR DURING METER MAINTENANCE
- ⑩ SIGNAL WIRE TO AMR DEVICE
- ⑪ FD

**NOTES:**

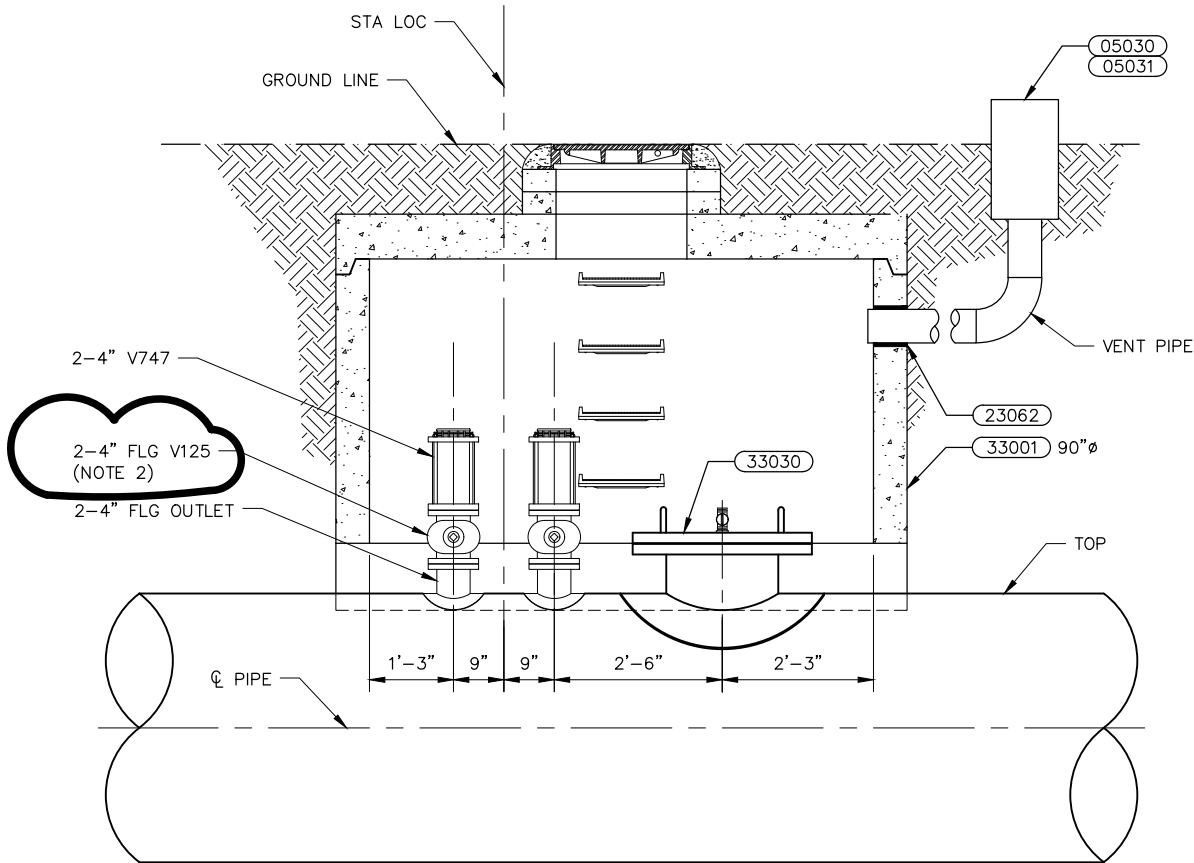
1. NEW INSIDE METER INSTALLATIONS ARE PERMITTED ONLY BY WRITTEN APPROVAL BY DENVER WATER. EXISTING INSIDE METER INSTALLATIONS SHALL COMPLY WITH THIS DRAWING.
2. INSTALLATION SHALL ALLOW FOR ACCESS FROM PUBLIC RIGHT-OF-WAY OR EASEMENT TO METER AND VALVES, AND PROVIDE PROTECTION FROM FREEZING.
3. A FLOOR DRAIN SHALL BE PLACED WITHIN 10 FEET OF THE METER INSTALLATION IN THE SAME ROOM.
4. METER SUPPORT MAY BE EITHER CONCRETE OR STRUCTURAL CHANNEL ATTACHED TO WALL.
5. WALL PENETRATIONS SHALL BE GROUTED WITH CONCRETE.
6. USC FCCCHR APPROVED DOUBLE CHECK VALVE OR REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY DETERMINED BY DEGREE OF HAZARD POSED BY INTERNAL PLUMBING USE.
7. REFER TO LOCAL CODES AND MANUFACTURER REQUIREMENTS FOR SPECIFIC INSTALLATION INSTRUCTIONS.

DRAWN BY: BAIRES
CHKD BY: K ROSS/ <i>KR</i>
APPD BY: <i>[Signature]</i>
ORIGINATION DATE: JULY 2021
REVISION DATE: NOVEMBER 2022

**22016**  
**INSIDE SETTING FOR 1 1/2" & 2" METER & BYPASS W/ INSIDE BACKFLOW PREVENTION ASSY**

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**NOTES:**

1. COAT PIPE, VALVES, AND FITTINGS WITHIN MANHOLE IN ACCORDANCE WITH SPECIFICATION SECTION 09 97 13.04.
2. ORIENT OPERATING FACE OF GUARD VALVE (V104) TOWARDS THE MANHOLE STEPS

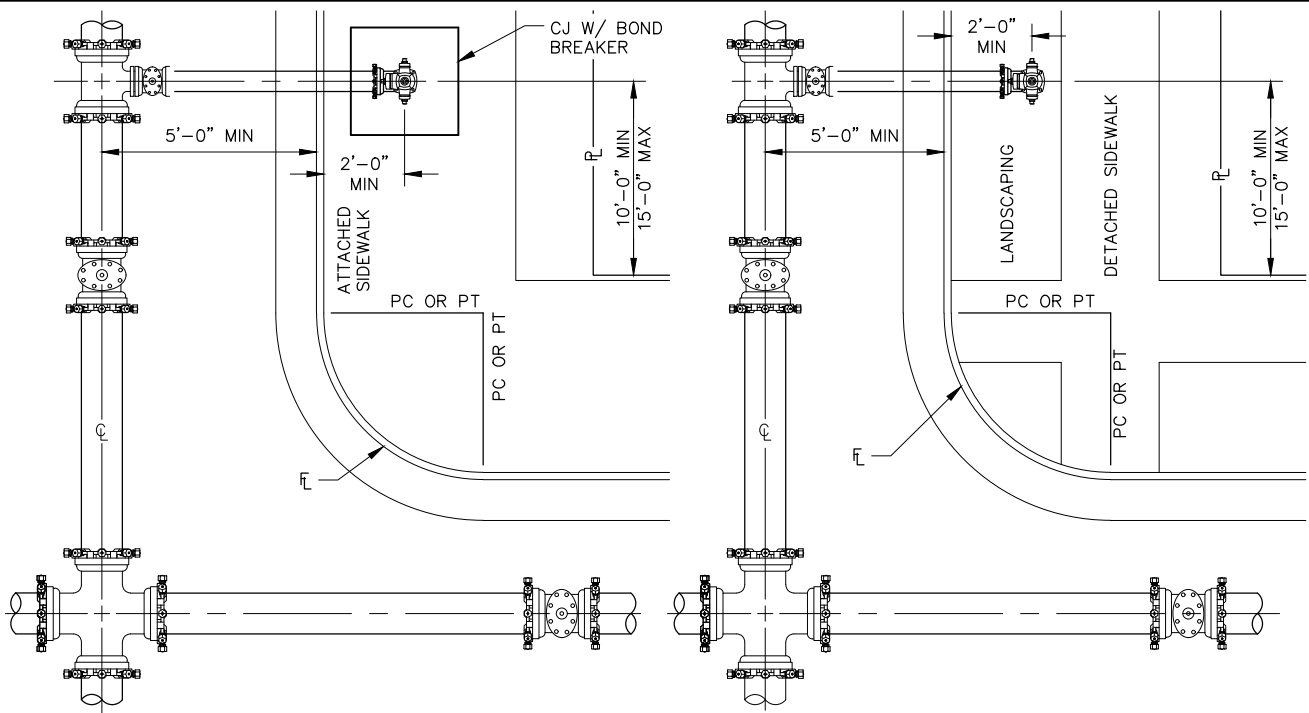
DRAWN BY: WENKHEIMER  
 CHKD BY: K ROSS / *KRR*  
 APPD BY: *[Signature]*  
 ORIGINATION DATE: JULY 2021  
 REVISION DATE: AUGUST 2022

**33006**  
**4" AIR VALVE ASSEMBLY**  
**WITH 20" ACCESS MANHOLE**  
**(STEEL PIPE)**



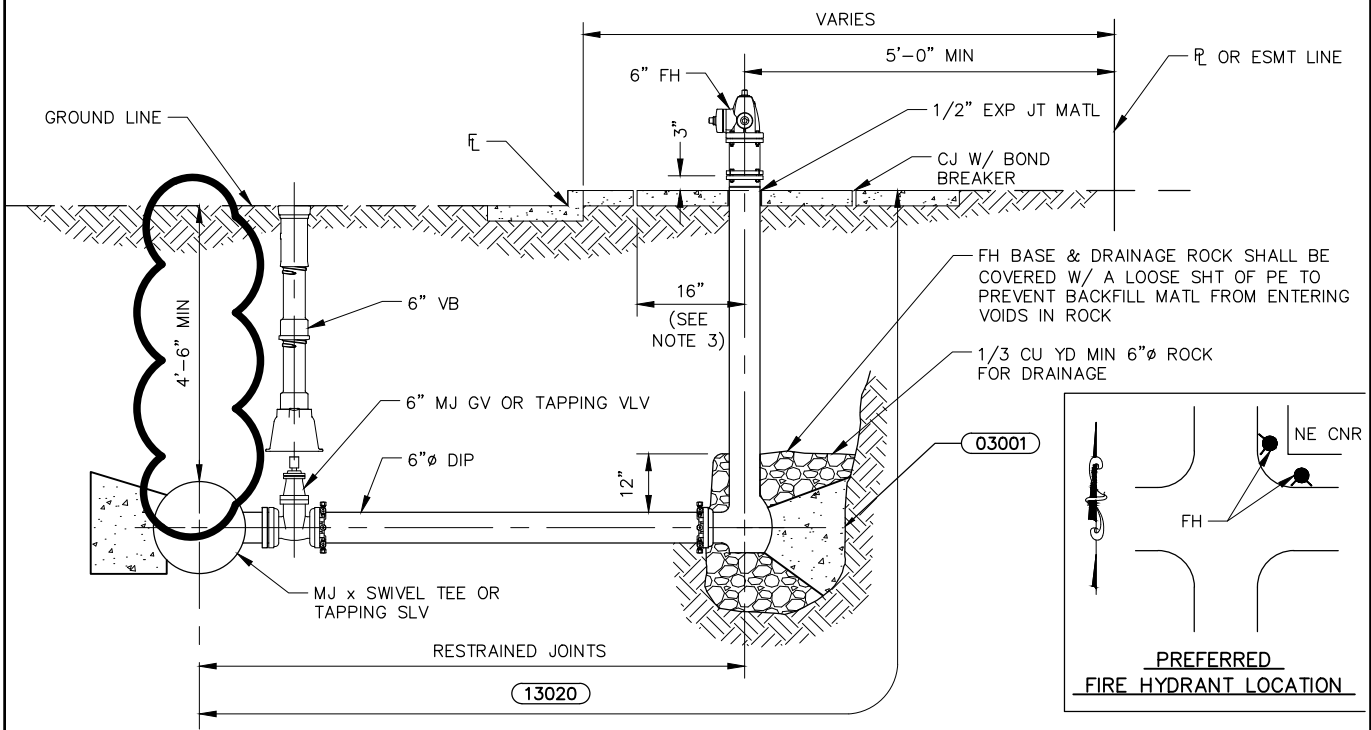
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TYPICAL ATTACHED SIDEWALK

TYPICAL DETACHED SIDEWALK



**NOTES:**

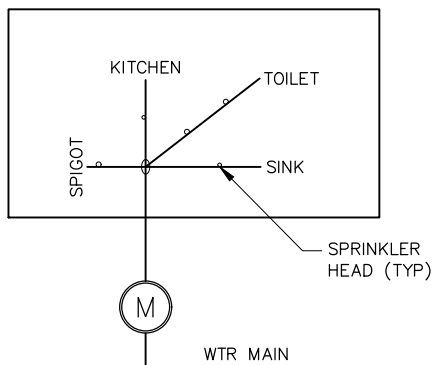
1. NO HORIZONTAL OR VERTICAL BENDS ARE ALLOWED IN FIRE HYDRANT BRANCH.
2. DO NOT COVER OR PLUG DRAIN HOLES WITH CONCRETE.
3. PROVIDE A 32 INCH BY 32 INCH BY 4 INCH CONCRETE PAD WITH CONSTRUCTION JOINT BOND BREAKERS WHEN FIRE HYDRANT IS INSTALLED IN SIDEWALK OR SIMILAR PAVED AREA.
4. FIRE HYDRANT SHALL NOT BE INSTALLED WITHIN CURB RAMP.

DRAWN BY: <i>BAIRES</i>
CHKD BY: <i>K ROSS</i>
APPD BY: <i>[Signature]</i>
ORIGINATION DATE: <i>JANUARY 2022</i>
REVISION DATE: <i>AUGUST 2022</i>

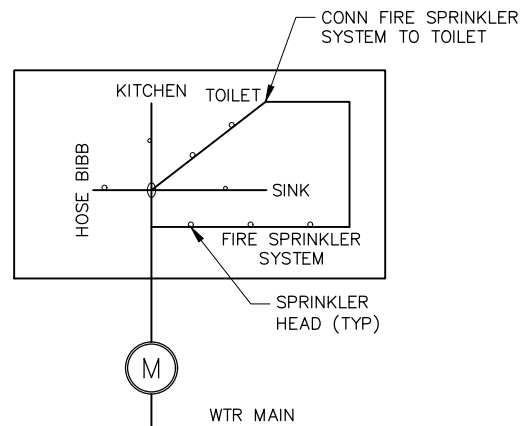
**33206**  
**PLAN, PROFILE, & LOCATION**  
**FOR FIRE HYDRANTS, MAINS,**  
**& VALVES**

**D DENVER WATER**

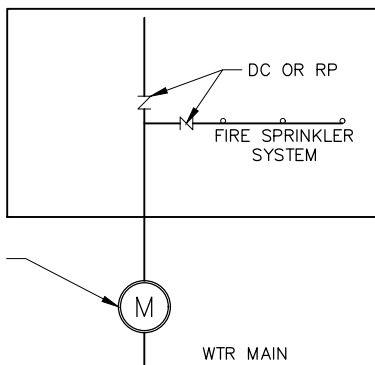
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**OPTION 1**  
MULTI-PURPOSE PIPING SYSTEM  
(PREFERRED)

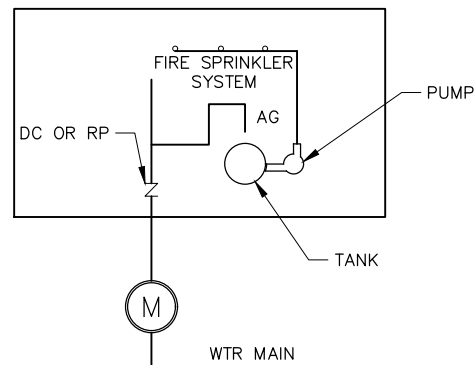


**OPTION 2**  
MULTI-PURPOSE PIPING SYSTEM  
(PASSIVE PURGE)



WTR METER (TYP)

**OPTION 3**  
BRANCHED



**OPTION 4**  
TANK

**NOTES:**

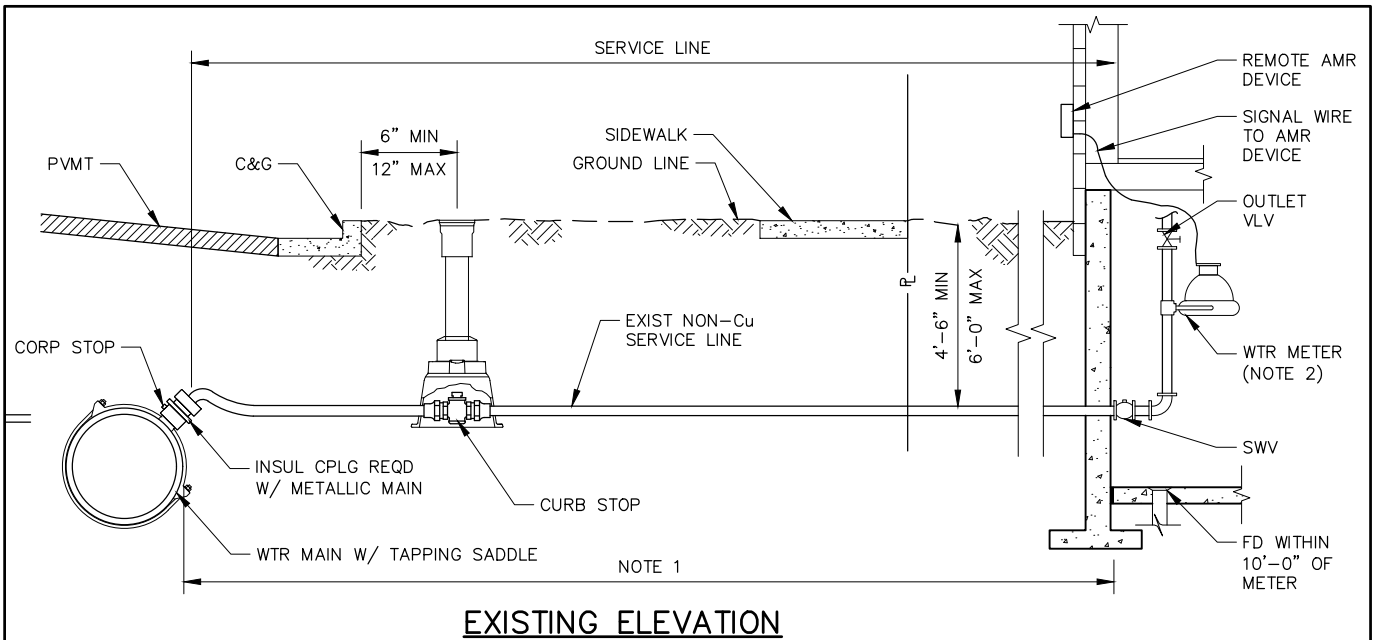
1. CHEMICAL ADDITIVES REQUIRE THE INSTALLATION OF A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER ON THE SPRINKLER SYSTEM BRANCH LINE.
2. OPTION 1 SYSTEM SHALL HAVE ALL BRANCH LINES TERMINATE AT A FIXTURE.
3. OPTION 2 SYSTEM SHALL HAVE NO DEAD-END LINES, SYSTEM PIPING SHALL BE CONSTRUCTED TO MOVE WATER THROUGH THE ENTIRE SYSTEM TO THE FIXTURE END POINT.
4. OPTIONS 3 AND 4 SHALL BE APPROVED BY DENVER WATER, THE LOCAL FIRE DEPARTMENT, AND IF APPLICABLE, THE DISTRIBUTOR PRIOR TO APPLICATION FOR WATER SUPPLY LICENSE.
5. OPTION 4 IS NOT PERMITTED ON NEW SERVICE LINES. OPTION 4 WILL REQUIRE AN AIR GAP IF THE WATER SUPPLY TO THE TANK IS HARD PIPED. A DC OR RP SHALL BE REQUIRED AT THE WATER ENTRY POINT DEPENDING ON THE HAZARD.

DRAWN BY: <i>BAIRES</i>
CHKD BY: <i>K ROSS</i> <i>HR</i>
APPD BY: <i>[Signature]</i>
ORIGINATION DATE: <i>JULY 2021</i>
REVISION DATE: <i>MAY 2023</i>

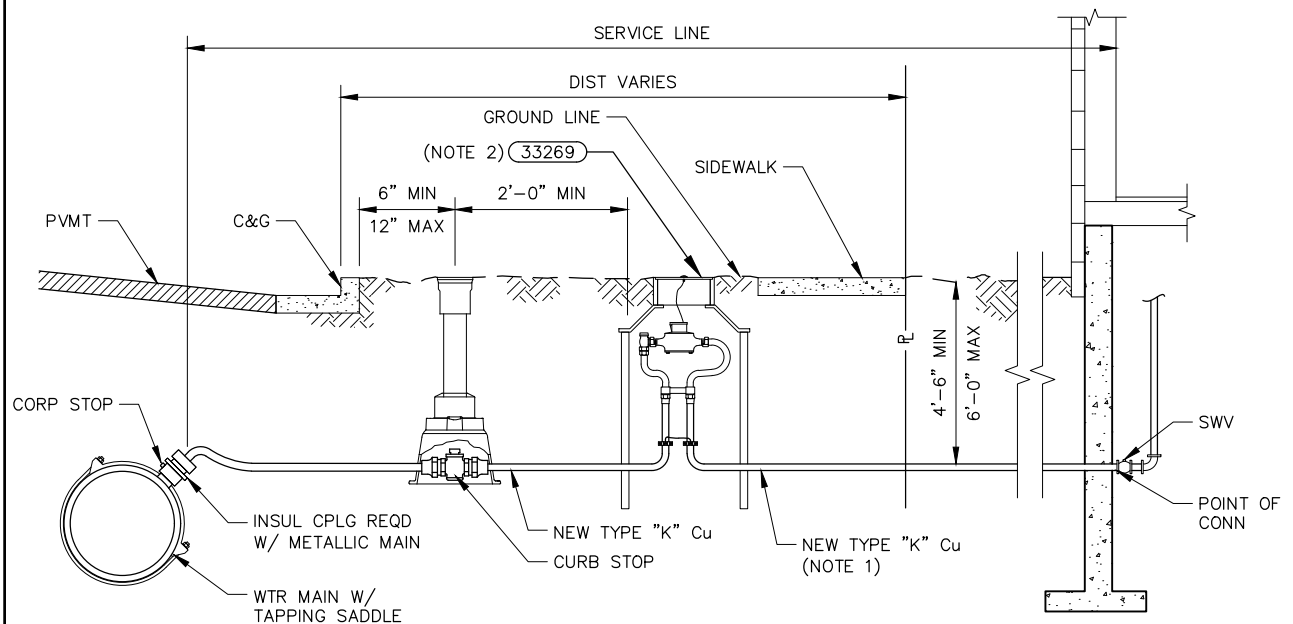
**33263**  
**NATIONAL FIRE PROTECTION**  
**ASSOCIATION 13D RESIDENTIAL**  
**SPRINKLER SERVICES**

**D DENVER WATER**

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**EXISTING ELEVATION**



**RELOCATION ELEVATION**

**NOTES:**

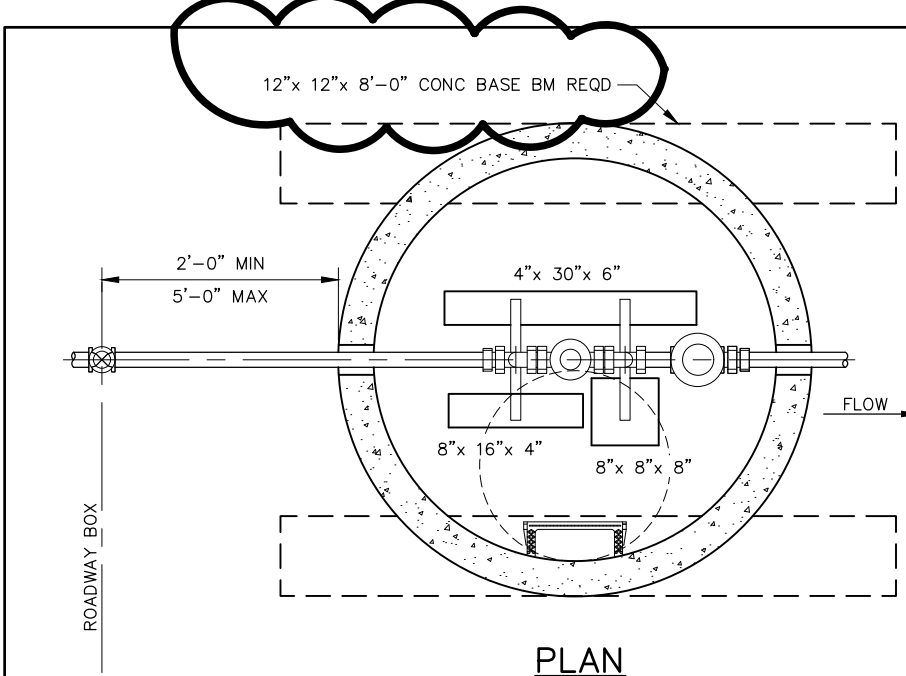
1. LIMITS OF REPLACEMENT OF NON-COPPER SERVICE LINE EXTENDS FROM THE TAP TO THE FIRST BRASS FITTING INSIDE THE STRUCTURE.
2. RELOCATE METER FROM AN INSIDE SETTING TO AN OUTSIDE SETTING IN ACCORDANCE WITH (33269).
3. INSTALL METER PIT AND SERVICE LINE IN ACCORDANCE WITH SPECIFICATION SECTION 33 19 13.
4. FOR REPLACEMENTS ON PVC MAINS, MAINTAIN THE EXISTING TAP LOCATION, REMOVE AND REPLACE THE TAPPING SADDLE WITH A NO-LEAD MODEL LISTED IN SPECIFICATION SECTION 33 14 17; OR, MAKE A NEW TAP 5'-0" MINIMUM FROM THE EXISTING TAP IN ACCORDANCE WITH SPECIFICATION SECTION 33 14 17.
5. ON EXISTING SERVICE LINES WITH COPPER FROM THE MAIN TO METER, REPLACE THE NON-COPPER SERVICE LINE FROM THE METER TO THE FIRST BRASS FITTING INSIDE THE STRUCTURE.

DRAWN BY: BAIRES
CHKD BY: K ROSS/ <i>[Signature]</i>
APPD BY: <i>[Signature]</i>
ORIGINATION DATE: JULY 2021
REVISION DATE: OCTOBER 2022

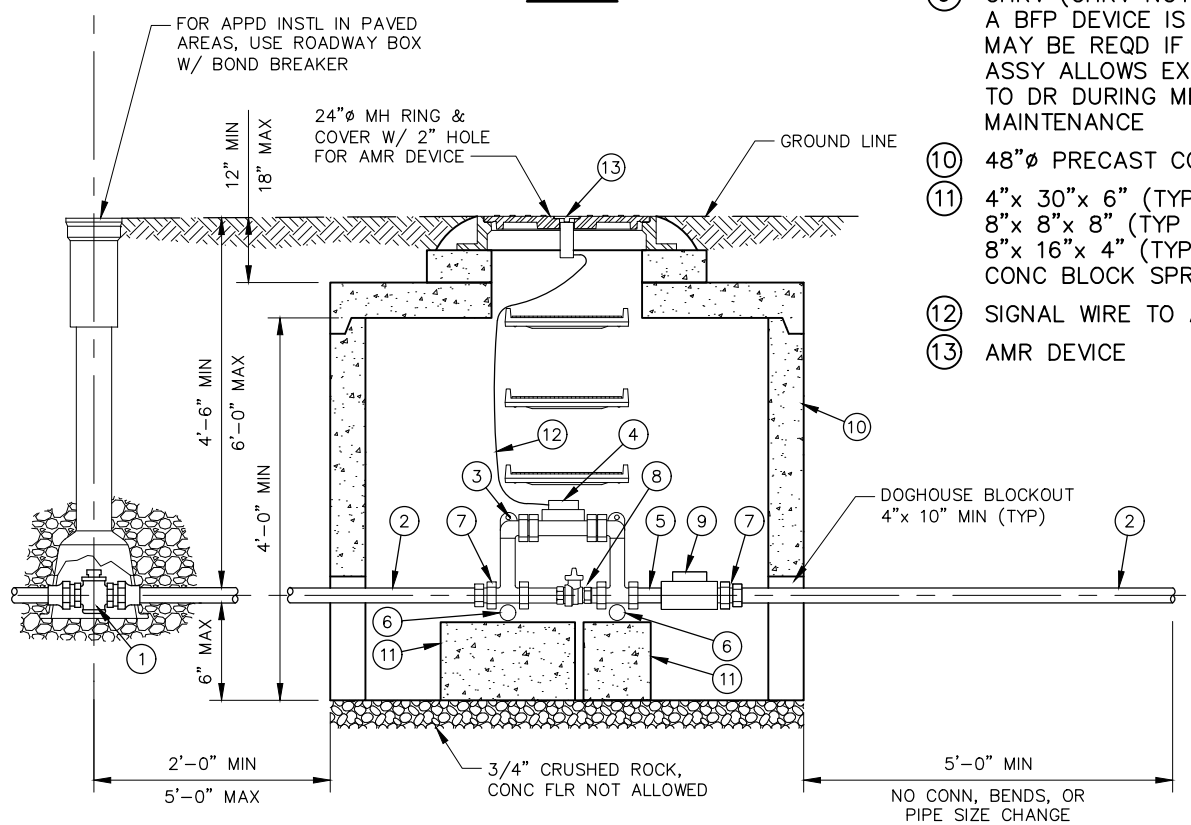
**33266**  
**2" & SMALLER NON-COPPER**  
**SERVICE LINE REPLACEMENT &**  
**INSIDE METER RELOCATION**

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**PLAN**



**ELEVATION**

**KEYED NOTES:**

- ① CURB STOP
- ② TYPE "K" Cu TUBING
- ③ 1 1/2" OR 2" COPPERSETTER/ METER YOKE W/ BYPASS
- ④ WTR METER W/ ENCODER REGISTER
- ⑤ 3" NIPPLE BTWN COPPERSETTER & CHKV
- ⑥ 1"x 23" BSP-40
- ⑦ IRON PIPE TO FLARE CPLG FROM INLET SIDE OF COPPERSETTER & OUTLET SIDE OF CHKV
- ⑧ BYPASS W/ VLV WILL BE 1" FOR 1 1/2" COPPERSETTERS & 1 1/2" OR 1 1/4" FOR 2" COPPERSETTERS; NO BYPASS FOR IRR METERS
- ⑨ CHKV (CHKV NOT REQD WHERE A BFP DEVICE IS INSTL) CHKV MAY BE REQD IF DIST TO BFP ASSY ALLOWS EXCESSIVE WTR TO DR DURING METER MAINTENANCE
- ⑩ 48"Ø PRECAST CONC MH
- ⑪ 4" x 30" x 6" (TYP OF 2) OR 8" x 8" x 8" (TYP OF 4) OR 8" x 16" x 4" (TYP OF 4) CONC BLOCK SPRT
- ⑫ SIGNAL WIRE TO AMR DEVICE
- ⑬ AMR DEVICE

**NOTES:**

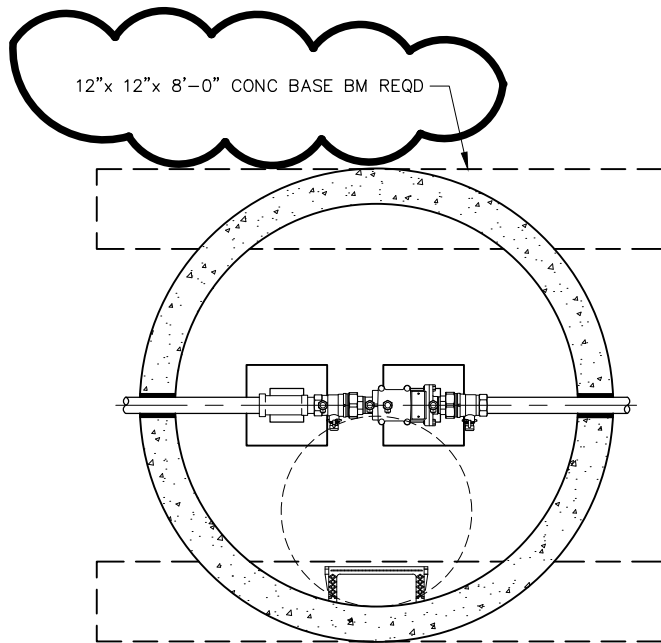
- 1. CURB STOP SHALL BE 2 FEET MINIMUM FROM THE INLET SIDE OF THE METER MANHOLE.
- 2. THE COPPERSETTER OR METER YOKE SHALL BE 12 INCH HIGH MAXIMUM.
- 3. GROUT DOGHOUSE BLOCKOUTS AFTER SERVICE LINE INSTALLATION.
- 4. INSTALL METER MANHOLE AND SERVICE LINE IN ACCORDANCE WITH SPECIFICATION SECTION 33 19 13.

DRAWN BY: <i>BAIRES</i>
CHKD BY: <i>K ROSS/ [Signature]</i>
APPD BY: <i>[Signature]</i>
ORIGINATION DATE: <i>JULY 2021</i>
REVISION DATE: <i>AUGUST 2022</i>

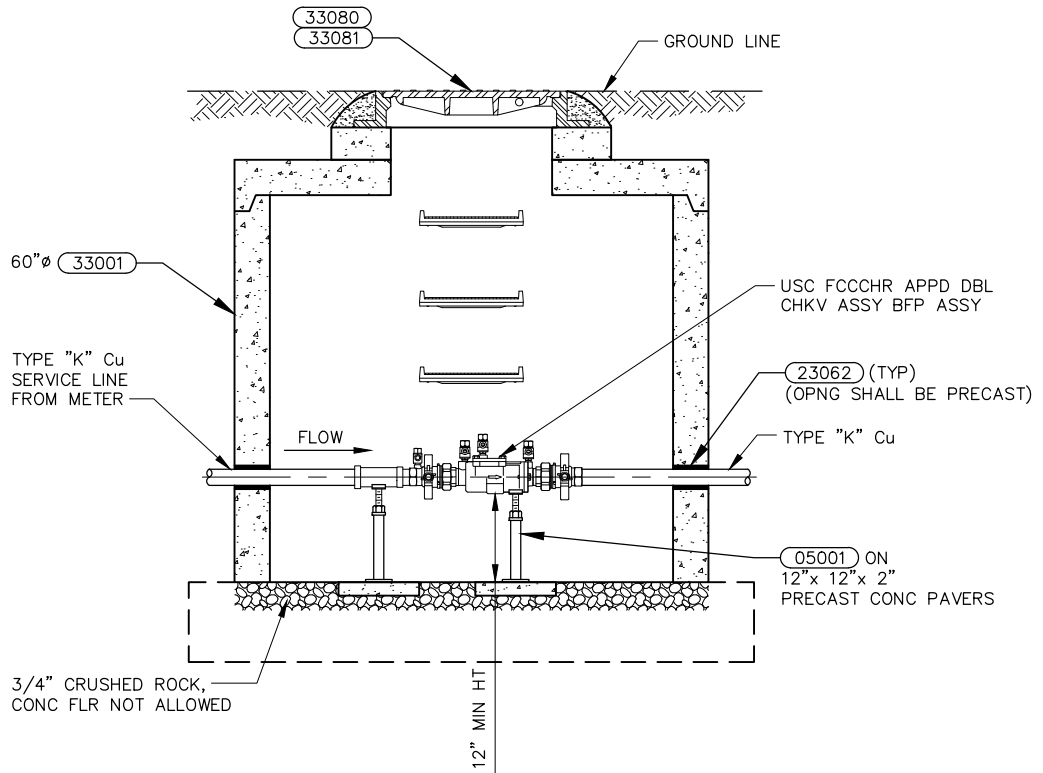
**33270**  
**OUTSIDE SETTING FOR**  
**1 1/2" & 2" METER W/ CHECK**  
**VALVE & BYPASS IN MANHOLE**

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**PLAN**



**ELEVATION**

**NOTES:**

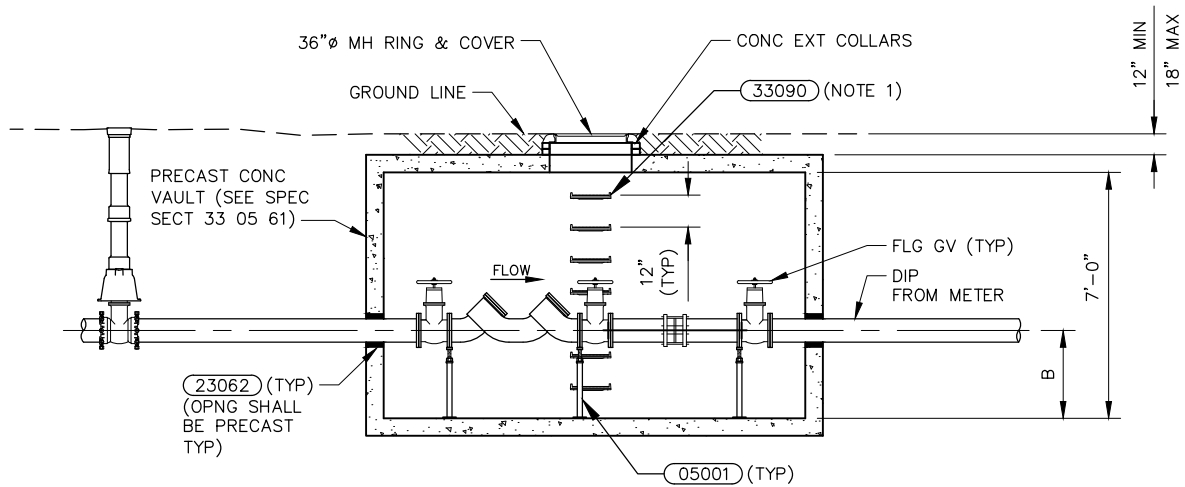
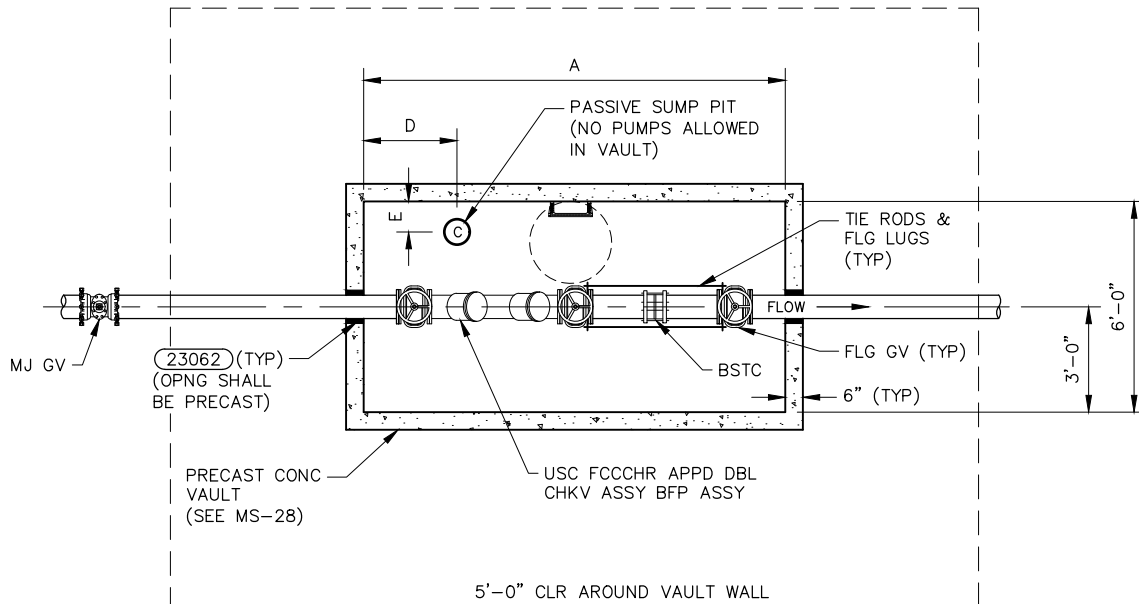
1. DIAMETER OF FITTINGS, NIPPLE, AND TUBING SHALL BE EQUAL IN DIAMETER TO THE BACKFLOW PREVENTER.
2. REFER TO LOCAL CODES AND MANUFACTURER REQUIREMENTS FOR INSTALLATION INSTRUCTIONS.
3. BACKFLOW PREVENTION ASSEMBLY SHALL BE THE SAME SIZE AS THE SERVICE LINE SIZE. UPSIZING THE BACKFLOW PREVENTION ASSEMBLY IS NOT ALLOWED.

DRAWN BY: *BAIRES*  
 CHKD BY: *K ROSS*  
 APPD BY: *[Signature]*  
 ORIGINATION DATE: *JULY 2021*  
 REVISION DATE: *AUGUST 2022*

**33280**  
**OUTSIDE SETTING FOR 2"**  
**& SMALLER DOUBLE CHECK**  
**VALVE ASSEMBLY IN MANHOLE**



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NOMINAL PIPE Ø	PRECAST VAULT DIMENSIONS		SUMP		
	A	B	C	D	E
2 1/2"	10'-0"	2'-6"	12"Ø	2'-2"	1'-6"
3"	10'-0"	2'-6"	12"Ø	2'-2"	1'-6"
4"	10'-0"	2'-6"	12"Ø	2'-2"	1'-6"
6"	14'-0"	2'-6"	18"Ø	2'-6"	1'-9"
8"	14'-0"	2'-6"	18"Ø	2'-6"	1'-9"
10"	14'-0"	2'-6"	18"Ø	2'-6"	1'-9"

- NOTES:**
1. THE DISTANCE BETWEEN RUNGS, CLEATS, AND STEPS SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER.
  2. VALVES INSIDE THE VAULT SHALL BE NON-RISING STEM, RIGHT HAND OPEN VALVES WITH HAND WHEEL OPERATORS.
  3. SERVICE LINES SHALL NOT CROSS INSIDE THE METER PIT.
  4. BACKFLOW PREVENTION ASSEMBLY SHALL BE THE SAME SIZE AS THE SERVICE LINE SIZE. UPSIZING THE BACKFLOW PREVENTION ASSEMBLY IS NOT ALLOWED.

DRAWN BY: *BAIRES*

CHKD BY: *K ROSS*

APPD BY: *[Signature]*

ORIGINATION DATE: *JULY 2021*

REVISION DATE: *AUGUST 2022*

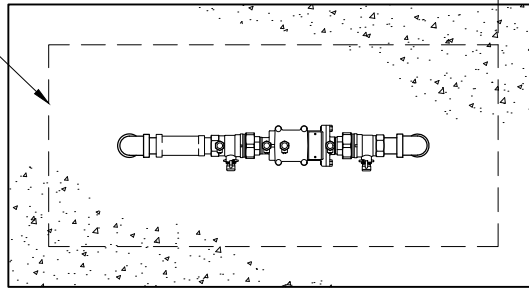
**33281**

**OUTSIDE SETTING FOR 2 1/2" TO 10" DOUBLE CHECK VALVE ASSEMBLY IN VAULT**

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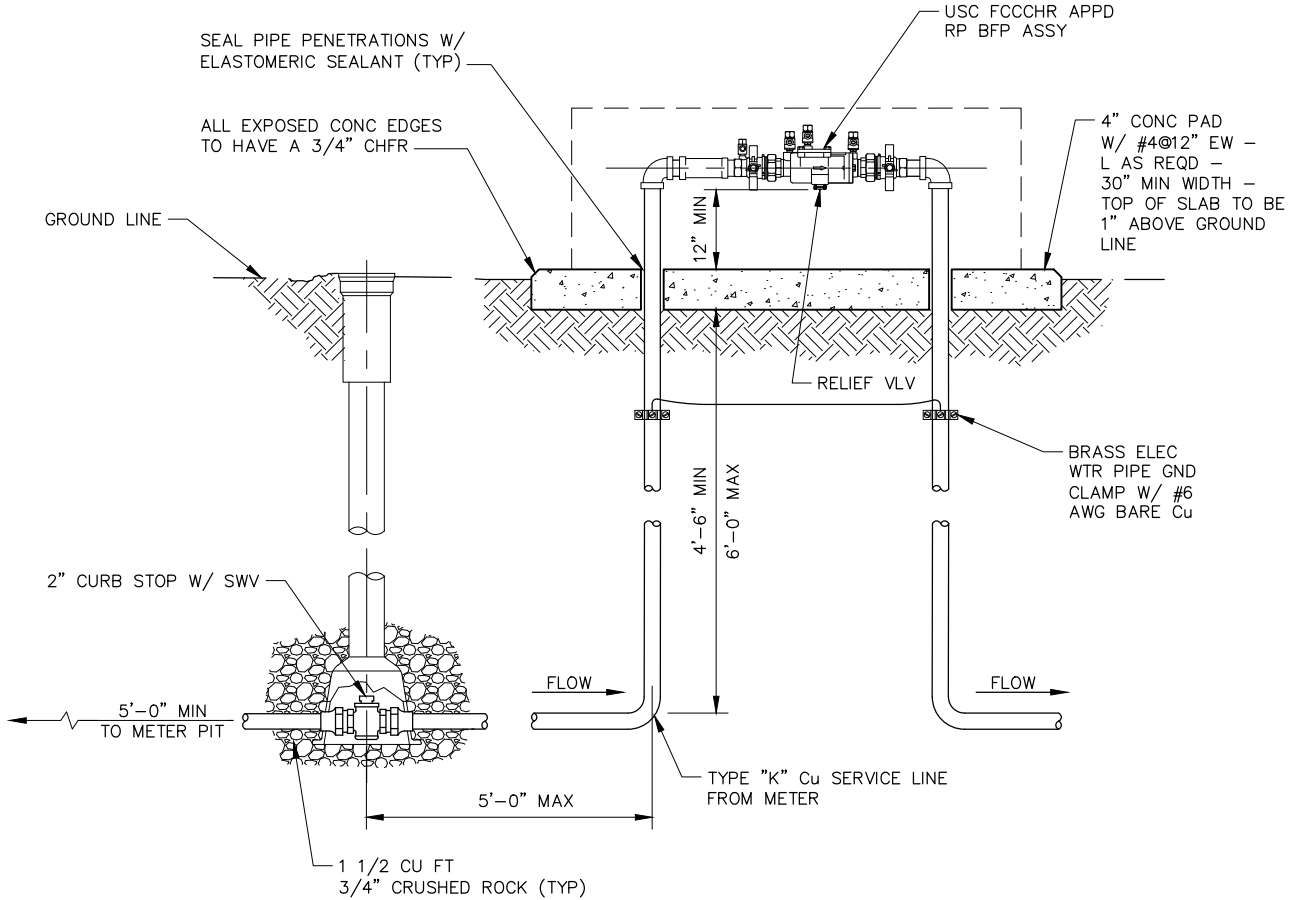
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SPEC ENCLOSURE  
(HEATED/NON-HEATED)



6" CLR  
ALL SIDES

**PLAN**



**ELEVATION**

**NOTES:**

1. CONCRETE PAD PENETRATIONS SHALL BE 1 INCH LARGER THAN PIPE DIAMETER.
2. DIAMETER OF FITTINGS, NIPPLE, AND TUBING SHALL BE EQUAL IN DIAMETER TO THE BACKFLOW PREVENTER.
3. HEATED ENCLOSURE SHALL HAVE SEPARATE APPROVED ELECTRICAL SERVICE AND SHALL BE SIZED TO ALLOW ADEQUATE ROOM FOR TESTING AND MAINTENANCE.
4. REFER TO LOCAL CODES AND MANUFACTURER REQUIREMENTS FOR INSTALLATION INSTRUCTIONS.
5. BACKFLOW PREVENTION ASSEMBLY SHALL BE THE SAME SIZE AS THE SERVICE LINE SIZE. UPSIZING THE BACKFLOW PREVENTION ASSEMBLY IS NOT ALLOWED.

DRAWN BY: *BAIRES*

CHKD BY: *K ROSS*

APPD BY: *[Signature]*

ORIGINATION DATE: *JULY 2021*

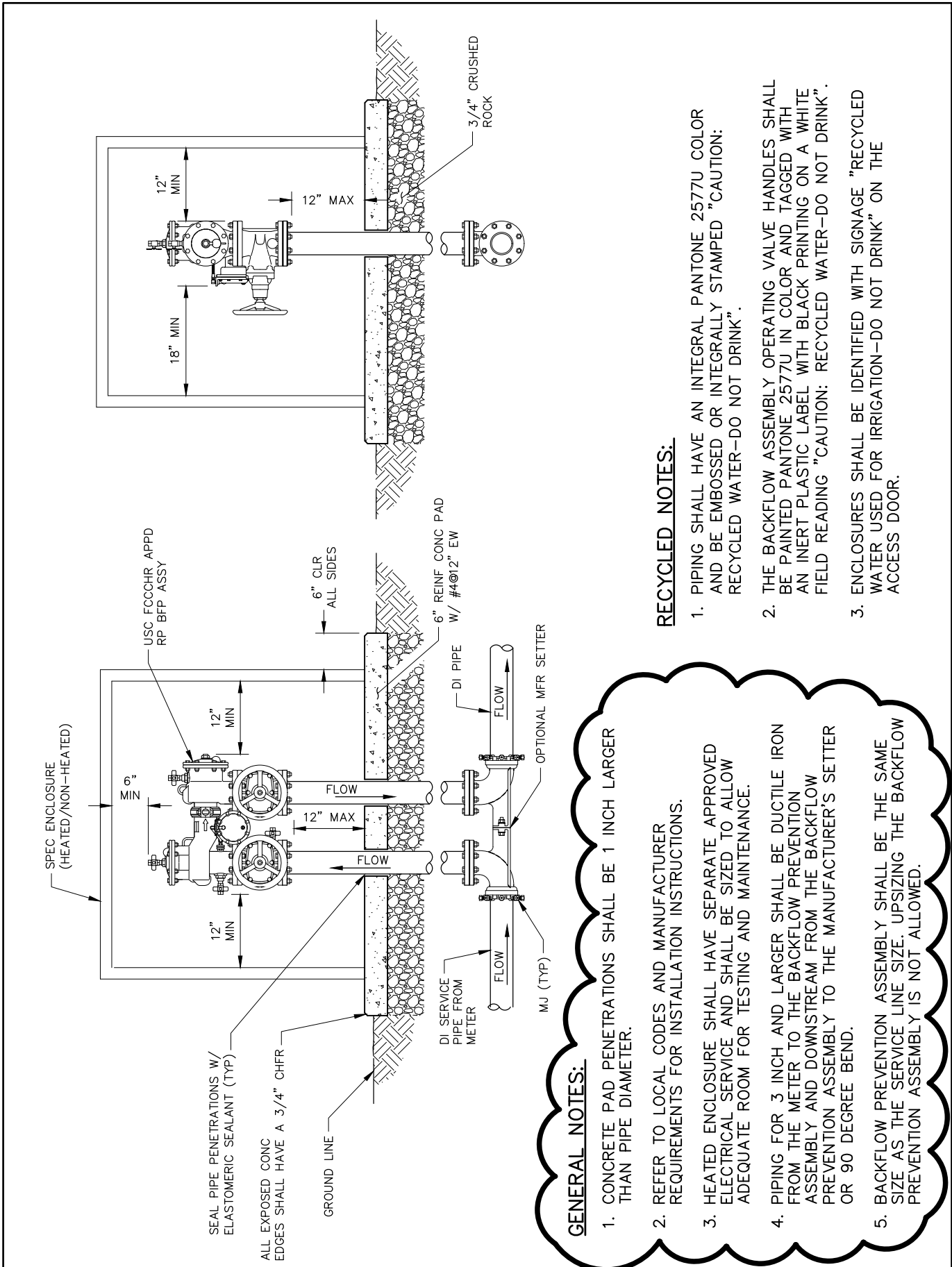
REVISION DATE: *AUGUST 2022*

*33282*

**OUTSIDE SETTING FOR 2" &  
SMALLER REDUCED PRESSURE  
PRINCIPLE ASSEMBLY IN  
ENCLOSURE**



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**RECYCLED NOTES:**

1. PIPING SHALL HAVE AN INTEGRAL PANTONE 2577U COLOR AND BE EMBOSSED OR INTEGRALLY STAMPED "CAUTION: RECYCLED WATER—DO NOT DRINK".
2. THE BACKFLOW ASSEMBLY OPERATING VALVE HANDLES SHALL BE PAINTED PANTONE 2577U IN COLOR AND TAGGED WITH AN INERT PLASTIC LABEL WITH BLACK PRINTING ON A WHITE FIELD READING "CAUTION: RECYCLED WATER—DO NOT DRINK".
3. ENCLOSURES SHALL BE IDENTIFIED WITH SIGNAGE "RECYCLED WATER USED FOR IRRIGATION—DO NOT DRINK" ON THE ACCESS DOOR.

**GENERAL NOTES:**

1. CONCRETE PAD PENETRATIONS SHALL BE 1 INCH LARGER THAN PIPE DIAMETER.
2. REFER TO LOCAL CODES AND MANUFACTURER REQUIREMENTS FOR INSTALLATION INSTRUCTIONS.
3. HEATED ENCLOSURE SHALL HAVE SEPARATE APPROVED ELECTRICAL SERVICE AND SHALL BE SIZED TO ALLOW ADEQUATE ROOM FOR TESTING AND MAINTENANCE.
4. PIPING FOR 3 INCH AND LARGER SHALL BE DUCTILE IRON FROM THE METER TO THE BACKFLOW PREVENTION ASSEMBLY AND DOWNSTREAM FROM THE BACKFLOW PREVENTION ASSEMBLY TO THE MANUFACTURER'S SETTER OR 90 DEGREE BEND.
5. BACKFLOW PREVENTION ASSEMBLY SHALL BE THE SAME SIZE AS THE SERVICE LINE SIZE. UPSIZING THE BACKFLOW PREVENTION ASSEMBLY IS NOT ALLOWED.

DRAWN BY: BAIREZ
CHKD BY: K ROSS
APPD BY: [Signature]
ORIGINATION DATE: JULY 2021
REVISION DATE: AUGUST 2022

**33283**  
**OUTSIDE SETTING FOR 3" & LARGER REDUCED PRESSURE PRINCIPLE ASSEMBLY N-TYPE, ABOVE GROUND**

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