

FOR USE WITH THE 2017 CPCS

LAST REVISED AUGUST 1, 2017

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.

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 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 the CONTRACTOR may have access to and use of the Board's computer or telecommunications resources.

SC-[] ARTICLE 6--CONTRACTOR RESPONSIBILITIES. Add Paragraph 6.36.

Computer and Telecommunications Resources

6.36 The CONTRACTOR and its employees and agents may have access to and use of the OWNER's computer or telecommunications resources to fulfill the terms of this Contract. As a condition of this access and use, the CONTRACTOR agrees to abide by all applicable laws and OWNER policies, including Personnel Policies, Executive Guidelines, and all other policies, procedures, guidelines, and standards that relate to the use and security of the OWNER's computer and telecommunications resources.

The CONTRACTOR will not knowingly use or permit the use of the OWNER's resources for any purposes other than those necessary to perform the Work required under this Contract. The CONTRACTOR will not use any access mechanism that the OWNER has not expressly assigned to the CONTRACTOR or its employees, and the CONTRACTOR will not disclose information concerning access to these resources unless properly authorized to do so by the OWNER. The CONTRACTOR will treat all information maintained on OWNER computer systems, networks, and telecommunications resources as strictly confidential and will not release information to any unauthorized person.

The OWNER reserves the right without notice to limit or restrict the CONTRACTOR's access and to inspect, remove, or otherwise alter any data, file, or system resource that may undermine or expand the limited scope of the CONTRACTOR's authorized use of the OWNER's network computing facilities. Should the CONTRACTOR fail to abide by these terms, the OWNER may immediately terminate this Contract for cause.

SUPPLEMENTARY TECHNICAL SPECIFICATIONS – CONTRACT *****

DIVISION 1

Engineer: If SECTION 01 14 13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 01 14 13 – ACCESS TO SECURE SITES, PART 1, SUBPARAGRAPH 1.3

DELETE:

- A. Personnel Screening: Refer to DW CONTRACTOR personnel screening requirements and forms: <http://www.denverwater.org/DoingBusinesswithUs/ContractorPrequalificationCapitalProjects/>.

SUBSTITUTE:

- A. Personnel Screening: Refer to DW CONTRACTOR personnel screening requirements and forms: <https://www.denverwater.org/contractors/bid-and-contract-opportunities/capital-project-prequalification>.

Select one of the following:

SECTION 01 29 00 – PAYMENT PROCEDURES, PART 1, SUBPARAGRAPH 1.1

DELETE:

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

SUBSTITUTE:

- B. Related Sections:
1. SECTION 01 32 16.02 – COST LOADED SCHEDULE
 2. SECTION 01 78 23 – OPERATION AND MAINTENANCE DATA

OR

SECTION 01 29 00 – PAYMENT PROCEDURES, PART 1, SUBPARAGRAPH 1.1

DELETE:

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

SUBSTITUTE:

- B. Related Sections:
1. SECTION 01 32 16.01 – COST LOADED SCHEDULE
 2. SECTION 01 78 23 – OPERATION AND MAINTENANCE DATA

This Section will stay in every contract, do not remove.

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.

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	Description	Completion date

Add if the project is restricted or highly restricted.

SECTION 01 32 20 – ELECTRONIC DOCUMENT MANAGEMENT SYSTEM, PART 1, SUBPARAGRAPH 1.1.B

DELETE:

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

SUBSTITUTE:

B. Related Sections:

1. SECTION 01 14 13 – ACCESS TO SECURE SITES
2. SECTION 01 31 00 – PROJECT MANAGEMENT AND COORDINATION
3. SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION
4. SECTION 01 33 00 – SUBMITTAL PROCEDURES

Add if the project is restricted or highly restricted.

SECTION 01 32 20 – ELECTRONIC DOCUMENT MANAGEMENT SYSTEM, PART 1, SUBPARAGRAPH 1.2

DELETE:

- G. Pre-Construction Submittals: Within 2 weeks after the Notice to Proceed, provide the names of CONTRACTOR and Subcontractor personnel working on-site in an electronic spreadsheet. Identify the administrator that will be utilizing the EDMS and the key personnel's roles and responsibilities for this Project.

SUBSTITUTE:

- G. Pre-Construction Submittals: Within 2 weeks after the Notice to Proceed, provide the names of CONTRACTOR and Subcontractor personnel working on-site in an electronic spreadsheet. Identify the administrator that will be utilizing the EDMS and the key personnel's roles and responsibilities for this Project. This is a secure site and access shall be as specified in SECTION 01 14 13.

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.3

DELETE:

- a. Complete, sign, and transmit with each Submittal package one Submittal Transmittal and Response Form. The form is available in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual>. Download the Submittal Transmittal and Response document from the Forms section under the Construction Contract Administration subheading.

SUBSTITUTE:

- a. Complete, sign, and transmit with each Submittal package one Submittal Transmittal and Response Form. The form is available in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>. Download the Submittal Transmittal and Response document from the Forms section under the Construction Contract Administration subheading.

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.
-

Engineer: If SECTION 01 44 33 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 01 44 33 – MANUFACTURER’S SERVICES, PART 1, SUBPARAGRAPH 1.3.F

DELETE:

1. The following forms can be found online in DW’s CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>:

SUBSTITUTE:

1. The following forms can be found online in DW’s CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual/>:

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)

Engineer: If SECTION 01 50 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 01 50 00 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS, PART 3, SUBPARAGRAPH 3.2.B.4

DELETE:

- h. For Work in the City and County of Denver Total Service and Read and Bill District Contract Areas, water used for construction purposes will be paid for by the OWNER in accordance with the requirements listed at <http://www.denverwater.org/DoingBusinesswithUs/Hydrants/>

SUBSTITUTE:

- h. For Work in the City and County of Denver Total Service and Read and Bill District Contract Areas, water used for construction purposes will be paid for by the OWNER in accordance with the requirements listed at <https://www.denverwater.org/contractors/construction-information/hydrant-use-program>
-

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 the OWNER’s storage yard: [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. 12th 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, and SECTION [REDACTED]; correct issues related to installation.
- 2. OWNER prepurchases product performance tests shall be completed no later than [REDACTED].

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 [REDACTED], [REDACTED], and [REDACTED] 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 [REDACTED] 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 [REDACTED]. Work associated with the product installation, such as [REDACTED], 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 [REDACTED] and SECTION [REDACTED].
 - D. Provide supervision, labor, tools, construction product, incidental materials, and necessary services required to install OWNER-furnished products.
-

Select the following 2 changes if the OWNER is to perform construction surveys instead of the CONTRACTOR.

SECTION 01 71 23.16 – CONSTRUCTION SURVEYING, PART 1, SUBPARAGRAPH 1.2.A

DELETE:

3. Perform surveys necessary to lay out the structure and pipeline lines, alignments, grades, and elevations from the OWNER's provided control points.
4. The ENGINEER may review or verify the CONTRACTOR-established lines, grades, and elevations by surveys. Provide access to Work for these 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.

SUBSTITUTE:

3. The OWNER will perform surveys necessary to lay out the structure and pipeline lines, alignments, grades, and elevations from the established control points.
4. Reviews or surveys performed or requested by the ENGINEER shall not relieve the CONTRACTOR's responsibility for correct lines, grades, elevations, and structure layout.

SECTION 01 71 23.16 – CONSTRUCTION SURVEYING, PART 1, SUBPARAGRAPH 1.2

DELETE:

- B. Construction Layout: *(In its entirety)*

Make the following 2 deletions if the CONTRACTOR is to perform construction surveys:

SECTION 01 71 23.16 – CONSTRUCTION SURVEYING, PART 3, SUBPARAGRAPH 3.1.A.1

DELETE:

- c. Preserve line and grade stakes and markers set by the ENGINEER until otherwise authorized.
- d. Submit a Survey Work Request Form to the ENGINEER a minimum of 3 days prior to the date the survey is needed.

SECTION 01 71 23.16 – CONSTRUCTION SURVEYING, PART 3, SUBPARAGRAPH 3.1.A

DELETE:

2. OWNER: *(In its entirety)*

Engineer: If SECTION 01 78 23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 01 78 23 – OPERATION AND MAINTENANCE DATA, PART 1, SUBPARAGRAPH 1.2

DELETE:

- G. Forms for optional CONTRACTOR use: The following forms can be found online in DW's CPPM: [http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProcedures Manual/](http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/).

SUBSTITUTE:

- G. Forms for optional CONTRACTOR use: The following forms can be found online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.
-

Select one of the following:

SECTION 01 91 00 – COMMISSIONING, PART 1, SUBPARAGRAPH 1.1

DELETE:

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

SUBSTITUTE:

- B. Related Sections:
1. SECTION 01 29 00 – PAYMENT PROCEDURES
 2. SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION
 3. SECTION 01 32 16.02 – COST LOADED SCHEDULE
 4. SECTION 01 44 33 – MANUFACTURER'S SERVICES
 5. SECTION 01 45 00 – QUALITY CONTROL
 6. SECTION 01 77 00 – CLOSEOUT PROCEDURES
 7. SECTION 01 78 23 – OPERATION AND MAINTENANCE DATA
 8. SECTION 23 09 00 – HVAC CONTROLS
 9. SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS

OR

SECTION 01 91 00 – COMMISSIONING, PART 1, SUBPARAGRAPH 1.1.B

DELETE:

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

SUBSTITUTE:

- B. Related Sections:
1. SECTION 01 29 00 – PAYMENT PROCEDURES
 2. SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION
 3. SECTION 01 32 16.01 – COST LOADED SCHEDULE
 4. SECTION 01 44 33 – MANUFACTURER'S SERVICES
 5. SECTION 01 45 00 – QUALITY CONTROL
 6. SECTION 01 77 00 – CLOSEOUT PROCEDURES
 7. SECTION 01 78 23 – OPERATION AND MAINTENANCE DATA
 8. SECTION 23 09 00 – HVAC CONTROLS
 9. SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS

Engineer: If SECTION 01 91 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 01 91 00 – COMMISSIONING, PART 1, SUBPARAGRAPH 1.3

DELETE:

- D. Forms for optional CONTRACTOR use: The following forms can be found online in DW's CPPM: [http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProcedures Manual/](http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/).

SUBSTITUTE:

- D. Forms for optional CONTRACTOR use: The following forms can be found online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

DIVISION 2

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: [].

Complete the following:

SECTION 02 41 19 – SELECTIVE DEMOLITION, PART 3

ADD:

3.3 DEMOLITION SCHEDULE

- A. Demolish:
 - 1. [].
 - 2. [].
- B. Remove and Salvage:
 - 1. [].
 - 2. [].
- C. Relocate:
 - 1. [].
 - 2. [].
- D. Lead [was] [was not] detected in the samples.
- E. Transformer Oil:
 - 1. Test results indicate a PCB level [less than 50 ppm] [greater than 50 ppm].

DIVISION 3

In the following paragraph, if another Type of cement is desired, consult with the Materials Lab Manager and specify below.

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

DELETE:

1. Cement: Type II portland cement in accordance with ASTM C 150.

SUBSTITUTE:

1. [] portland cement in accordance with ASTM [].

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.A.1

ADD:

- a. 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 unless you are using one of the other deletions associated with 2.2.E.2 listed below.

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

DELETE:

- 1) For thrust blocks, and ductbanks; can be used for lean concrete when approved by the ENGINEER.

SUBSTITUTE:

- 1) For use as thrust blocks.

****See above** Used as structural concrete for areas not exposed to moisture and freeze-thaw cycles.**

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

DELETE:

2. Mixes: *(In its entirety)*

SUBSTITUTE:

2. Mixes:
 - a. Concrete fill (Class B):
 - 1) For thrust blocks; can be used for lean concrete when approved by the ENGINEER.
 - 2) Minimum 28 day compressive strength: 2,500 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 400 lbs/cy.
 - 4) Maximum w/cm ratio: 0.62.
 - 5) Air content: 4% to 8% of the volume of the batch when tested in accordance with ASTM C 231.
 - b. Structural concrete (CDOT Class D):
 - 1) For use as structural concrete.

- 2) Minimum 28 day compressive strength: 4,500 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 615 to 660 lbs/cy.
 - 4) Maximum w/cm ratio: 0.45.
 - 5) Slump: 1 1/2-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 6) Air content: 5% to 8% of volume of batch when tested in accordance with ASTM C 231.
 - 7) Maximum air content: 3% for interior floor slabs where a steel troweled (Type S-1) or a sealer/hardener concrete floor finish is specified.
- c. Mass concrete (Class M):
- 1) For use where volume of concrete with dimensions large enough to require that measures need to be taken to cope with generation of heat from hydration of cement and attendant volume change to minimize cracking.
 - 2) Minimum compressive strength: 2,500 psi at 28 days; 4,000 psi at 56 days when molded and cured in accordance with ASTM C 31.
 - 3) Maximum fly ash content: 35%.
 - 4) Minimum cementitious content: 517 lbs/cy.
 - 5) Maximum w/cm ratio: 0.44.
 - 6) Fine aggregate: Between 25% and 40% by volume of total aggregate.
 - 7) Coarse aggregate: In accordance with ASTM C 33, size 357.
 - 8) Slump: 3-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 9) Air content: 4% to 7% of the volume of the batch when tested in accordance with ASTM C 231.
- d. Pavement concrete (Modified Class P):
- 1) Minimum 28 day compressive strength: 4,500 psi when molded and cured in accordance with ASTM C 31.
 - 2) Minimum cementitious content: 660 lbs/cy.
 - 3) Maximum w/cm ratio: 0.44.
 - 4) Slump: 1 1/2-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 5) Air content: 5% to 8% of volume of batch when tested in accordance with ASTM C 231.
 - 6) Minimum 28 day flexural strength of 650 psi in accordance with ASTM C 293.

****See above** Used for kickblocks and ductbanks.**

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

DELETE:

2. Mixes: *(In its entirety)*

SUBSTITUTE:

2. Mixes:
- a. Structural concrete (Class A):
 - 1) Interior use or where not exposed to moisture and freeze-thaw cycles.
 - 2) Minimum 28 day compressive strength: 4,000 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 610 lbs/cy.
 - 4) Maximum w/cm ratio: 0.44.
 - 5) Slump: 3-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 6) Air content: 4% to 7% of the volume of the batch tested in accordance with ASTM C 231.
 - 7) Maximum air content: 3% for interior floor slabs where a steel troweled (Type S-1) or a sealer/hardener concrete floor finish is specified.
 - b. Structural concrete (CDOT Class D):
 - 1) For use as structural concrete.

- 2) Minimum 28 day compressive strength: 4,500 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 615 to 660 lbs/cy.
 - 4) Maximum w/cm ratio: 0.45.
 - 5) Slump: 1 1/2-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 6) Air content: 5% to 8% of volume of batch when tested in accordance with ASTM C 231.
 - 7) Maximum air content: 3% for interior floor slabs where a steel troweled (Type S-1) or a sealer/hardener concrete floor finish is specified.
- c. Mass concrete (Class M):
- 1) For use where volume of concrete with dimensions large enough to require that measures need to be taken to cope with generation of heat from hydration of cement and attendant volume change to minimize cracking.
 - 2) Minimum compressive strength: 2,500 psi at 28 days; 4,000 psi at 56 days when molded and cured in accordance with ASTM C 31.
 - 3) Maximum fly ash content: 35%.
 - 4) Minimum cementitious content: 517 lbs/cy.
 - 5) Maximum w/cm ratio: 0.44.
 - 6) Fine aggregate: Between 25% and 40% by volume of total aggregate.
 - 7) Coarse aggregate: In accordance with ASTM C 33, size 357.
 - 8) Slump: 3-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 9) Air content: 4% to 7% of the volume of the batch when tested in accordance with ASTM C 231.
- d. Pavement concrete (Modified Class P):
- 1) Minimum 28 day compressive strength: 4,500 psi when molded and cured in accordance with ASTM C 31.
 - 2) Minimum cementitious content: 660 lbs/cy.
 - 3) Maximum w/cm ratio: 0.44.
 - 4) Slump: 1 1/2-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 5) Air content: 5% to 8% of volume of batch when tested in accordance with ASTM C 231.
 - 6) Minimum 28 day flexural strength of 650 psi in accordance with ASTM C 293.

****See above** Used for most structural concrete.**

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

DELETE:

2. Mixes: *(In its entirety)*

SUBSTITUTE:

2. Mixes:
- a. Structural concrete (Class A):
 - 1) Interior use or where not exposed to moisture and freeze-thaw cycles.
 - 2) Minimum 28 day compressive strength: 4,000 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 610 lbs/cy.
 - 4) Maximum w/cm ratio: 0.44.
 - 5) Slump: 3-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 6) Air content: 4% to 7% of the volume of the batch tested in accordance with ASTM C 231.
 - 7) Maximum air content: 3% for interior floor slabs where a steel troweled (Type S-1) or a sealer/hardener concrete floor finish is specified.
 - b. Concrete fill (Class B):
 - 1) For thrust blocks; can be used for lean concrete when approved by the ENGINEER.

- 2) Minimum 28 day compressive strength: 2,500 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 400 lbs/cy.
 - 4) Maximum w/cm ratio: 0.62.
 - 5) Air content: 4% to 8% of the volume of the batch when tested in accordance with ASTM C 231.
- c. Mass concrete (Class M):
- 1) For use where volume of concrete with dimensions large enough to require that measures need to be taken to cope with generation of heat from hydration of cement and attendant volume change to minimize cracking.
 - 2) Minimum compressive strength: 2,500 psi at 28 days; 4,000 psi at 56 days when molded and cured in accordance with ASTM C 31.
 - 3) Maximum fly ash content: 35%.
 - 4) Minimum cementitious content: 517 lbs/cy.
 - 5) Maximum w/cm ratio: 0.44.
 - 6) Fine aggregate: Between 25% and 40% by volume of total aggregate.
 - 7) Coarse aggregate: In accordance with ASTM C 33, size 357.
 - 8) Slump: 3-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 9) Air content: 4% to 7% of the volume of the batch when tested in accordance with ASTM C 231.
- d. Pavement concrete (Modified Class P):
- 1) Minimum 28 day compressive strength: 4,500 psi when molded and cured in accordance with ASTM C 31.
 - 2) Minimum cementitious content: 660 lbs/cy.
 - 3) Maximum w/cm ratio: 0.44.
 - 4) Slump: 1 1/2-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 5) Air content: 5% to 8% of volume of batch when tested in accordance with ASTM C 231.
 - 6) Minimum 28 day flexural strength of 650 psi in accordance with ASTM C 293.

****See above** Used for items other than pavement.**

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

DELETE:

2. Mixes: *(In its entirety)*

SUBSTITUTE:

2. Mixes:
 - a. Structural concrete (Class A):
 - 1) Interior use or where not exposed to moisture and freeze-thaw cycles.
 - 2) Minimum 28 day compressive strength: 4,000 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 610 lbs/cy.
 - 4) Maximum w/cm ratio: 0.44.
 - 5) Slump: 3-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 6) Air content: 4% to 7% of the volume of the batch tested in accordance with ASTM C 231.
 - 7) Maximum air content: 3% for interior floor slabs where a steel troweled (Type S-1) or a sealer/hardener concrete floor finish is specified.
 - b. Concrete fill (Class B):
 - 1) For thrust blocks; can be used for lean concrete when approved by the ENGINEER.
 - 2) Minimum 28 day compressive strength: 2,500 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 400 lbs/cy.
 - 4) Maximum w/cm ratio: 0.62.

- 5) Air content: 4% to 8% of the volume of the batch when tested in accordance with ASTM C 231.
- c. Structural concrete (CDOT Class D):
 - 1) For use as structural concrete.
 - 2) Minimum 28 day compressive strength: 4,500 psi when molded and cured in accordance with ASTM C 31.
 - 3) Minimum cementitious content: 615 to 660 lbs/cy.
 - 4) Maximum w/cm ratio: 0.45.
 - 5) Slump: 1 1/2-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 6) Air content: 5% to 8% of volume of batch when tested in accordance with ASTM C 231.
 - 7) Maximum air content: 3% for interior floor slabs where a steel troweled (Type S-1) or a sealer/hardener concrete floor finish is specified.
- d. Pavement concrete (Modified Class P):
 - 1) Minimum 28 day compressive strength: 4,500 psi when molded and cured in accordance with ASTM C 31.
 - 2) Minimum cementitious content: 660 lbs/cy.
 - 3) Maximum w/cm ratio: 0.44.
 - 4) Slump: 1 1/2-inches to 6-inches when measured in accordance with ASTM C 143, except 4 1/2-inches to 8-inches if a high range water reducing admixture is used.
 - 5) Air content: 5% to 8% of volume of batch when tested in accordance with ASTM C 231.
 - 6) Minimum 28 day flexural strength of 650 psi in accordance with ASTM C 293.

Used for pavement, C&G, and sidewalks.

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

DELETE:

- e. Pavement concrete (Modified Class P): *(In its entirety)*

In the following paragraphs, if other mix designs are required other than provided in the specification, contact the Materials Lab Manager.

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

ADD:

- f. [REDACTED].

Delete the following information unless there are very large, flat areas in the Project.

SECTION 03 30 00 – CAST-IN-PLACE CONCRETE, PART 2, SUBPARAGRAPH 2.4.B.2.i

DELETE:

- 3) Do the first steel troweling by hand.

Consult with the Materials Lab Manager for more complex projects that may need additional Specifications 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 CONCRETE BUILDING, PART 1, SUBPARAGRAPH 1.4.C

ADD:

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

Modify as required.

SECTION 03 45 00 – PRECAST CONCRETE BUILDING, 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 CONCRETE BUILDING, 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.
-

Modify as required.

SECTION 03 52 16 – LIGHTWEIGHT INSULATING CONCRETE, PART 1, SUBPARAGRAPH 1.4.A

ADD:

1. A minimum of [] years of documented experience in the Work of this Section.

Modify as required.

SECTION 03 52 16 – LIGHTWEIGHT INSULATING CONCRETE, PART 1, SUBPARAGRAPH 1.4

ADD:

- B. System Description: Thermal resistance of installed system [Minimum] [Average] R-value of [].
- C. Lightweight Insulating Concrete Roof Deck System:
 1. FM Class [1-60] [1-90] [1-120] wind uplift rating.
 2. Non-combustible, tested in accordance with ASTM E 108.

Modify as required.

SECTION 03 52 16 – LIGHTWEIGHT INSULATING CONCRETE, PART 1, SUBPARAGRAPH 1.5

DELETE:

- A. Environmental Requirements – Air Temperatures: *(In its entirety)*

SUBSTITUTE:

- A. Environmental Requirements – Air Temperatures:
 1. If an air temperature of 32°F to 40°F [°F to °F] is anticipated within one day after placement, increase the cement/aggregate ratio to 1:5 []. If heated water is used, the concrete temperature shall not exceed 100 []°F at the point of placement.
 2. If air temperatures above 40 []°F are anticipated within one day after placement, use normal placement procedures.
 3. Do not place concrete mix at ambient temperatures lower than 32 []°F.

Modify as required.

SECTION 03 52 16 – LIGHTWEIGHT INSULATING CONCRETE, PART 2, SUBPARAGRAPH 2.2

DELETE:

- B. Lightweight Insulating Aggregate: In accordance with ASTM C 332, Group 1, vermiculite.

SUBSTITUTE:

- B. Cellular Insulating Admixture: [by].

Modify as required.

SECTION 03 52 16 – LIGHTWEIGHT INSULATING CONCRETE, PART 2, SUBPARAGRAPH 2.3

DELETE:

- B. Insulation Board: Rigid expanded polystyrene, in accordance with ASTM C 578, Type I, perforated to 3% open area.

SUBSTITUTE:

- B. Insulation Board: Rigid expanded polystyrene, in accordance with ASTM C 578, Type I, perforated to 3% [] open area

Modify as required.

SECTION 03 52 16 – LIGHTWEIGHT INSULATING CONCRETE, PART 2, SUBPARAGRAPH 2.4

DELETE:

- A. Physical Properties: *(In its entirety)*

SUBSTITUTE:

- A. Physical Properties:
1. Minimum cement/aggregate ratio: 1:6 [1:3.5] [].
 2. Minimum compressive strength: 125 [300] [] psi.
 3. Wet density at placement: 44 pcf to 60 pcf [60 pcf to 68 pcf] [].
 4. Dry density: Minimum 22 [35] [] pcf.

****** OR ******

*Include the following for cellular insulating concrete.*A. Physical Properties:

1. Minimum 28 day compressive strength: [160] [] psi.
 2. Air dry density: [27 pcf to 32 pcf] [] pcf to [] pcf].
- B. Mixing: Mix for a sufficient time to provide a consistent, thorough mix that will flow freely and screed smooth.

SECTION 03 52 16 – LIGHTWEIGHT INSULATING CONCRETE, PART 3, SUBPARAGRAPH 3.1

*Include the following for roof vents for use over non-venting substrates.***ADD:**

- B. Place vents at the spacing recommended by the Manufacturer.
- C. Provide screeds at maximum [12] []-feet on center.

Include the following for installation over metal deck.

- D. Fill corrugations with insulating concrete slurry to a minimum of [1/8] []-inch over top of corrugations.

Include the following for installation over concrete deck.

- E. Apply a minimum of [1/4] []-inch insulating concrete slurry over structural deck.

Include the following 3 paragraphs if rigid insulation is used.

- F. Place insulation board within [30] [] minutes of slurry placement. Place the remainder of insulating concrete within 4 hours of the insulation board placement.
- G. Place insulation board in the slurry with joints staggered in adjacent rows, and joints butted to moderate contact, in full contact with the slurry, causing the slurry to enter the openings of the board.
- H. Place a minimum of [one-inch] [2-inches] []-inches of insulating concrete over insulation board.

****** OR ******

Include the following paragraph for installation over metal deck.

- F. Place concrete to a minimum of [2 3/8] []-inches over the top of deck flutes.
- G. Slope concrete for roof surface drainage as indicated.
- H. Screed to a smooth surface.
- I. Installation Tolerances: Maximum [1/4] []-inch in 10-foot surface deviation.
- J. Curing:

1. Cure in accordance with the Manufacturer's instructions.
2. Protect concrete from the excess evaporation of surface moisture.
3. During low humidity conditions, sprinkle water over the concrete surface to aid hydration and curing.

Include the following for testing and inspection services to be provided by an outside entity.

SECTION 03 52 16 – LIGHTWEIGHT INSULATING CONCRETE, PART 3, SUBPARAGRAPH 3.2

DELETE:

- A. Testing and Inspection Services: *(In its entirety)*

SUBSTITUTE:

- A. Testing and Inspection Services:
1. Take [3] [] test samples from each [75] [] cubic yards of insulating concrete or fraction thereof.
 2. Take [one] [] additional test sample[s] during cold weather concreting.
 3. Test samples shall be in accordance with ASTM [C 495] [C 796].
 4. Report density and compressive strength.

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.

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 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
 2. Category III:
 - a. Escoweld Industrial Grouts and Polymers, Escoweld 7505E/7530
 - b. Sika Corporation, Sikadur 42, Grout Pak

OR

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 2122.
 2. Category III:

- a. Escoweld Industrial Grouts and Polymers, Escoweld 7505E/7530
- b. Sika Corporation, Sikadur 42, Grout Pak

OR

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

DELETE:

- 3. Category III: *(In its entirety)*

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.

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 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 one day; 4,500 psi at 3 days; and 7,000 psi at 28 days.
 - 2. Category III:
 - a. Pre-proportioned, epoxy, baseplate grouting system.
 - b. 3-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.

OR

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%, 5 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 III:
 - a. Pre-proportioned, epoxy, baseplate grouting system.
 - b. 3-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.

OR

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

DELETE:

3. Category III: *(In its entirety)*

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 63 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 03 63 00 – EPOXY GROUTING, PART 1, SUBPARAGRAPH 1.2

DELETE:

- A. ASTM International (ASTM): *(In its entirety)*

SUBSTITUTE:

- A. ASTM International (ASTM):
 1. D 638 – Standard Test Method for Tensile Properties of Plastics
 2. D 695 – Standard Test Method for Compressive Properties of Rigid Plastics
 3. C 882 – Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear
 4. D 790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

Engineer: If SECTION 03 63 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 03 63 00 – EPOXY GROUTING, PART 2, SUBPARAGRAPH 2.2.B

DELETE:

2. Properties: *(In its entirety)*

SUBSTITUTE:

2. Properties:

Component A – Resin		Component B – Hardener
Solids (%)	100	100
Color	Clear	Amber
Shelf life (year)	1	2
Properties at 77°F	Typical Mixed Values	ASTM Method
Mix ratio (A to B by volume)	2 to 1	--
Viscosity (cps)	375	--
Pot life (60 gram) (minutes)	25	--
7-Day Tensile strength (psi)	8,900	D 638
14-Day Flexural strength (psi)	14,000	D 790
14-Day Compressive strength (psi)	12,000	D 695
14-Day Bond strength to dry concrete (psi)	2,900	C 882
Elongation (%)	5.4	D 638

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

DELETE:

- B. ASTM International (ASTM): *(In its entirety)*

SUBSTITUTE:

- B. ASTM International (ASTM):
1. C 33 – Standard Specification for Concrete Aggregates
 2. C 39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 3. C 78 – Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
 4. C 94 – Standard Specification for Ready-Mixed Concrete
 5. C 109 – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
 6. C 157 – Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
 7. C 293 – Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Center Point Loading)
 8. C 307 – Standard Test Method for Tensile Strength of Chemical-Resistant Mortar, Grouts, and Monolithic Surfacing
 9. C 309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 10. C 496 – Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
 11. C 666 – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
 12. C 695 – Standard Test Method for Compressive Strength of Carbon and Graphite
 13. C 882 – Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete by Slant Shear
 14. D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings

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.B

DELETE:

2. Properties and performance requirements: *(In its entirety)*

SUBSTITUTE:

2. Properties and performance requirements:
 - a. Compressive strength, in accordance with ASTM C109 and ASTM C39:
 - 1) 2,000 psi at one day.
 - 2) 4,500 psi at 7 days.
 - 3) 5,000 psi at 28 days.
 - b. Flexural strength, in accordance with ASTM C 78: 700 psi at 28 days.
 - c. Bond strength, in accordance with ASTM C 882: 1,500 psi at 28 days.
 - d. Shrinkage, in accordance with ASTM C 157: <0.06% at 28 days.
 - e. Splitting tensile strength, in accordance with ASTM C 496: 700 psi at 28 days.

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.C

DELETE:

2. Properties and performance requirements: *(In its entirety)*

SUBSTITUTE:

2. Properties of cured polymer-modified repair mortar:
 - a. Compressive strength in accordance with ASTM C 109:
 - 1) 2,500 psi at one day.
 - 2) 4,000 psi at 7 days.
 - 3) 6,000 psi at 28 days.
 - b. Splitting tensile strength in accordance with ASTM C 496: 500 psi at 28 days.
 - c. Flexural strength, modulus of rupture, in accordance with ASTM C 293: 1,500 psi at 28 days.
 - d. Rapid freeze/thaw durability in accordance with ASTM C 666, Procedure A, 300 cycles, 98%.
 - e. Bond strength in accordance with ASTM C 882: 2,000 psi at 28 days.

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; ASTM A 123, to [1.3] [2.0] []-ounces psf.
- 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 SSPC SP2 – Hand Tool Cleaning or SSPC SP3 – Power Tool Cleaning.
 3. Application: One coat; follow the coating Manufacturer's instructions.
 4. Minimum DFT: [2.0] [] mils.

- 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: 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 included are 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

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.

In this Section, verify wind pressures in accordance with ASCE 7 and the local and national building codes insert positive and negative wind pressures, and modify Project requirements using the text below.

SECTION 07 40 00 – METAL PANELS, PART 1, SUBPARAGRAPH 1.4

DELETE:

B. System Description: *(In its entirety)*

SUBSTITUTE:

B. System Description:

1. Design requirements; design roof system to withstand:
 - a. Live and dead loads in accordance with Building Code.
 - b. Minimum wind pressures [Building Code], [] to withstand dead and live loads caused by wind pressures as follows:
 - 1) Positive pressure: [20] psf normal to panel.
 - 2) Negative pressure: [20] psf normal to panel.
 - 3) Maximum allowable deflection of [], tested in accordance with [].
 - c. Movement caused by an ambient temperature range of []°F and a surface temperature range of []°F.
2. Roof panel performance requirements:
 - a. Air leakage: Maximum [no measurable leakage] per square foot of roof area, measured at reference differential pressure across assembly of [] psf, tested in accordance with ASTM E 1680.
 - b. Water penetration: None, tested in accordance with ASTM E 1646 with test pressure of [] psf.
 - c. Wind Uplift: UL 90 rated roof system, tested in accordance with UL 580 test procedure.
3. Wall panel/soffit performance requirements:
 - a. Air leakage: Maximum [] per linear foot of panel seam measured at reference differential pressure across assembly of [] psf, tested in accordance with ASTM E 283.
 - b. Water penetration: None, tested in accordance with ASTM E 331 with test pressure of [] psf.

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

SECTION 07 40 00 – METAL PANELS, PART 2, SUBPARAGRAPH 2.2

DELETE:

- B. Roof Panels: *(In its entirety)*
- C. Wall Panels and Soffits: *(In its entirety)*

SUBSTITUTE:

- B. Roof Panels:
 - 1. Material: Fabricate panels from a minimum [] gauge steel sheet.
 - 2. Panel profile: []-inch high [] seams spaced [12] []-inches on center.
 - 3. Texture: [Striated] pan.
 - 4. Seam sealant: Continuous factory-installed, hot-melt sealant on the bottom edge of the female seam so as not to be interfered by the panel clip.
 - 5. Color: [].
- C. Wall Panels and Soffits:
 - 1. Material: Fabricate panels from a minimum [] gauge steel sheet.
 - 2. Panel profile: []-inch wide by []-inch deep, interlocking edges for concealed fasteners.
 - 3. Texture: [Flat with 2 stiffening ribs]. [Waved pattern].
 - 4. Color: [].

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

SECTION 07 40 00 – METAL PANELS, PART 2, SUBPARAGRAPH 2.3

DELETE:

- A. Perimeter Underlayment: *(In its entirety)*

SUBSTITUTE:

- A. Perimeter Underlayment:
 - 1. Minimum []-mil thick, SBS-modified asphalt-fabric-reinforced, self-adhering with release film facing in accordance with ASTM D 146.
 - 2. Elongation: Minimum []%.
 - 3. Tensile strength: Minimum [] psi, tested in accordance with ASTM D 882.

Delete if the entire roof is covered with the product above:

SECTION 07 40 00 – METAL PANELS, PART 2

DELETE:

- 2.3 ACCESSORIES *(In its entirety)*

SUBSTITUTE:

- 2.3 ACCESSORIES
- A. Perimeter Underlayment:
 - 1. Minimum 40-mils thick, SBS-modified asphalt-fabric-reinforced, self-adhering with release film facing, in accordance with ASTM D 146.
 - 2. Elongation: Minimum 500%.
 - 3. Tensile strength: Minimum 1,400 psi, tested in accordance with ASTM D 882.
 - B. Fasteners:
 - 1. Concealed: The type recommended by the Manufacturer.
 - 2. Panels and trim: Stainless steel rivets; the type best suited to the application; head color to match panels where exposed.
 - C. Panel Clips: 18 gauge galvanized steel, designed to fit between 2 adjacent panels and secure both panels; UL-90 rated, tested in accordance with UL 580.

- D. Vent Tape:
 - 1. Adhesive resin edged strips with stretch pleated fabric and expanded metal reinforcement on the sides and a breathable/water-resistant fleece center reinforced with plastic stretch grid.
 - 2. Width: 11-inches.
- E. Snow Retention System:
 - 1. Retention bar: 16 gauge, one-inch by one-inch stainless steel bar.
 - 2. Clamp: 12 gauge stainless steel clamp.
 - 3. Finish: Match roof panel color.
- F. Joint Sealants: As specified in SECTION 07 92 00.

Modify the CPCS if underlayment is used for the entire roof surface:

SECTION 07 40 00 – METAL PANELS, PART 3, SUBPARAGRAPH 3.1.A

DELETE:

- 2. Install base sheet at the entire surface to receive roofing.

SUBSTITUTE:

- 2. Install underlayment at the remaining entire surface to receive roofing.

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:

- 8. 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.

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 2.5.A

ADD:

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

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

SECTION 07 62 00 – SHEET METAL FLASHING AND TRIM, PART 2, SUBPARAGRAPH 2.5

DELETE:

- B. Pre-Manufactured Flashing: *(In its entirety)*
C. Pre-Manufactured Coping: *(In its entirety)*

SUBSTITUTE:

- B. Pre-Manufactured Flashing:
1. Manufactured [] gauge [prefinished], 2-piece reglet and counterflashing.
 2. Type: [CO] [MA].
 3. Corners: Provide the Manufacturer's standard factory mitered and sealed [inside] corners.
 4. Fasteners: Manufacturer's standard drive pins with 7/8-inch diameter stainless steel washers with neoprene facing.
- C. Pre-Manufactured Coping:
1. [Aluminum] [prefinished] coping system, with Kynar coating: [0.052-inch] [] gauge].
 2. Concealed splice shall match the color and finish of cap.
 3. Galvanized steel gutter chairs and anchor cleats: 20 gauge.
 4. Provide the Manufacturer's standard corners and end caps.

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.

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 I, SUBPARAGRAPH 1.3.A.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 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, [].

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 2.3**

DELETE:

- A. Hardware: *(In its entirety)*

SUBSTITUTE:

- A. Hardware:
 - 1. Refer to the hardware schedule as specified in SECTION 08 71 00 for items noted below that are not provided by the entrance system Manufacturer:
 - a. Continuous hinges: [Geared type hinge provided by the door manufacturer]
 - b. Surface mounted door closers: [See hardware schedule].
 - c. Cylinders: [See hardware schedule].
 - d. Panic: [See hardware schedule].
 - e. Pull handles: [See hardware schedule].
 - f. Threshold: [See hardware schedule].
 - g. Weatherstrip: Door Manufacturers standard at head and jambs. [See hardware schedule for sill sweep].
 - h. Sill sweep.

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 WALL, 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 WALL, 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.8

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.E.2.a

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.B

ADD:

1. Color: [Green] [] .

Choose project colors or delete text if not required.

SECTION 08 80 00 – GLAZING, PART 2, SUBPARAGRAPH 2.2.E

ADD:

1. Color: [Green] [] .

Choose project colors or delete text if not required.

SECTION 08 80 00 – GLAZING, PART 2, SUBPARAGRAPH 2.2.F

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.

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: .

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. [REDACTED].
 - b. [REDACTED].
 - c. [REDACTED].
-

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

Engineer: If SECTION 13 47 13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 13 47 13 – COMMON WORK RESULTS FOR CATHODIC PROTECTION, PART 1, SUBPARAGRAPH 1.5

DELETE:

- N. Submit electronically current As-Built Drawings, including conduit/conductor schedule and the photo album at 30%, 60%, 90%, and 100% of the Final Completion date. As-Built Drawings shall be provided in .pdf and .dwg formats. Photos shall be individually labeled with descriptions and dates and shall be in jpg format. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

Engineer: If SECTION 13 47 14 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 13 47 14 – IMPRESSED CURRENT CATHODIC PROTECTION, PART 1, SUBPARAGRAPH 1.4

DELETE:

- O. Submit electronically current As-Built Drawings, including conduit/conductor schedule and the photo album at 30%, 60%, 90%, and 100% of the Final Completion date. As-Built Drawings shall be provided in .pdf and .dwg formats. Photos shall be individually labeled with descriptions and dates and shall be in jpg format. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

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.4

DELETE:

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

SUBSTITUTE:

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

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 15-feet 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 [] , minimum Schedule [] .
 - 2) [] casing: In accordance with [] .
 - 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 []-inch or larger diameter steel casing: []-inch thick.

Engineer: If SECTION 13 47 15 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 13 47 15 – GALVANIC CATHODIC PROTECTION, PART 1, SUBPARAGRAPH 1.3

DELETE:

- D. The following checklist can be found online in DW's CPPM:
[http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProcedures Manual/](http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/)

SUBSTITUTE:

- D. The following checklist can be found online in DW's CPPM:
[https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects -procedures-manual.](https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual.)

Engineer: If SECTION 13 47 16 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 13 47 16 – ISOLATION AND BONDING FOR CATHODIC PROTECTION, PART 1, SUBPARAGRAPH 1.3

DELETE:

- E. The following checklist can be found online in DW's CPPM:
[http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProcedures Manual/](http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/)

SUBSTITUTE:

- E. The following checklist can be found online in DW's CPPM:
<https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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

DELETE:

Footers *(In their entirety)*

SUBSTITUTE:

SECTION 22 00 00 PLUMBING

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, SUPPLEMENT A

DELETE:

Footers *(In their entirety)*

SUBSTITUTE:

SECTION 22 00 00 SUPPLEMENT A PLUMBING

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, SUPPLEMENT B

DELETE:

Footers *(In their entirety)*

SUBSTITUTE:

SECTION 22 00 00 SUPPLEMENT B PLUMBING

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

DELETE:

B. American Water Works Association (AWWA): *(In its entirety)*

SUBSTITUTE:

- B. American Water Works Association (AWWA):
1. C111 – Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
 2. C509 – Resilient-Seated Gate Valves for Water Supply Service
 3. C515 – Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service
 4. C550 – Protective Interior Coatings for Valves and Hydrants

5. C651 – Disinfecting Water Mains
6. C800 – Underground Service Line Valves and Fittings

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

ADD:

- F. NSF International (NSF)
 1. 60 – Water Treatment Chemicals

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 3, SUBPARAGRAPH 3.4

DELETE:

- C. Disinfect pipelines intended to carry potable water before placing them in service.

SUBSTITUTE:

- C. Disinfect potable pipelines and fittings in accordance with AWWA C651 with an NSF 60 certified sodium hypochlorite solution.

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

DELETE:

Supplement A – Copper and Copper Alloy Pipe, Tubing, and Fittings *(in its entirety)*

SUBSTITUTE:

SUPPLEMENT A COPPER AND COPPER ALLOY PIPE, TUBING, AND FITTINGS	
Item	Description
Tubing	Seamless, in accordance with ASTM B 88 as follows: Potable Water (buried) Type K, soft or hard temper Potable Water (exposed) Type L, hard drawn Domestic hot water Type L, hard drawn Compressed air service Type L, hard drawn Sample line service Type L, hard drawn No. 1 water (buried) Type K, soft or hard temper No. 1 water (exposed) Type L, hard drawn
Fittings	Commercially pure wrought copper, socket joint, in accordance with ASTM B 75, dimensions in accordance with ASME B16.22.
Flanges	Commercially pure wrought copper, socket joint, in accordance with ASTM B 75, faced and drilled 150 pound in accordance with ASME B16.24.
Bolting	Type 304 or Type 316 stainless steel, Grade B8M hex head bolts or threaded studs in accordance with ASTM A 320 and Grade 8M hex head nuts in accordance with ASTM A 194.
Gaskets	1/16-inch thick non-asbestos compression type, full face, red rubber gasket, Johns Manville.
Solder	J.W. Harris, bridges, lead free solder; in accordance with ASTM B 32.

**SUPPLEMENT A
COPPER AND COPPER ALLOY PIPE, TUBING, AND FITTINGS**

Item	Description
Brazing	Joints 2 1/2-inches and greater shall be brazed.

DIVISION 23

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: [] DB/[] WB°F.
 - b) Winter: -[] DB°F.
 - 2) Indoor temperature:
 - a) Summer maximum: []°F.
 - b) Winter minimum: []°F.
 - 3) Altitude: [] feet above mean sea level.
 - 4) Seismic: UBC Zone 1.

DIVISION 26

Engineer: If SECTION 26 05 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL, PART 1, SUBPARAGRAPH 1.5.P

DELETE:

1. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

1. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

Engineer: If SECTION 26 05 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL, PART 1, SUBPARAGRAPH 1.5

ADD:

- Q. SECTION XX XX XX, SECTION XX XX XX, SECTION XX XX XX, SECTION XX XX XX, SECTION XX XX XX, SECTION XX XX XX, SECTION XX XX XX, SECTION XX XX XX, and SECTION XX XX XX. Submittals shall meet the general requirements in this Section. Additional detailed Submittal requirements are included in each individual Section.

Specify the Project Elevation.

SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL, PART 1, SUBPARAGRAPH 1.7

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 2, SUBPARAGRAPH 2.2.E.2

DELETE:

- b. Rated for 277/480 V or 120/208 V, 3-phase, 4-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 amperes 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 [] amperes 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: 3-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 amperes rms symmetrical.

SUBSTITUTE:

5. Short-circuit current equipment rating: Fully rated; series connected not acceptable. Rating: [] amperes 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 amperes.

SUBSTITUTE:

2. Minimum interrupt rating: [] amperes.

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 [], 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 amperes.

SUBSTITUTE:

2. Minimum interrupt rating: [] amperes.

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 indicated 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 indicated 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 [REDACTED] 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, high-visibility LED, push-to-test type.

SUBSTITUTE:

a. Lights: Full voltage [REDACTED], 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 amperes continuous at 125 VDC.

SUBSTITUTE:

2) Rating: [REDACTED] amperes continuous at 125 VDC.

Modify as required.

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

DELETE:

1. 120 VAC relays.

SUBSTITUTE:

1. [] VAC relays.

Modify as required.

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

DELETE:

5. Coil voltage: 110 VDC or 120 VAC.

SUBSTITUTE:

5. Coil voltage: [].

Modify as required.

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

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 [], 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.T**

DELETE:

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

SUBSTITUTE:

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

Modify as required.

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

DELETE:

1. Panelboard transformers TX I 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 [] 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.U

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 2 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 [] 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.AA

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.

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 3 right-angle bends.

SUBSTITUTE:

- 3. Install in conduit runs at least every []-feet or after the equivalent of 3 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.C.6

DELETE:

- d. For cables and conductor sizes for pulling lengths longer than 200-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, not inside the pump station, shall be 4-skirt type.

SUBSTITUTE:

- d. Exterior stress cones, not inside the [] , 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 one 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 one 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 4-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.C.10

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, #24 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 amperes continuous, 3-phase, 4-wire, 600 V, internal ground. The minimum available short-circuit current at the input end shall be 65,000 amperes rms symmetrical.

SUBSTITUTE:

2. Rated [] amperes continuous, 3-phase, 4-wire, 600 V, internal ground. The minimum available short-circuit current at the input end shall be [] amperes 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 VFDs, and the MCC1. 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 amperes 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 [] amperes 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 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 2-hole lugs.

SUBSTITUTE:

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

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 [] 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 [] AWG copper conductor.

Modify as required.

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

DELETE:

2. Bond neutrals of pad-mounted transformers to 4 locally driven ground rods and buried ground wire encircling transformer and system ground network.

SUBSTITUTE:

2. Bond neutrals of pad-mounted transformers to [] locally driven ground rods and buried ground wire encircling transformer and system ground network.

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 [] ohms.

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: Class D concrete as specified in SECTION 03 30 00; contain 3 pounds of red oxide per 94 pound sack of cement.

SUBSTITUTE:

10. Concrete encasement: Class A concrete as specified in SECTION 03 30 00; contain 3 pounds of red oxide per 94 pound sack of cementitious material.

Modify as required.

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

DELETE:

1. Provide hardcopies and one electronic copy of the ESA in ESA Easypower version 9.0 or newer. Provide on standard IBM computer compatible 2GB hi-speed USB flash drives, each with one read-only copy and one read/writable copy with each Submittal.

SUBSTITUTE:

1. Provide hardcopies and one electronic copy of the ESA in ESA Easypower version [] or newer. Provide on standard IBM computer compatible 2GB hi-speed USB flash drives, each with one read-only copy and one read/writable copy with each Submittal.

Modify as required.

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

DELETE:

7. Short-circuit study: An initial study shall be submitted 30 days prior to energizing, startup, or commissioning of equipment. Coordinate with the electric utility to ensure equipment AIC ratings are adequate.
8. Protective device coordination study: An initial study shall be submitted 30 days prior to energizing, startup, or commissioning of equipment. Time-current curves on the same plot shall each be a different color.
9. Arc flash hazard study: An initial study shall be submitted 30 days prior to energizing, startup, or commissioning of equipment.

SUBSTITUTE:

7. Short-circuit study: An initial study shall be submitted [] days prior to energizing, startup, or commissioning of equipment. Coordinate with the electric utility to ensure equipment AIC ratings are adequate.
8. Protective device coordination study: An initial study shall be submitted [] days prior to energizing, startup, or commissioning of equipment. Time-current curves on the same plot shall each be a different color.
9. Arc flash hazard study: An initial study shall be submitted [] days prior to energizing, startup, or commissioning of equipment.

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 [] days prior to energizing, startup, or commissioning of equipment.
12. PF correction study: An initial study shall be submitted [] 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 9.0 or newer. Provide 2 standard IBM computer compatible 2GB hi-speed USB flash drives, each with one read-only copy and one read/writable copy of the completed Easypower ESA to the OWNER. 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 on the aforementioned flash drives.

SUBSTITUTE:

- 1) Complete ESA in ESA Easypower version [] or newer. Provide 2 standard IBM computer compatible 2GB hi-speed USB flash drives, each with one read-only copy and one read/writable copy

of the completed Easypower ESA to the OWNER. 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 on the aforementioned flash drives.

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 9.0 or newer.

SUBSTITUTE:

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

Modify as required.

SECTION 26 05 70 – ELECTRICAL SYSTEMS ANALYSIS, PART 1, SUBPARAGRAPH 1.4.G.5

DELETE:

- j. Once the ESA is As-Built and approved by the ENGINEER; the ENGINEER will order and provide the arc flash labels to the CONTRACTOR within 35 days. The CONTRACTOR shall install arc flash labels on the equipment with guidance from the ENGINEER.

SUBSTITUTE:

- j. Once the ESA is As-Built and approved by the ENGINEER; the ENGINEER will order and provide the arc flash labels to the CONTRACTOR within [] days. The CONTRACTOR shall install arc flash labels on the equipment with guidance from the ENGINEER.

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 amperes and larger.

SUBSTITUTE:

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

Engineer: If SECTION 26 09 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 09 00 – CONTROL AND PROTECTION EQUIPMENT, PART 1, SUBPARAGRAPH 1.1.B

DELETE:

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

SUBSTITUTE:

- B. Related Sections:
1. SECTION 01 44 33 – MANUFACTURER'S SERVICES
 2. SECTION 01 78 23 – OPERATION AND MAINTENANCE DATA
 3. SECTION 26 05 00 – COMMON WORK RESULTS FOR ELECTRICAL
 4. SECTION 26 05 10 – BASIC ELECTRICAL MATERIALS AND METHODS
 5. SECTION 26 05 70 – ELECTRICAL SYSTEMS ANALYSIS
 6. SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS
 7. SECTION 48 70 00 – GENERATION STARTUP AND COMMISSIONING

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 2 position selector switch with pistol grip handle and a minimum of 4 spare contacts. SES-RSL and 65C-RSL shall be spring return type with pistol grip handles. Contacts shall be rated a minimum of 3 amperes at 125 VDC.

SUBSTITUTE:

- 6. SES-AM shall be maintained 2 position selector switch with pistol grip handle and a minimum of 4 spare contacts. SES-RSL and 65C-RSL shall be spring return type with pistol grip handles. Contacts shall be rated a minimum of 3 amperes 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 setpoints 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 setpoints as specified in SECTION 26 05 70 and SECTION 26 08 00.

Engineer: If SECTION 26 12 13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 26 12 13 – PAD-MOUNTED TRANSFORMERS, PART 1, SUBPARAGRAPH 1.3.D.3

DELETE:

- h. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- h. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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)
3000	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 amperes and 10 amperes, 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 [] kVA, continuous duty, capable of limiting ground current between [] amperes and [] amperes, depending on capacitive charging current at the Project site.

Engineer: If SECTION 26 12 15 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 12 15 – SECONDARY SUBSTATION TRANSFORMERS, PART 1, SUBPARAGRAPH 1.3.D.2

DELETE:

- d. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW’s CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- d. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW’s CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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 ampere non-load-break elbow terminators for each bushing.

SUBSTITUTE:

- d. The Transformer Manufacturer shall provide [] ampere 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.

Engineer: If SECTION 26 13 23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 26 13 23 – MEDIUM-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 1, SUBPARAGRAPH 1.3.I.2

DELETE:

- i. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- i. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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, 3-pole, 2-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, 3-pole, 2-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) [] ampere stationary switch, fused.
 - 2) Fused/unfused amperes rating in a vented enclosure: [] amperes.
 - 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.

Engineer: If SECTION 26 13 26 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 13 26 – MEDIUM-VOLTAGE METAL-CLAD SWITCHGEAR, PART 1, SUBPARAGRAPH 1.3.D.2

DELETE:

- i. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW

Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- i. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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) [] amperes, 3-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, 4 stage.
- 4) 2 sets of 3 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) 2-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) 2-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 amperes, 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 2 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 [] amperes, 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 2 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: 3 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 3-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 3-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 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 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.

Engineer: If SECTION 26 18 39 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 1, SUBPARAGRAPH 1.3.D.2

DELETE:

- k. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- k. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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-000E

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 4,160 V, 3-phase, high-resistance grounded-wye electrical system having an available short-circuit current at line terminals of 50,000 amperes rms symmetrical. Designed, tested, and assembled in accordance with NEMA ICS 3 and UL 347.

SUBSTITUTE:

2. Equipment suitable for [] V, 3-phase, high-resistance grounded-wye electrical system having an available short-circuit current at line terminals of 50,000 amperes 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, 3-phase with rating of 1,000 amperes.
4. Vertical bus: Insulated, 3-phase with rating of 800 amperes.

SUBSTITUTE:

2. [] kV insulated main bus with boots on main bus splices between sections.
3. Horizontal bus: Isolated, []-phase with rating of [] amperes.
4. Vertical bus: Insulated, []-phase with rating of [] amperes.

Modify as required.

SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.D

DELETE:

6. Bus bracing: 50,000 amperes rms asymmetrical.

SUBSTITUTE:

6. Bus bracing: [] amperes rms asymmetrical.

Modify as required.

SECTION 26 18 39 – MEDIUM-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.E

DELETE:

2. Contactors: Electrically operated, 3-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, 3-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) 3-phase interrupting capacity of 50 MVA rms symmetrical.
 - b. Auxiliary contacts:
 - 1) Rated 10 amperes, 600 V.
 - 2) 10 normally open; 4 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, [] amperes, [] 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 amps, 4,000 V, 3-phase, 60 Hz, 1.0 PF, DC excitation: 37.3 field amps, 125 field volts.

SUBSTITUTE:

7. Synchronous motor rating: [] hp, [] rpm, [] amps, [] V, 3-phase, 60 Hz, 1.0 PF, DC excitation: [] field amps, [] 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 amperes and 4.0 amperes. The motor controller shall be provided with 3 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 amperes and 4.0 amperes. The motor controller shall be provided with 3 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 amperes.
 - (2) Maximum continuous sec. current (bar and donut): [] amperes.

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, 3-wire with 60 kV BIL rating with 2, 2 1/2% taps above, and 2, 2 1/2% taps below normal voltage.

SUBSTITUTE:

- 1) [] V/120 V, single-phase, 3-wire with [] kV BIL rating with 2, 2 1/2% taps above, and 2, 2 1/2% taps below normal voltage.

Engineer: If SECTION 26 23 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 1, SUBPARAGRAPH 1.3.D.2

DELETE:

- h. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- h. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

Modify as required.

SECTION 26 23 00 – LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR, PART 2, SUBPARAGRAPH 2.2.C

DELETE:

- 1. Service: 480 V, 3-phase, 3-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 weather proof 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 weather proof in accordance with 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 ampere rating for a 1,500 ampere sensor.

SUBSTITUTE:

- a. The [] main breaker shall have a nominal trip rating of [] ampere rating for a [] ampere 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 ampere 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 ampere 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 REAR COMPARTMENT DOOR.

Engineer: If SECTION 26 24 19 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 26 24 19 – LOW-VOLTAGE MOTOR CONTROL, PART 1, SUBPARAGRAPH 1.3.D.1

DELETE:

- n. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- n. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

Modify as required.

SECTION 26 24 19 – LOW-VOLTAGE MOTOR CONTROL, PART 2, SUBPARAGRAPH 2.2.B.3.a

DELETE:

- 1) 600 amperes minimum rated bus, 3 phase, tin plated copper, extending the entire width of the control center rated as indicated.

SUBSTITUTE:

- 1) [] amperes 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) 3 phase, tin plated copper, full height of section, rated a minimum of 300 amperes.

SUBSTITUTE:

- 1) 3 phase, tin plated copper, full height of section, rated a minimum of [] amperes.

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.3.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, 60Hz, 3-pole, 3-phase, 4 wire, and have as minimums, a 200 ampere frame and 42,000 amperes 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 [] ampere frame and 42,000 amperes interrupting capacity, unless otherwise shown on the Drawings.

Engineer: If SECTION 26 29 23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 29 23 – VARIABLE FREQUENCY DRIVES, PART 1, SUBPARAGRAPH 1.4.D.1

DELETE:

- j. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- j. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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: 3-phase, 18-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.

Engineer: If SECTION 26 29 24 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 26 29 24 – VARIABLE FREQUENCY DRIVES LESS THAN 50 HP, PART 1, SUBPARAGRAPH 1.4.D.1

DELETE:

- j. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- j. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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%, 3 phase, 60 Hz.
8. Output voltage: 0 V to 480 V, 3-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 3-phase, bolted fault, a minimum short-circuit available of 42,000 amperes rms symmetrical at 480 V.

SUBSTITUTE:

11. Equipment short-circuit rating: Suitable for connection to the system with maximum source 3-phase, bolted fault, a minimum short-circuit available of 42,000 amperes rms symmetrical at [] V.

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, -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. [REDACTED].

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, 3-phase.
- c. 4-wire.

SUBSTITUTE:

- a. [REDACTED] 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. [REDACTED] V/[REDACTED] V, grounded wye, [REDACTED]-phase.
- c. [REDACTED]-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 [REDACTED]-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. [REDACTED] 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.

Engineer: If SECTION 26 32 20 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 26 32 20 – GENERATOR EXCITATION EQUIPMENT, PART 1, SUBPARAGRAPH 1.3.D.3

DELETE:

- j. Final As-Built Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- j. Final As-Built Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

Modify as required.

SECTION 26 32 20 – GENERATOR EXCITATION EQUIPMENT, PART 2, SUBPARAGRAPH 2.1

DELETE:

- A. Basler Electric Company, Model DECS-250 Generator Excitation System

SUBSTITUTE:

- A. 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:

- J. Communications: A rear-mounted RS 485 serial communication link shall be provided for use with Modbus protocol. A RS 232 front panel port shall be provided for calibration and setup. The communications shall provide means to control start/stop functions, raise/lower setpoint of any active mode including the voltage regulator, field current regulator, var/PF mode, transfer between operating modes, annunciate alarms including limiters, and protective functions active.

SUBSTITUTE:

- J. Communications: A rear-mounted [] communication link shall be provided for use with Modbus protocol. A RS 232 front panel port shall be provided for calibration and setup. The communications shall provide means to control start/stop functions, raise/lower setpoint of any active mode including the voltage regulator, field current regulator, var/PF mode, transfer between operating modes, annunciate alarms including limiters, and protective functions active.

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 RS 485 serial link 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.D

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. [].
 - b. [].
 - c. Fuses: Provide 4 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. The battery shall have an 8-hour discharge rate of not less than 100 amperes to an end voltage of 1.75 V per cell at 104°F. A minimum of 60 cells shall be furnished.

SUBSTITUTE:

2. The battery shall have an 8-hour discharge rate of not less than [] amperes 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 2 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 amperes 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 [] amperes 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 2-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 2-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 2-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 2-wire 250 VDC, NEMA Type [] as shown on the Drawings and in accordance with the following:

Engineer: If SECTION 26 33 53 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER, PART 1, SUBPARAGRAPH 1.3.D.1

DELETE:

- o. Final As-Built Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- o. Final As-Built Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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.

Engineer: If SECTION 26 33 53 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 33 53 – THREE-PHASE UNINTERRUPTIBLE POWER SUPPLY SYSTEM, PART 1, SUBPARAGRAPH 1.4.D.4

DELETE:

- e. Shall allow modification of VFD settings and logic.

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: 3-phase, 4-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: 3-phase, 4-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 3 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 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 28 strands of 14 gauge copper wire in a rope lay configuration with a net weight of 380 pounds per 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 [] pounds per []-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 on center.

SUBSTITUTE:

4. Every other column shall be grounded or at intervals not exceeding an average of []-feet on center.

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 on center 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 on center 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.

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 – SURGE PROTECTIVE DEVICES FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS, PART 1, SUBPARAGRAPH 1.4

ADD:

- F. As specified in SECTION 26 05 00.

Modify as required

SECTION 26 43 00 – SURGE PROTECTIVE DEVICES FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS, PART 1, SUBPARAGRAPH 1.4.E

DELETE:

- 1. Furnish, box, tag, and clearly mark on the exterior; identify each item with Manufacturer's name, description, and part number for shipment and long-term storage and deliver 14 days prior to the Substantial Completion date the following extra materials:

SUBSTITUTE:

- 1. Furnish, box, tag, and clearly mark on the exterior; identify each item with Manufacturer's name, description, and part number for shipment and long-term storage and deliver [] days prior to the Substantial Completion date the following extra materials:

Modify as required

SECTION 26 43 00 – SURGE PROTECTIVE DEVICES FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS, PART 1, SUBPARAGRAPH 1.4.E.1.b

DELETE:

- 2) Light lamps of each color installed: 10 indicators.

SUBSTITUTE:

- 2) [].

Modify as required.

SECTION 26 50 00 – LIGHTING, PART 1, SUBPARAGRAPH 1.4.D

DELETE:

3. For each driver type: 2 LED driver assemblies.
4. For each LED luminaire type: 2 LED engine assemblies.

SUBSTITUTE:

3. [REDACTED].
4. [REDACTED].

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, [REDACTED], 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, [REDACTED], dual voltage transformer, transient/surge protection, solid-state inverter/charger, sealed nickel cadmium battery, and indicator switch in accordance with UL 924.

Engineer: If SECTION 26 70 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 26 70 00 – MOTORS, PART 1, SUBPARAGRAPH 1.4.C

DELETE:

2. Certified dimensional drawings of the equipment. Drawings shall be provided in electronic media on standard IBM computer compatible hi-Speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual>.

SUBSTITUTE:

2. Certified dimensional drawings of the equipment. Drawings shall be provided in electronic media on standard IBM computer compatible hi-Speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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. One 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.

Modify as required

SECTION 27 00 00 – COMMUNICATIONS SYSTEMS, PART 1, SUBPARAGRAPH 1.3.F

DELETE:

1. Furnish to the ENGINEER's office the following spare equipment, a maximum of 20 weeks after the Notice of Award of the Contract: *(In its entirety)*

SUBSTITUTE:

1. Furnish to the ENGINEER's office the following spare equipment, a maximum of 20 weeks after the Notice of Award of the Contract:
 - 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. 4 to 8 10/100 BASE-T Ethernet ports (RJ-45) and 2 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.E.3

DELETE:

- a. Ethernet switch with 4 to 6 RJ-45 ports and 2 SFP ports with ST type connectors.

SUBSTITUTE:

- a. Ethernet switch with [REDACTED] RJ-45 ports and 2 SFP ports with ST 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, 8-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. []-port, Category 6 patch panel with RJ-45, []-position, []-wire ports unless otherwise shown on the Drawings.
4. []-port, Category 6 patch panel with [] 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. [].

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 [] 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 []-foot loop of spare fiber optic cable shall be installed in the EHH.

DIVISION 28

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.

Engineer: If SECTION 28 46 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 28 46 00 – FIRE ALARM SYSTEM, PART 1, SUBPARAGRAPH 1.4.C.2

DELETE:

- p. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- p. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

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

Modify as required

SECTION 31 05 19 – GEOTEXTILES, PART 2, SUBPARAGRAPH 2.2.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. [].

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: [].

DIVISION 32

Engineer: If SECTION 32 92 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 32 92 00 – TURF AND GRASSES, PART 1, SUBPARAGRAPH 1.8

DELETE:

- A. Warranty for 5 years from the Substantial Completion date for the satisfactory performance and installation of the turf and grasses system and associated appurtenances.

SUBSTITUTE:

- A. Warranty for one year full growing season (April 1 through October 31) following the Substantial Completion date for the satisfactory performance and installation of the turf and grasses system and associated appurtenances.

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 07.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 33 05 07.13 – UTILITY DIRECTIONAL DRILLING, PART 1, SUBPARAGRAPH 1.1.B

DELETE:

1. SECTION 33 11 01.03 – POLYVINYL CHLORIDE PIPING

SUBSTITUTE:

1. SECTION 33 05 31.13 – POLYVINYL CHLORIDE PIPE FOR WATER TRANSMISSION AND DISTRIBUTION

Engineer: If SECTION 33 05 07.13 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 33 05 07.13 – UTILITY DIRECTIONAL DRILLING, PART 2, SUBPARAGRAPH 2.1

DELETE:

- A. Pipe: As specified in SECTION 33 11 01.03.

SUBSTITUTE:

- A. Pipe: As specified in SECTION 33 05 31.13.

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 23.23 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 2, SUBPARAGRAPH 2.1

DELETE:

- A. Pipe: *(In its entirety)*

SUBSTITUTE:

- A. Pipe:
1. American SpiraWeld Pipe
 2. Ameron Water Transmission Group
 3. Thompson Pipegroup
 4. Mid America Pipe
 5. Northwest Pipe

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 C222]** **[AWWA C210]**. Lining and coating applied in this manner shall provide protection equal to that specified for the pipe.

Engineer: If SECTION 33 14 11 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 33 14 11 – WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING – GENERAL, PART 1, SUBPARAGRAPH 1.2.A

ADD:

7. C651 – Disinfecting Water Mains

Engineer: If SECTION 33 14 11 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 33 14 11 – WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING - GENERAL, PART 1, SUBPARAGRAPH 1.2

ADD:

- E. NSF International (NSF)
 1. 60 – Water Treatment Chemicals

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.

Engineer: If SECTION 33 14 11 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 33 14 11 – WATER UTILITY TRANSMISSION AND DISTRIBUTION PIPING - GENERAL, PART 3, SUBPARAGRAPH 3.3.B.2

DELETE:

- b. Where areas of the Work are identified as spray-disinfected, this Work shall be done by the CONTRACTOR. Provide a 200 ppm bleach spray.

SUBSTITUTE:

- 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.

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.
-

SECTION 33 14 19 – VALVES FOR WATER UTILITY PIPING, PART 2, SUBPARAGRAPH 2.2.C.6.a

DELETE:

- 9) Maximum operating pressure: 150 psig.

SUBSTITUTE:

- 9) Maximum operating pressure: [] psig.
-

DIVISION 40

Engineer: If SECTION 40 05 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications:

SECTION 40 05 00 – PROCESS PIPING - GENERAL

DELETE:

Supplement A – Piping Schedule (in its entirety)

SUBSTITUTE:

Supplement A – Piping Schedule												
Service	Proposed Legend	Size(s), inches	Exposure	Piping Material	Gasket Material	Bolt Material	Test Pressure and Type, psig	Pipe Color	Specification Section			
Process Systems												
Backwash Air	BWA	ALL	EXP	304	EPDM	304	1.5 x working pressure	--	40 05 00			
Backwash Supply	BWS	ALL	ALL	STL	33 14 11		100 - H	09 90 00	33 05 24.23			
Backwash Wastewater	BWW	ALL	ALL	STL	33 14 11		25 - H	09 90 00	33 05 24.23			
Chlorinated Water	CW	8 to 18	BUR	DI	33 05 19		150 - H	--	40 05 00			
			EXP		SBR	CS		09 90 00	40 05 00			
			WET					09 90 00	40 05 00			
			SUB		09 90 00	40 05 00						
		<8	BUR	DI	33 05 19			EPDM	316	--	40 05 00	
			EXP	PVC	EPDM	316					40 05 00	
			WET								GS	40 05 00
			SUB								316	40 05 00
Filter Effluent	FE	ALL	ALL				STL	33 14 11		25 - H	09 90 00	33 05 24.23
Filter Influent	FI	ALL	ALL	STL	33 14 11		60 - H	09 90 00	33 05 24.23			
Filter-to-Waste	FTW	ALL	ALL	STL	33 14 11		25 - H	09 90 00	33 05 24.23			
Finished Water	FW	ALL	ALL	STL	33 14 11		25 - H	09 90 00	33 05 24.23			
Flocculation/Sedimentation Influent	FSI	ALL	ALL	STL	33 14 11		25 - H	09 90 00	33 05 24.23			
Raw Water	RW	ALL	ALL	STL	33 14 11		150 - H	09 90 00	33 05 24.23			
Recycled Water	R	ALL	ALL	STL	33 14 11		150 - H	09 90 00	33 05 24.23			
Sample Water	SAMP	ALL	BUR	LLDPE	None	--	100 - H	--	40 05 00			
				HDPE					40 05 00			

Supplement A – Piping Schedule									
Service	Proposed Legend	Size(s), inches	Exposure	Piping Material	Gasket Material	Bolt Material	Test Pressure and Type, psig	Pipe Color	Specification Section
Process Systems									
			EXP	PP					40 05 00
Settled Water	STW	ALL	ALL	STL	33 14 11		25 - H	09 90 00	33 05 24.23
Surface Wash	SURW	ALL	ALL	CS-G, DI	IF, SBR	CS	150 - H	--	40 05 00
Thickened Sludge	TSL	ALL	ALL	DI	SBR	CS	250 - H	09 90 00	40 05 00
Thickened Sludge Decant	DSL	ALL	ALL	PVC, DI	SBR	AS	150 - H	09 90 00	40 05 00
Tubing									
Unthickened Sludge	USL	ALL	ALL	DI	SBR	CS	150 - H	09 90 00	40 05 00
Compressed Air	CA	<3	All	CU	EPDM	304	250-P	09 90 00	22 00 00
		≥3	All	CS-G	EPDM	304	250-H	09 90 00	22 00 00

Abbreviations:

Exposure:

BUR: Buried
 EXP: Exposed
 WET: Wetted
 SUB: Submerged

Piping Material:

CPVC: Chlorinated Polyvinyl Chloride
 CS-C: Carbon Steel-Chlorine Pressure Service
 CS-G: Carbon Steel-General Service
 DI: Ductile Iron
 PVC: Polyvinyl Chloride
 PVC-T: Flexible Reinforced PVC Tubing
 STL: Steel
 LLDPE: Linear Low Density Polyethylene
 HDPE: High Density Polyethylene

Gasket Material:

EPDM: Ethylene Propylene Diene Monomer
 IF: Inorganic Fiber
 PTFE: Polytetrafluoroethylene
 --: Not Applicable
 SBR: Styrene Butadiene Rubber

Bolt Material:

AS: Alloy Steel
 CS: Carbon Steel
 GS: Galvanized Alloy Steel
 304: Type 304 Stainless Steel
 316: Type 316 Stainless Steel
 --: Not Applicable

Test Pressure:

H: Hydrostatic
 P: Pneumatic
 --: Not Applicable
 V: Vacuum

Use deletion if V126 gate valves are not used in your project:

SECTION 40 05 51 – COMMON REQUIREMENTS FOR PROCESS VALVES, PART 2, SUBPARAGRAPH 2.1.A

DELETE:

3. Type V126 resilient-seated gate valve – Class 250: *(In its entirety)*
4. Type V130 PVC gate valve: *(In its entirety)*

SUBSTITUTE:

3. Type V130 PVC gate valve:
 - a. ASAHI/America, Type P
 - b. Spears

Use deletion if V501, V502v V504, V505, and V515 butterfly valves are not used in your project:

SECTION 40 05 51 – COMMON REQUIREMENTS FOR PROCESS VALVES, PART 2, SUBPARAGRAPH 2.1

DELETE:

- E. Butterfly Valves: *(In its entirety)*

SUBSTITUTE:

- E. Butterfly Valves:
 1. Type V500 flanged butterfly valve – Class 150, 12-inches and smaller:
 - a. Dezurik
 - b. Henry Pratt
 - c. Mueller
 - d. Valmatic
 2. Type V520 PVC butterfly valve:
 - a. ASAHI/America, Type 56
 - b. Nibco, Chemtrol Model B
 3. Type V530 CPVC butterfly valve:
 - a. Nibco, Chemtrol Model B
 - b. Spears
 4. Type V540 PP butterfly valve:
 - a. ASAHI/America, Type 57
 - b. Spears

Engineer: If SECTION 40 05 57.23 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 40 05 57.23 – ELECTRIC MOTOR ACTUATORS FOR PROCESS VALVES AND GATES, PART 1, SUBPARAGRAPH 1.3.A

DELETE:

11. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

11. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.
-

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: [REDACTED].
 - b. Metallic piping systems: [REDACTED].

Modify as required.

SECTION 40 41 00 – HEAT TAPE SYSTEMS, PART 2, SUBPARAGRAPH 2.2.D

DELETE:

4. Switch: SP-ST, UL listed, rated 22 amperes, 120 VAC to 240 VAC.

SUBSTITUTE:

4. Switch: SP-ST, UL listed, rated [REDACTED] amperes, [REDACTED].

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, [REDACTED]°F to 140°F.

Modify as required.

SECTION 40 41 00 – HEAT TAPE SYSTEMS, PART 2, SUBPARAGRAPH 2.3.B

DELETE:

4. Voltage: 120 VAC or 208 VAC.

SUBSTITUTE:

4. Voltage: [REDACTED] VAC.
-

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 1,
SUBPARAGRAPH 1.4.B**

DELETE:

3. 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:

3. 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 1.4.D.1**

DELETE:

- d. After the I&C has been completely installed and made operational, the entire system shall be subject to an operational test run before being accepted. To complete the requirement, the I&C and PLC/RTU communications shall operate properly, without significant system malfunction, as deemed by the ENGINEER, for a continuous uninterrupted time period of 20 days. If the PLC/RTU system fails to meet the requirement, make the necessary repairs or adjustments required to correct the problem. The acceptance test shall completely restart from the beginning for a complete retest.

SUBSTITUTE:

- d. After the I&C has been completely installed and made operational, the entire system shall be subject to an operational test run before being accepted. To complete the requirement, the I&C and PLC/RTU communications shall operate properly, without significant system malfunction, as deemed by the ENGINEER, for a continuous uninterrupted time period of [] days. If the PLC/RTU system fails to meet the requirement, make the necessary repairs or adjustments required to correct the problem. The acceptance test shall completely restart from the beginning for a complete retest.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 1,
SUBPARAGRAPH 1.5**

DELETE:

- B. ENGINEER's Review: The ENGINEER will act upon the CONTRACTOR's Submittal and transmit a response to the CONTRACTOR no later than 20 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 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.

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, PART 1, SUBPARAGRAPH 1.5.F.2

DELETE:

- i. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual/>.

SUBSTITUTE:

- i. Drawings shall be provided in electronic media on standard IBM computer compatible hi-speed USB flash drives and in quality hardcopy media. AutoCAD Drawings shall be in accordance with DW Design Drafting Standards and shall include, but not be limited to, the Standards located online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>.

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, PART 1, SUBPARAGRAPH 1.6.E.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.E.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: [].

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, PART 1, SUBPARAGRAPH 1.6

DELETE:

F. Instrument Tag Numbers: The tag number notation corresponds to the Drawings and is used in the loop specifications. Example: PI-02-01. *(In its entirety)*

SUBSTITUTE:

F. Instrument Tag Numbers: The tag number notation corresponds to the Drawings and is used in the loop specifications.

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 #4 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.

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, PART 2, SUBPARAGRAPH 2.4.F.4.c

DELETE:

- 6) Coil voltage: 120 VAC or 24 VDC.

SUBSTITUTE:

- 6) Coil voltage: 24 VDC.

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, PART 2, SUBPARAGRAPH 2.4.F.4

ADD:

- d. Auxiliary industrial control relays:
- 1) 120 V coil relays.
 - 2) Type: Hinged armature auxiliary, with cover.
 - 3) Contact arrangement: As shown on the Drawings, 2 Form C contacts minimum.
 - 4) Contact rating: 5 A at 150 VDC load switching.
 - 5) Contact material: Silver cadmium oxide alloy.
 - 6) Coil voltage: 110 VDC or 120 VAC.
 - 7) Coil power: 1.8 W.

- 8) Provide with indicator lamps.
- 9) Expected mechanical life: 100,000 operations minimum.
- 10) Expected electrical life at rated load: 100,000 operations minimum.
- 11) Provided and installed with Manufacturer recommended and provided surge suppressors across the coil terminals. The surge suppressor shall be designed to absorb all energy surges that appear on the line.

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: [].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH A.8

DELETE:

- a. Panalarm, Series 90.

SUBSTITUTE:

- a. Panalarm, Series [].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A

DELETE:

- B. Carbon Monoxide Gas Monitoring System:

SUBSTITUTE:

- B. [] 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 setpoints.

SUBSTITUTE:

- a. The [] gas monitoring systems shall measure and provide the control and alarm indication in the event the gas level exceeds the limit setpoints.

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 [].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH B.5

DELETE:

- a. Mine Safety Appliance Toxgard II gas monitor A-TOX.

SUBSTITUTE:

- a. Mine Safety Appliance [].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH C.2

DELETE:

- a. Eaton D853 series with 3-position selector switch.

SUBSTITUTE:

- a. [].

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 [REDACTED].

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: [REDACTED]. 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 [REDACTED] gpm.

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH H.5

DELETE:

- b. Connection type: 150 pound ANSI raised-face flanges or wafer type depending on meter size, unless otherwise shown on the Drawings.

SUBSTITUTE:

- b. Connection type: [REDACTED] 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: [REDACTED] 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 304 stainless steel, unless otherwise shown on the Drawings.
- b. Liner material: Teflon, unless otherwise shown on the Drawings.

SUBSTITUTE:

- a. Meter tube material: Type [REDACTED], unless otherwise shown on the Drawings.
- b. Liner material: [REDACTED], 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. [REDACTED].
14. [REDACTED].
15. [REDACTED].
16. Provide and install a Manufacturer recommended isolating transformer on the input power to the flow meter.
17. [REDACTED].
18. Install a GFI on the input to the isolating transformer.
19. [REDACTED].
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: [] unless otherwise shown on the Drawings.

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH L

DELETE:

4. Programming buttons: Wire and connect caretaker accessible push buttons and switches in the GCP. To adjust and set the time on the clock, for daylight savings, and in the event of a power loss. Push buttons and switches shall be mounted in the GCP and the location shall be approved by the ENGINEER. Push buttons and switches for the clock adjustment shall be mounted GE Spectra Series 080 22-mm type.

SUBSTITUTE:

4. Programming buttons: []. To adjust and set the time on the clock, for daylight savings, and in the event of a power loss. Push buttons and switches shall be mounted in the [] and the location shall be approved by the ENGINEER. Push buttons and switches for the clock adjustment shall be [].

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: [].

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 [].

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 95°C.

SUBSTITUTE:

d. Temperature range: Level element shall be capable of operating in the range of [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH N.8

DELETE:

- a. Transducer: Siemens Milltronics Echomax XPS-10.
- b. Transmitter: Siemens SISTRANS LUT420.

SUBSTITUTE:

- a. Transducer: [REDACTED].
- b. Transmitter: [REDACTED].

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 stainless steel 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 (2 switch mechanisms) providing the same functions as 2 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 stainless steel 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.

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

ADD:

Q. Level Control System (Surge Tanks):

1. General:
 - a. Function: Provide continuous level measurement with output to control surge tank operation.
 - b. Parts: Level electrodes, flanged cast iron electrode holder, solid-state relays to interface electrodes to controls, Manufacturer recommended cables for connection from electrodes to relays.
2. Service:
 - a. Medium: Water.
 - b. Pressure: Atmospheric.
 - c. Altitude: Level element shall be capable of operating at [] feet.
 - d. Temperature range: Level element shall be capable of operating in range of []°C to []°C.
3. Performance:
 - a. Range: As shown on the Drawings or as required.
 - b. Zero reference: As shown on the Drawings or as required.
 - c. Accuracy: $\pm 0.5\%$ of full scale for analog output signal and alarm setpoints shall be repeatable within $\pm 1\%$ of full scale.
 - d. Resolution: 2 mm or 0.1% of range, whichever is greater.
4. Features:
 - a. Interconnecting Cable: Cable between level electrodes and relays.
 - b. Shall be supplied with unit.
 - c. Rod spacers every 2 feet.
5. Signal interface:
 - a. Power supply: Unit shall operate on 120 V, 50/60 Hz power, unless otherwise shown on the Drawings.
 - b. Relay contact outputs: DPDT load contacts, SPDT holding contacts rated at 10 amperes, non-inductive, continuous, at 120 VAC.
6. Element:
 - a. Type: Shall be of a waterproof/weatherproof design for outdoor installation.
 - b. Process connection: Flanged cast iron electrode holder.
 - c. Shall be chemically resistant to the process fluid to be measured.
7. Manufacturer and product:
 - a. Electrodes: Ametek/BW Controls 6013-GP-316-SS-P-8B with RS rod spacers.
 - b. Electrode holder: 6012 Flanged Cast Iron.

- c. Relays: BW Controls 5200-LF1-OC

RENUMBER:

Supplement A accordingly

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH Q.1

DELETE:

- e. Stainless steel 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. The CONTRACTOR shall 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 Q.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 Q.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 R.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 R.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 S

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 T

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 U

DELETE:

- 4. Stainless steel class 150 flanges.
- 5. Sleeve: Viton or as recommended by the Manufacturer for application.

SUBSTITUTE:

- 4. Stainless steel class [REDACTED] flanges.
- 5. Sleeve: [REDACTED] or as recommended by the Manufacturer for application.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH U.11**

DELETE:

- a. Red Valve Series 40.

SUBSTITUTE:

- a. Red Valve Series [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH V.6**

DELETE:

- a. Rosemount, Model 3144.

SUBSTITUTE:

- a. Rosemount, Model [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH W.3**

DELETE:

- e. Power supply: 24 VDC supply.

SUBSTITUTE:

- e. Power supply: [REDACTED] VDC supply.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH W.4**

DELETE:

- a. Dwyer, RHP Series.

SUBSTITUTE:

- a. [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH X.2**

DELETE:

- d. Coil voltage rating: 24 VAC.

SUBSTITUTE:

- d. Coil voltage rating: [REDACTED] VAC.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH X.4**

DELETE:

- a. IDEC, RTE-P1AF20.

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

DELETE:

- Y. Switches, Current: *(In its entirety)*

SUBSTITUTE:

- Y. HPU System Reservoir Level Switch:
 - 1. General:
 - a. Provide large stainless steel tag.
 - b. Function: Full-size, multi-point liquid level switch.
 - c. Type: Heavy-duty, industrial type.
 - d. Liquid: ISO 46 hydraulic oil. Specific gravity = 0.865.
 - 2. Performance:
 - a. Level control of hydraulic oil reservoir tank level.
 - b. Adjustable switching heights and actions throughout the range of the float travel.
 - c. Temperature: 30°F minimum, 150°F maximum.
 - d. Pressure: 50 psi minimum, or as required.
 - 3. Features:
 - a. Complete float and trim construction type 316 stainless steel.
 - b. Mounting: Side-mounted, coordinate mounting connection and length with the Tank Manufacturer and ENGINEER.
 - 4. Signal interface:
 - a. Switch: 2 DPST, arrangement.
 - b. Contact: Rated 5 A continuous at 120 VAC.
 - 5. Manufacturer:
 - a. Madison, M Series.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH AA.2**

DELETE:

- c. Power: Individual power supplies shall be rated for 5 A output. A minimum of 4 power supplies shall be provided. The total number of power supplies provided shall be sized for actual loads with 100% spare capacity.

SUBSTITUTE:

- c. Power: Individual power supplies shall be rated for [REDACTED] output. A minimum of 4 power supplies shall be provided. The total number of power supplies provided shall be sized for actual loads with 100% spare capacity.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH AA.10**

DELETE:

- a. Phoenix Contact, QUINT PS 100-240AC/24DC/10 with QUINT-DIODE/40 module.

SUBSTITUTE:

- a. Phoenix Contact, [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH BB.2**

DELETE:

- c. Power: 3,000 W minimum, sized for actual loads with 100% spare capacity.

SUBSTITUTE:

- c. Power: [REDACTED] W minimum, sized for actual loads with 100% spare capacity.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH BB.2**

DELETE:

- f. Rated for 7,500 feet above mean sea level, 104°F ambient, and 95% relative humidity.

SUBSTITUTE:

- f. Rated for [REDACTED] feet above mean sea level, 104°F ambient, and 95% relative humidity.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH BB.3**

DELETE:

- b. Mounting: Panel, inside GCP.

SUBSTITUTE:

- b. Mounting: Panel, [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH BB.4**

DELETE:

- a. Absopulse, Model BAP 3K-130/110-3U7-R1486.

SUBSTITUTE:

- a. [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH CC.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 CC.4

DELETE:

- a. Philtek, Model PIV.

SUBSTITUTE:

- a. [].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH DD.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 EE.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

INPUT/OUTPUT VOLTAGE: 120 VAC single phase
Voltage Regulation: ±3% nominal regulation
Frequency (Input): 60 Hz ± to ±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
[]	[]	[]

INPUT/OUTPUT VOLTAGE: 120 VAC single phase
Voltage Regulation: $\pm 3\%$ nominal regulation
Frequency (Input): 60 Hz \pm to ± 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 EE.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 EE.2.a

DELETE:

- 1) APC, SUA500PDR-2 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 EE.2.a.1)

DELETE:

- b) APC temperature sensor.

SUBSTITUTE:

- b) [REDACTED] temperature sensor.

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH EE.2.b

DELETE:

- 1) Eaton, FERRUPS Model FE series with external bypass switch model BPE.
- 2) Eaton, 5P1000 with Network Card.

SUBSTITUTE:

- 1) [REDACTED].
- 2) [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF

DELETE:

1. The PLC process automation controllers shall have a minimum of 8 I/O slots, 3 100/10 MB Ethernet port, and 4 serial communication ports, 2 RS 232 and 2 RS 485. Provide I/O modules to account for I/O points, including spare I/O, in accordance with the Contract Documents.

SUBSTITUTE:

1. The PLC process automation controllers shall have a minimum of [] I/O slots, [], and []. Provide I/O modules to account for I/O points, including spare I/O, in accordance with the Contract Documents.

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF

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 FF.2

DELETE:

- e. 100/10 MB Ethernet port with RJ45 connectors: 3.
- f. Serial communication ports, 4; 2 RS 485 and 2 RS 232.

SUBSTITUTE:

- e. [].
- f. Serial communication ports, [].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF.3.a

DELETE:

- 1) High density 32-point input.

SUBSTITUTE:

- 1) High density [].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH FF.3.b**

DELETE:

- 1) High density 32-point input.

SUBSTITUTE:

- 1) High density [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH FF.3.c**

DELETE:

- 1) High density 16-channel input.

SUBSTITUTE:

- 1) High density [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH FF.3.d**

DELETE:

- 1) High density 8-channel output.

SUBSTITUTE:

- 1) High density [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH FF.4**

DELETE:

- a. 10/100 Base T Ethernet port with RJ45 connectors: 2.

SUBSTITUTE:

- a. [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH FF.4**

DELETE:

- c. Serial communication ports: 2; one RS 485 and one RS 232.
- d. I/O slot panel or rack-mount stainless steel chassis: 8; the mounting method shall be approved by the ENGINEER.

SUBSTITUTE:

- c. Serial communication ports: [REDACTED].
- d. I/O slot panel or rack-mount stainless steel chassis: [REDACTED]; the mounting method shall be approved by the ENGINEER.

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF

DELETE:

- 6. ControlWave Micro PLC/RTU/PAC hybrid controller:

SUBSTITUTE:

- 6. [REDACTED] hybrid controller:

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF.6

DELETE:

- a. 8-slot panel-mount base, PSSM, Micro 150 CPU, System Controller with keylock, and watch dog.

SUBSTITUTE:

- a. [REDACTED]-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 FF.6

DELETE:

- c. Communications: 2 10/100 Base T Ethernet port with RJ45 connectors and 2 serial communication ports, one RS 485, one RS 232.

SUBSTITUTE:

- c. Communications: [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF.6.m.1)

DELETE:

- a) High density 16 point input.

SUBSTITUTE:

- a) High density [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF.6.m.2)

DELETE:

- a) High density 16 point output with LEDs.

SUBSTITUTE:

- a) High density [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF.6.m.3)

DELETE:

- a) Isolated 8-channel input.

SUBSTITUTE:

- a) Isolated [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF.6.m.4)

DELETE:

- a) Isolated 4-channel input.

SUBSTITUTE:

- a) Isolated [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH FF

DELETE:

- 8. 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. It shall be the CONTRACTOR's responsibility to verify each component's system compatibility.

SUBSTITUTE:

- 8. [REDACTED] 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. It shall be the CONTRACTOR's responsibility to verify each component's system compatibility.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH FF**

DELETE:

9. Manufacturer and products: *(In its entirety)*

SUBSTITUTE:

9. Manufacturer and products:
- a. Hardware and software:
 - 1) Emerson/Bristol Babcock, [REDACTED].
 - b. Input/output models:
 - 1) Discrete input:
 - a) Emerson/Bristol Babcock, [REDACTED].
 - 2) Discrete output:
 - a) Emerson/Bristol Babcock, [REDACTED].
 - 3) Analog input:
 - a) Emerson/Bristol Babcock, [REDACTED].
 - 4) Analog output:
 - a) Emerson/Bristol Babcock, [REDACTED].
 - c. Pre-manufactured remote termination modules:
 - 1) Emerson/Bristol Babcock, [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH GG.3**

DELETE:

- b. Pressure limit: 250 psi.

SUBSTITUTE:

- b. Pressure limit: [REDACTED] psi.

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH GG.4**

DELETE:

- c. Temperature: -4°F to 220°F (50°C).

SUBSTITUTE:

- c. Temperature: [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH GG.9**

DELETE:

- a. W. E. Anderson Series V6 FLOTECT Low Flow model.

SUBSTITUTE:

- a. [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH HH.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 HH.6

DELETE:

- a. Edwards Signaling B-KHE-1000-PP.

SUBSTITUTE:

- a. [REDACTED].

Modify as required.

SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A, SUBPARAGRAPH II

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 II.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 JJ.3**

DELETE:

- c. Lamp: Incandescent, 25 W.

SUBSTITUTE:

- c. Lamp: [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH JJ**

DELETE:

5. Power: 125 VDC.

SUBSTITUTE:

5. Power: [REDACTED].

Modify as required.

**SECTION 40 50 00 – INSTRUMENTATION AND CONTROL SYSTEMS, SUPPLEMENT A,
SUBPARAGRAPH KK.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 KK.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 KK**

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 KK.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)

Unit Process	Tag Number	Component Code	Component Description	Design Characteristics

SUBSTITUTE:

**SUPPLEMENT B
INSTRUMENT LIST**

(Note: All required instruments are not listed)

Unit Process	Tag Number	Component Code	Component Description	Design Characteristics
[]	[]	[]	[]	[]
[]	[]	[]	[]	[]
[]	[]	[]	[]	[]

Specify Facility Name

SECTION 46 33 73 – LIQUID CHEMICAL DIFFUSERS, PART 1, SUBPARAGRAPH 1.3

DELETE:

- A. The Work of this Section includes furnishing diffuser system components and installation of fabricated chemical diffuser pipe, hose assemblies, and components for the rapid mix system as shown on the Drawings.

SUBSTITUTE:

- A. The Work of this Section includes furnishing diffuser system components and installation of fabricated chemical diffuser pipe, hose assemblies, and components for the [] rapid mix system as shown on the Drawings.

Specify Spare part information

SECTION 46 33 73 – LIQUID CHEMICAL DIFFUSERS, PART 1, SUBPARAGRAPH 1.4

DELETE:

- G. Spare Parts: *(In its entirety)*

SUBSTITUTE:

- G. Spare Parts:
 - 1. Vaneless nozzle:
 - a. Additional quantity provided, uninstalled: []-inches and []-inches.
 - 2. Hex nipples:
 - a. Additional quantity provided, uninstalled: []-inches, and []-inches.

Specify Model

SECTION 46 33 73 – LIQUID CHEMICAL DIFFUSERS, PART 2, SUBPARAGRAPH 2.1.D.1

DELETE:

- a. Spraying Systems Co., Unijet T Body with TH-W tip

SUBSTITUTE:

- a. Spraying Systems Co., []

Specify material and size

SECTION 46 33 73 – LIQUID CHEMICAL DIFFUSERS, PART 2, SUBPARAGRAPH 2.2.A.1

DELETE:

- a. Material of construction: F316L stainless steel, UNS No. S31603.
- b. Nominal size: 1 1/2-inches.

SUBSTITUTE:

- a. Material of construction: [].
- b. Nominal size: []-inches.

Modify as required

SECTION 46 33 73 – LIQUID CHEMICAL DIFFUSERS, PART 2, SUBPARAGRAPH 2.2

DELETE:

- B. Diffuser Hose Assemblies: *(In its entirety)*
- C. Diffuser Dry Quick-Disconnect Fittings: *(In its entirety)*

SUBSTITUTE:

- B. Diffuser Hose Assemblies:
 - 1. Diffuser Hoses:
 - a. Hose material of construction: [REDACTED].
 - b. PTFE fluoropolymer. WCS helically convoluted inner tube.
 - c. Hose cover: Type 304 stainless steel braid.
 - d. Hose ends, prior to coupling attachment: Plain ends.
 - e. Maximum water pressure rating: [REDACTED] psi.
 - f. Nominal inside diameter: [REDACTED]-inch.
 - g. Nominal outside diameter: 1 3/8-inches.
 - h. Length: As shown on the Drawings.
 - i. Number of hoses: As shown on the Drawings.
 - j. Nominal weight: 0.40 lbs/ft, hose only.
 - k. Bend radius: 2 3/4-inches.
 - l. Provide excess hose from a standard coil package length of 150-feet to the ENGINEER as spare material.
 - 2. Fittings:
 - a. Material and style: PermaSeal Crimp-Style [REDACTED] fittings and ferrules suitable for the pressure rating.
 - b. Model: PermaSeal Cam and Groove Female Fitting [REDACTED] swivel style 16 LK, one end of hose.
 - c. Model: PermaSeal J.I.C. adapter union male [REDACTED] style 08, one end of hose.
 - d. Hose size: One-inch.
 - e. Hydrostatic test: Diffuser hoses and couplings shall be assembled and hydrostatically tested with water to 150 psi by the Hose Supplier.
 - f. Certification: Provide certification of a successful hydrostatic test.
- C. Diffuser Dry Quick-Disconnect Fittings:
 - 1. Material of construction: [REDACTED].
 - 2. Nominal coupler and adaptor size: One-inch NPT.
 - 3. O-ring material: [REDACTED].
 - 4. End-connections: Threaded NPT.
 - 5. Number of dry-quick disconnect fittings: As shown on the Drawings.

Modify as required

SECTION 46 33 73 – LIQUID CHEMICAL DIFFUSERS, PART 2, SUBPARAGRAPH 2.2.D

DELETE:

- 1. Vaneless nozzle: *(In its entirety)*

SUBSTITUTE:

- 1. Vaneless nozzle:
 - a. Materials of construction: [REDACTED].
 - b. Nozzle inlet connection size: [REDACTED]-inch and [REDACTED]-inch female body as shown on the Drawings.
 - c. Model number: As shown on the Drawings.
 - d. Total quantity installed on diffusers: As shown on the Drawings.
 - e. Spray pattern: [REDACTED].
 - f. Spray angle: [REDACTED] degrees to [REDACTED] degrees.
 - g. Connection type: Female NPT.

Modify as required

SECTION 46 33 73 – LIQUID CHEMICAL DIFFUSERS, PART 2, SUBPARAGRAPH 2.2.D.2

DELETE:

- a. Material of construction: Type 316 stainless steel.

SUBSTITUTE:

- a. Material of construction: [REDACTED].

Modify as required

SECTION 46 33 73 – LIQUID CHEMICAL DIFFUSERS, PART 3, SUBPARAGRAPH 3.3

DELETE:

- B. Install a Purefit Type 316 stainless steel pipe interface adapter, clamp, and gasket x female NPT, to transition chemical PVC pipe to stainless steel hose fitting. Hand-tighten fitting, plus 1/4-turn. Do not over-tighten fitting. Connect hoses in a manner that prevents abrasion with other components. Loop hose if necessary to make the connection.

SUBSTITUTE:

- B. Install a Purefit [REDACTED] pipe interface adapter, clamp, and gasket x female NPT, to transition chemical PVC pipe to stainless steel hose fitting. Hand-tighten fitting, plus 1/4-turn. Do not over-tighten fitting. Connect hoses in a manner that prevents abrasion with other components. Loop hose if necessary to make the connection.

DIVISION 48

Engineer: If SECTION 48 70 00 is applicable to your project, the following change MUST stay in the Supplementary Technical Specifications.

SECTION 48 70 00 – GENERATOR STARTUP AND COMMISSIONING, PART 3, SUBPARAGRAPH 3.1.A

DELETE:

3. Utilize the Manufacturer's certificate of proper installation form found online in DW's CPPM: <http://www.denverwater.org/DoingBusinesswithUs/EngineeringOverview/CapitalProjectsProceduresManual>, supplemented as necessary, to document functional and performance procedures, results, problems, and conclusions.

SUBSTITUTE:

3. Utilize the Manufacturer's certificate of proper installation form found online in DW's CPPM: <https://www.denverwater.org/contractors/construction-information/engineering-standards/capital-projects-procedures-manual>, supplemented as necessary, to document functional and performance procedures, results, problems, and conclusions.

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. [] .

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 [] .

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 one day.
- 12) Continuous uninterrupted on-line operation for one day.

SUBSTITUTE:

- 11) Continuous uninterrupted off-line operation for [] day.

12) Continuous uninterrupted on-line operation for [] day.