EXHIBIT S

SPECIFICATIONS

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SECTION 01 11 00

SUMMARY OF WORK

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SUMMARY OF WORK

1.0 PROJECT DESCRIPTION

1.1 BACKGROUND

Public Utility District No. 1 of Chelan County operates the Rocky Reach Hydroelectric Project, located on the Columbia River, at river mile 475, approximately 7 miles upstream of Wenatchee, Washington. The Powerhouse consists of 11 generating units, Units C-1 to C-11.

Units C-2 through C-7 have scheduled outages in 2020 and 2021 and will be disassembled for repairs. The wicket gate servomotors for each of the units will require inspection and refurbishment and are the subject of this solicitation.

Each unit contains two wicket gate servomotors, which are rear base mounted and hydraulically operated with turbine oil under pressure. Each servomotor consists of a cylinder, cylinder head, piston, piston rod and locking device. Movement of the piston within the cylinder transfers force to operate the unit’s wicket gate mechanism. The piston rod is bolted to the piston, and extends to a connecting rod. Each cylinder head contains two bushings, which act as a bearing for piston rod. One bushing is located at the bolted flange end and the other is located at the opposite end of the cylinder head. They also contain packing boxes and glands, which prevent leaking of oil from cylinders.

1.2 SCOPE OF WORK

Contractor shall furnish all labor, materials, equipment, instruments, tools and transportation required for inspecting and refurbishing the servomotors.

Contractor shall submit a complete description of the intended plan on how the Work will be performed, and where the Work will be done within three (3) business days of Contract execution.

1.2.1 As Found Inspections

Contractor shall perform as-found inspection of the servomotors per list below.

The following general notes apply to as-found inspections for all components:

- All inspection results shall be compiled into an as-found inspection report and submitted to the District for review and comment. Contractor shall provide repair recommendations for any defects identified during inspection.
- Each component requires at least two overall as-found photos, in different view angles.
• During as-found visual inspection, minor scratches and/or light galling that can be hand dressed and smoothed out do not need detailed in the Contractor’s inspection report. One sample photo will be sufficient.
• Any significant galling, that cannot be smoothed out by lightly hand dressing, needs to be recorded individually. Record length, width, depth dimension, and location with photo.
• Contractor shall utilize a table format to record each component dimension in Contractor’s inspection report.

1.2.1.1 Cylinder
Measurements are required at the following locations: starting at 1.0” in from top flange at open side, measure at every 10.00” increment until 50”. By means: measure sections are at 1.0”, 10.0”, 20.0”, 30.0”, 40.0” and 50.0” from face of cylinder flange. Cylinder bore measurements to be recorded on Site Record Sheet RR-17SMBM-001 (Exhibit T).
   a. Cylinder bore diameter measure at each measurement section at 0⁰, 45⁰, 90⁰, 135⁰.
   b. Measure cylinder runout every 45⁰ (0⁰, 45⁰, 90⁰, 135⁰, 180⁰, 225⁰, 270⁰, and 315⁰) at each measurement section.
   c. 100% Visual inspection, recording any indication and significant galling. For any found indications, additional Dye Penetrant Testing (PT)/ Magnetic Particle Testing (MT) is required. Record length, width, depth dimension and photo of indication in report for any indications.
   d. Surface finish test on existing bore.
   e. See drawings 4490-QT-1, 4490-SD-1, 4490-QW-1 Pos. 1 and Pos. 2, and Drawing 6F180906 for details.

1.2.1.2 Piston
Measurements shall be taken at 1” distance from each end of the piston. Piston diameter measurements to be recorded on Site Record Sheet RR-17WGSP-002 (Exhibit T).
   a. Piston OD to be measured at each measurement section at 0⁰, 45⁰, 90⁰, 135⁰.
   b. 100% Visual inspection, recording any indication and galling. For any found indications, include length, width, depth dimension and photo of indication in report.
   c. See drawings 4490-PX-5, 4490-QW-1 Pos. 65 & Pos. 66, Drawing 6F180906 for details.

1.2.1.3 Piston rings (three per servomotor)
   a. 100% Visual inspection, recording any significant galling.
   b. Piston ring relaxed OD pi-tape measurement at mid-section of piston ring.
   c. Each piston ring width (ring radial direction) at 0⁰ and 90⁰.
   d. See drawing 4490-QW-1 Pos. 67 for details.

1.2.1.4 Cylinder head bushings.
There are two bushings per servomotor: a straight bushing and a flanged bushing. Outer bushing is straight, inner bushing is flanged. See drawing 4490-SD-1 for details. The following as-found inspections are required for both bushings.
   a. Straight cylinder head bushing diameters to be measured at 1” from each end at 0⁰, 90⁰ at ID before and after bushing removal and OD after bushing.
b. Flanged cylinder head bushing diameters to be measured at 1" from each end at 0°, 90° at ID before and after bushing removal, OD after bushing removal, and flange OD and thickness after bushing removal.
c. 100% Visual inspection, recording any indication and significant galling.
d. See drawings 4490-SD-1, 4490-QW-1 (Pos. 41 straight and Pos. 42 flanged) for details.

1.2.1.5 Cylinder Heads.

a. Straight cylinder head bushing housing bore diameters to be measured at 1 inch away from each end in 0°, 90° after disassemble of existing straight bushing.
b. Flanged cylinder head bushing housing bore diameter to be measured at 1 inch away from each end in 0°, 90° after disassemble of flanged bushing.
c. 100% Visual inspection, record any indication and notable galling. For any found indications, additional PT / MT is required. Record indications’ length, width, depth dimension location. Photo record all the indications.
d. Surface finish test on bushing housing bore and packing box housing bore.
e. See drawing 4490-SD-1, 4490-QW-1 (Pos. 35 & Pos. 36) for details.

1.2.1.6 Piston Yokes.

a. 100% Visual inspection, record any indication and notable galling. For any found indications, additional PT / MT is required. Record indications’ length, width, depth dimension. Photo record all indications.
b. Surface finish test on link pin ID bore.
c. See drawing 4490-HQ-5, 4490-QW-1 (Pos. 81) for details.

1.2.1.7 Piston rod

a. 100% Visual inspection, recording any indication and significant galling. For any found indications, record indications’ length, width, depth dimension location. Photo record all the indications.
b. Measure OD at 0° and 90° at every 12.0" increment along the piston rod and straightness of piston rod by performing runouts on the piston rod at every 12" along the rod, as well as on the yoke end of the piston rod.
c. If the piston rod has significant wear and galling, and the Contractor recommends re-chroming of the piston rods is required, measurement of 1.2.1.7(b) can be simplified. Measure OD at location with least wear and one location at the most wear. Submit measurement results and photo to District for review and evaluation.
d. See drawing 4490-QR-5, 4490-QW-1 (Pos. 94) for details.

1.2.1.8 Packing box

a. Measure as-found stack height for installation reference. The packing will be replaced during reassembly.
b. See drawings 4490-QW-1 (Pos. 44) and 4490-SD-1 for location and details.

1.2.1.9 Packing gland

a. 100% Visual inspection, recording any indication and significant galling. For any found indications, record indications’ length, width, depth dimension location. Photo record all the indications.
b. Measure gland bore ID at 0° and 90° at mid-point of gland.
c. See drawings 4490-QW-1 (Pos. 43) and 4490-SD-1 for location and details.

1.2.1.10 All other parts and hardware
a. 100% Visual inspection, recording any indications. For any found indications, additional PT/MT is required. Record indication’s length, width, depth dimension and photo of indication in report.
b. Any hardware with confirmed indications shall be replaced and measurement of indications are not required. One photo record is sufficient.

1.2.2 Repairs
The District will provide a repair scope of work to the Contractor, based on the as-found inspection results and the Contractor’s recommendations. The repair scope will be provided within three (3) working days upon receipt of the inspection report. No repair work shall commence until the repair scope of work has been given by the District Project Manager to the Contractor. All materials shall be provided by the Contractor unless specifically mentioned by the District.

1.2.2.1 Overview of minimum repair work
At a minimum, the repair scope of work will include supply and replacement components:
- The straight and flanged bronze bushings in the cylinder head.
- Rod packing.
- Gaskets at the main cylinder flange.
- Polishing of wear surfaces and any minor galling on machining surfaces.

1.2.2.2 Requirements for minimum repair work
1.2.2.2.1 New straight and flanged bronze bushings
1. The cylinder head bushings shall be C93700 bronze material. Recommend order Φ8.00" bronze material prior to rework.
2. District will provide final machined ID and OD required to achieve proper interference fit, based on the as-found inspection report.
3. Contractor shall shrink fit the flanged and straight bushings in each cylinder head.
4. After installation, the bushing ID’s shall be honed to achieve the required running clearance between the bushings and the piston rod.
5. Installed bushing honing ID dimension shall be determined according to after refurbished piston rod OD dimension. The running clearance between bushing ID and piston rod OD should be 0.004”-0.006”.
6. After honing, measure and record new straight and flanged bronze bushings at 1" away from each end at 0°, 90° for
   a. ID and OD before to be installed on cylinder head.
   b. ID after installed on cylinder head.
7. Piston rod to bushing clearances shall be verified by calculation result of honed bushing ID and refurbished piston rod OD measurement dimension at in 0 and 90 deg. All measurement
results shall be submitted to the District for review prior to return to the District.

1.2.2.2 Rod Packing
   1. The rod packing materials shall be Garlock Chevron Style 432 Or Equal.
   2. Each packing set shall consist of one male adapter, four v-rings, and one female adapter.
   3. The packing set may be shimmed to achieve adequate compression with Garlock 3000 1/32” gasket material Or Equal, cut to match the packing ID and OD.

1.2.2.3 Cylinder flange gaskets
   1. Cylinder flange gaskets shall be Garlock 3000 1/32” sheet gaskets, Or Equal, cut to the dimensions provided on drawing 4490-SD-1.

1.2.2.4 Minimum surface repair
   1. In general, contractor shall polish, smooth, and perform light filing on wear areas of existing parts with minimum material removal. Repair areas should have smooth profile. Grinding is not recommended.
   2. For servomotor piston, the wear surfaces on the piston ODs shall be polished to a surface finish of 32 µin RA. Contractor shall excavate any cracked areas by lightly grinding/filing to smooth all indications (crack depth should be minimal). If any of the piston overlay material is found to be unadhered to the base metal, the District shall be notified and a secondary repair plan will be determined.

1.2.2.3 Additional possible refurbishment work
   1.2.2.3.1 Piston rod re-chroming (if required)
   If the District determines that grinding and re-chroming of the piston rods is required as part of the repair scope, the Contractor shall machine the rod to a diameter suitable for clean-up of scoring and wear and suitable for chrome overlay, then hard chrome plate the rod, followed by machining/grinding to the drawing dimension 6.997” +0.005 / -0.001 with 32 finish requirements per drawing 4490-QR-5. Contractor shall perform VT and MT/PT of finish machined piston rod.

   If the piston rod OD refurbished with new chrome overlay, Contractor shall perform the following measurements on the refurbished piston rod:
   - OD at 0° and 90° at every 12.0” increment along the piston rod.
   - Straightness of piston rod by performing runouts on the piston rod at every 12” along the rod, as well as on the yoke end of the piston rod.

   1.2.2.3.2 Restoration of cylinder bores (if required)
   If the District determines that flame spraying and honing of the cylinder bores is required as part of the repair scope, the Contractor shall machine the bore of the cylinder to clean up scratches, wear, etc, and rebuild ID of cylinder with flamespray and machine/Hone ID to 26.100” +0.003/-0.000” diameter per Drawing 6F180906, to a surface finish or 32µin or better. Submit certificate of flamespray material to District for review and approval prior to flamespray application. Record bore measurements and runouts on District form RR-17SMBM-001 (Exhibit T). The Contractor shall take measures to protect the oil ports from the flamespray.
Contractor shall perform VT and MT of finish machined cylinder bore.

1.2.2.3.3 Restoration of servomotor pistons (if required)
If the District determines that replacement of the bronze overlay on the servomotor pistons is required as part of the repair scope, the Contractor shall machine the OD of the piston to clean up scratches, wear, etc, and rebuild OD of piston cylinder with aluminum bronze. Minimum thickness of aluminum bronze shall be 20 mm (~0.080”) and machine/grind OD to 26.095” +0.000/-0.003” diameter per Drawing 6F18090. Aluminum Bronze Thermal Spray Powder product such as Diamalloy 1004 (HVOF or plasma spray or combustion powder Thermospray is recommended Or Equal). Provide material specification to District for review and approval prior to application of aluminum bronze. The Contractor shall take measures to protect the piston ring grooves from the flamespray. Record piston diameter measurements on District form RR-17WGSP-002 (Exhibit T). Contractor shall perform VT and MT of finish machined piston. Contractor shall provide material certificates of the bronze overlay material.

1.2.2.3.4 Replacement of piston nut (if required)
If the District determines that replacement of the piston nut is required as part of the repair scope, the Contractor shall supply 4-1/2”-8-2B TPI Right Hand threaded nuts from 1045 Q&T SR material with 190-200 BHN hardness material. Nut height shall be equal to the existing nut height. Contractor shall perform VT and MT of finished piston nuts. Contractor shall provide material certificates of the piston nuts.

If additional repairs are included in the repair scope of work, repair specifications will be provided by the District at that time.

1.2.3 Assembly and Testing
Contractor shall assemble the servomotors with new replacement parts and refurbished components. The Contractor shall measure the distance from the yoke bore centerline to mounting flange bottom surface to confirm both servomotor assembly dimension in servomotor fully opened and closed position. All recorded measurements shall be submitted to the District for review prior to shipping.

Contractor shall perform pressure and leakage testing on both servomotors. Contractor shall provide Chevron Regal R&O 68 oil to perform the pressure and leakage tests.

- Pressure testing of the servomotors shall be performed at 525 psig for one hour with zero pressure drop. The piston can be in any position during the pressure testing.
- Leak testing of the servomotors shall be performed with the piston in three different positions: in the fully retracted position, at the center of travel, and in the fully extended position. The District will provide a stroke-limiting device to hold the piston at the center of travel during leak testing. The leak testing shall be performed at 350 psig and piston leakage during the test shall be recorded.
1.2.4 Touch up paint

Contractor shall paint non-machined external surfaces of the servomotors. The existing primer coating on the servomotors is known to contain lead. In some areas the topcoat has been rubbed off or chipped off. Caution must be taken to not disturb the existing coating. Contractor shall perform an SSPC-SP1 solvent cleaning of the servomotors, ensuring to not disturb the existing coating. Contractor shall then apply a new coating, per Section 09 90 04 – Painting, System No. 3.

1.2.5 Final QA document submittal

Contractor shall submit a fully assembled QA/QC package to District for review prior to shipment of the servomotors. The QA/QC package shall include all required assembly dimensions, NDE results, and pressure/leakage test reports.

1.2.6 District supplied components

- New cast iron piston rings, if replacement is required after inspection.

1.2.7 District QC inspections

Contractor shall give the District five working days advance notification for the following inspections or tests to be witnessed by District personnel:

- Visual inspection of all components after complete disassembly (and after NDE of existing conditions).
- The pressure and leak tests of the assembled servomotors.

1.2.8 Drawings

Contract Drawings:
- 6F 180906 Application of distributor servomotor stroke limiting
- RR-17SMBM-001 C1-C7 Wicket Gate Servo Cylinder Bore Measurements – Site Record Sheet
- 17WGSP-002 – C1-C7 Wicket Gate Servo Piston Diameter Measurements – Site Record Sheet

Reference Drawings:
- 4490-QT-1 26” Dia. Servomotor Cylinder
- 4490-QW-1 General Arrangement of Gate Operating Cylinder
- 4490-PX-5 26” Dia. Piston
- 4490-QR-5 Piston Rod - Gate Operating Cyl.
- 4490-SD-1 Gate Operating Cylinder Head
- 4490-HQ-5 Fork End
- WTSA – C1-C7 Wicket Gate Servo Piston Leakage Test Assembly

Note: The Servomotor Cylinder ID and Piston OD, shown on drawings 4490-QT-1 and 4490-PX-5 respectively, have been modified since original construction. Refer to
1.3 PROJECT SCHEDULE

A milestone schedule for the first Unit shall be prepared by Contractor and submitted for District review within 7 days of Contract execution.

The anticipated dates that the servomotors for each unit will be ready for pick up from Rocky Reach Dam are shown below.

<table>
<thead>
<tr>
<th>UNIT</th>
<th>ANTICIPATED READY TO PICK UP DATE</th>
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</thead>
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<tr>
<td>1\textsuperscript{st} Unit</td>
<td>Upon Issuance of Notice to Proceed</td>
</tr>
<tr>
<td>2\textsuperscript{nd} Unit</td>
<td>Anticipated April 17, 2020</td>
</tr>
<tr>
<td>3\textsuperscript{rd} Unit</td>
<td>Anticipated August 24, 2020</td>
</tr>
<tr>
<td>4\textsuperscript{th} Unit</td>
<td>Anticipated October 28, 2020</td>
</tr>
<tr>
<td>5\textsuperscript{th} Unit</td>
<td>Anticipated July 23, 2021</td>
</tr>
<tr>
<td>6\textsuperscript{th} Unit</td>
<td>Anticipated September 10, 2021</td>
</tr>
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# SECTION 01 30 00

## ADMINISTRATIVE REQUIREMENTS

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SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

1.0 GENERAL

This section describes the requirements and procedures for all correspondence, document and Drawing submittals to the District. The District reserves the right to revise or modify these procedures as necessary to facilitate proper and consistent communication between related parties.

This section provides examples of forms to be used by the Contractor in the Appendices. Alternate forms may be used subject to approval by the District’s Engineer.

1.1 Project Correspondence

The District utilizes a specific “Smart Number” file naming convention described further in Serialized Correspondence Numbering (Smart Numbering), see paragraph 1.1.8 of this section.

The following Project correspondence will be utilized for the Contract:

1.Serialized Letters
2.Serialized Request for Information (RFI) Contractor only
3.Serialized Speedy Memos (District only)
4.Records of Conversation (telephone and personal contacts)
5.Emails
6.Serialized Contractor Submittals
7.District Submittal Responses

1.1.1 Serialized Letters

Serialized letters shall be used for all correspondence from any Project entity that addresses **Contract scope, budget, schedule, or other contractual issues**.

Serialized letters shall be sent to the District’s Project Manager and followed immediately by the signed original via regular or express mail, by courier service, or hand carried to the District.

If the District determines that there is any change to the Contract scope, budget, or schedule, then the District will issue a Field Work Order/Change Order (FWO/CO).
All Serial Letters shall include (on the first page):

1. Contract Number: **20-05, Rocky Reach C2-C7 Wicket Gate Servomotor Refurbishment**
2. Sender’s Name
3. Sender’s Company Name
4. Date: MM/DD/YYYY
5. Serial Letter Number

Additionally, each page shall indicate page number and total number of pages, formatted as “Page X of Y”, and Serial Letter Number.

1.1.2 Serialized Request for Information (RFI) Contractor only

Request for Information (Appendix 4.2) shall be used by the Contractor for requesting **information, clarifications, or interpretations of the Contract**.

It is Contractor’s responsibility to initiate a Serialized Letter identifying any contractual changes that may result from an RFI response.

RFI’s shall be emailed to the District’s Project Manager. No hard copy is required.

1.1.3 Serialized Speedy Memos, District only

Speedy Memos (Appendix 4.3) shall be used for **requesting information, clarifications, or interpretations of the Contract**.

Speedy Memos shall be emailed to the District’s Project Manager. No hard copy is required.

1.1.4 Telephone and Personal Contact Records

Telephone and personal contact discussions (except meeting minutes) and particularly those which could result in a change to scope, schedule or budget, shall be recorded by the Contractor on a Record of Conversation Form (Appendix 4.4). Completed Record of Conversation Forms shall be emailed to the District’s Project Manager within three (3) calendar days of the conversation.

1.1.5 E-Mail Communications

Parties to the Project may use e-mail for items other than those identified in the list of Project correspondence.

**E-mail shall not be used for official correspondence as direction to proceed or to alter terms of the Contract.**

E-mail may be used as a mechanism to transmit courtesy copies of other documents. Each e-mail shall contain a single subject. In rare cases similar subjects may be
combined in a single e-mail if necessary for understanding. The Subject Line shall reference the:

1. Contract Number: **20-05**
2. Project Name: **Rocky Reach C2-C7 Wicket Gate Servomotor Refurbishment**
3. The email contents clearly described.

### 1.1.6 Serialized Contractor Submittals

Contractor shall send all submittals to the District’s Project Manager and Engineer. Each serialized submittal will have included only one (1) document or drawing per Serialized Submittal. Documents shall be **CHECKED** by Contractor before being submitted. All drawings shall be stamped by Contractor as having been checked, including the name or initials of the person checking the drawings and the date.

If documents are changed subsequent to the original submittal, Contractor shall send the revised document(s) in accordance with the naming convention, for information or review and approval consistent with the original requirement.

Resubmittals shall have the same number and title as the original submittal with a numeric revision code (example: 2005-S-001-1)

**New submittals shall not be combined with resubmittals.**

### 1.1.7 District Submittal Response

The Engineer will respond to submittals within two (2) weeks after submission to the District.

Engineer will mark submittal **Status** with the following:

- **ANR** – Approval Not Required
- **APP** – Approved
- **AAR** – Approved as Revised
- **NOT APP** – Not Approved
Engineer will mark **Action** required by the Contractor with the following:

- **NR** – No Action Required
- **REV** – Revise and Resubmit for Approval
- **RSR** – Revise and Submit for Record
- **SR** – Submit for Record (As-built, O&M Manual, QA/QC Docket)

<table>
<thead>
<tr>
<th>STATUS</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>Approval Not Required</td>
<td>Applicable to documents submitted for information only.</td>
</tr>
<tr>
<td>Approved</td>
<td>Document is approved for use.</td>
</tr>
<tr>
<td>Approved As Revised</td>
<td>Document is approved for use with incorporation and resolution of comments.</td>
</tr>
<tr>
<td>Not Approved</td>
<td>Document is not approved for use.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACTION REQUIRED</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Action Required</td>
<td>No action on the part of Contractor is required.</td>
</tr>
<tr>
<td>Revise and Resubmit for Approval</td>
<td>Contractor shall revise, take required action and incorporate comments, if any and repost the document addressing all comments within two (2) weeks of the District’s posted response.</td>
</tr>
<tr>
<td>Revise and Resubmit for Record</td>
<td>Contractor shall revise and resubmit the document as part of the Final Record Documents.</td>
</tr>
<tr>
<td>Submit for Record (As-built, O&amp;M Manual, QA/QC Docket)</td>
<td>Contractor shall resubmit the document as part of the Final Record Documents.</td>
</tr>
</tbody>
</table>

Any work undertaken by the Contractor prior to submittal Approval shall be at the Contractor’s sole risk.

1.1.8 **Serialized Correspondence Numbering (Smart Numbering)**

Serial numbers shall begin at 001 for each type of correspondence from each sender. Numbers shall be consecutive. Correspondence initiated by Subcontractors shall be routed and tracked through the Contractor. The Engineer shall approve all deviations to this requirement. If a deviation is agreed to in writing, then Contractor shall ensure that Subcontractors shall be bound by the same requirements as the Contractor, as provided herein.
Correspondence Smart Numbers and file names for this Project shall be formatted as follows:

<table>
<thead>
<tr>
<th>DOCUMENT TYPE</th>
<th>NUMBERING CONVENTION AND FILE NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Letter</td>
<td>2005–L–001-0</td>
</tr>
<tr>
<td>RFI</td>
<td>2005–RFI-001-0</td>
</tr>
<tr>
<td>Speedy Memo</td>
<td>2005–M–001-0</td>
</tr>
<tr>
<td>Submittal</td>
<td>2005–S–001-0</td>
</tr>
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Examples: **2005-L001-0**

- **2005**: (Bid Number)
- **L–001**: (Correspondence Type and Sequential Number)
- **0**: (Revision number)
- **L–001-0**: Letter Number 001, Revision 0;
- **M–009-C1**: Speedy Memo number 9, revision C1 (Revisions are with alpha characters (0, A, B, C…) If a Memo needs to be revised prior to a response, then use sequential numbering, following that revision alpha character.
- **S-054-3**: Submittal Number 054, Revision 3 (Revision with sequential numeric character (0,1, 2, 3….)

1.1.9 Address Information

All Project correspondence shall be addressed as follows:

**US Mail**

- Public Utility District No. 1 of Chelan County
- ATTN: Mitchell Clark, Project Manager, BID 20-05
- P.O. Box 1231
- Wenatchee, WA 98807-1231

**Physical Address, (Fed Ex, UPS, oversized mail)**

- Mitchell Clark, Project Manager
- Public Utility District No. 1 of Chelan County
- Rocky Reach Dam
- 5000 Hwy 97A North
- Wenatchee, WA 98801
1.2 Submittals

1.2.1 General
The Contractor is required to provide information to support its engineering, design, fabrication, and installation process and provide this information in sufficient detail to demonstrate the Work is being performed in accordance with these Contract Documents.

The required submittals are not limited to those on the List of Required Submittals (Appendix 4.1). The District or Engineer may, at any time throughout the duration of the Contract, require the Contractor to provide additional information pertaining to the Work. The Contractor shall comply by providing the information in the form of a Submittal.

Documents and Shop Drawings shall be emailed to the District’s Project Manager and Engineer for information, or review and approval. Contractor shall supply complete documentation and Shop Drawings for the equipment provided in accordance with the format and procedures established by these Contract Documents.

Non-paper submittal items such as hardware, samples, material items, etc. that cannot be sent electronically shall be sent to the Project Manager and include Submittal Number, Contract Number, Contract Name and Description.

Documents shall be submitted in a timely manner to support Contractor’s engineering, design, and fabrication process. All delays due to untimely submittal of documents to District shall be the responsibility of the Contractor. Contractor shall arrange the submittal schedule such that no more than 25 documents or Shop Drawings are posted per week, except as otherwise approved in writing (in advance), by the Engineer, or in the case of As-Built Drawings.

It is in the Contractor’s best interest to post submittals and resubmittals far enough in advance of the District’s submittal review time so that mobilization and construction start dates are not delayed while waiting for submittal Approval. The District has the right to delay work if required pre-construction submittals are not Approved.

The Contractor shall furnish descriptions and drawings of the equipment it proposes to furnish, showing the dimensions of all parts, the materials from which the parts are to be made, the general arrangement and cross-sectional assembly, critical tolerances, and an outline drawing of each assembly of equipment to be supplied. Drawings shall show overall dimensions, limiting space requirements, and foundation requirements, in accordance with the submittal schedule.

The Contractor shall provide equipment documentation and Shop Drawings with overall dimensions and interfaces with other equipment in sufficient detail for the District’s
Engineer to review with the intent of verifying the Work is being performed in accordance with these Specifications. Where both design calculations and drawings are prepared, they shall be posted together to allow complete review.

Materials shall be identified with the corresponding code or serial numbers referring to the standards of ASTM or to other standards recognized in the United States of America.

Contractor shall be responsible for the accuracy and correctness of dimensions and details on the documents and Shop Drawings. The Approval of such documents and Shop Drawings by the Engineer shall not relieve Contractor of this responsibility.

Any document required by this Specification which is produced by a sub-supplier, or subcontractor shall first be REVIEWED and noted as being APPROVED by Contractor and then submitted to the Engineer for review and Approval.

Contractor shall assume all responsibility and risk for conditions due to any error on Shop Drawings regardless of drawing Approval or field acceptance of material or delivery.

Any fabrication or other Work performed in advance of Contractor’s receipt of review comments and Approval shall be entirely at Contractor’s risk. After review, Contractor shall not deviate in any way from the design, details, dimensions, or other information shown on the drawings without the written Approval of Engineer.

1.2.2 Documents and Drawings

Documents and drawings submitted by the Contractor, as a minimum, shall refer to information specifically required in the Submittal Schedule and elsewhere in this Specification. This information shall include all drawings, diagrams, illustrations, manufacturer’s product data, catalog data, brochures, performance charts, and other information required to illustrate distinct portions of work.

Documents and Drawings shall include all the details necessary for fabrication, assembly, installation, repair, and maintenance of furnished items. The minimum drawings required are specified in individual sections of the Specifications. Contractor shall furnish detailed fabrication drawings (Shop Drawings) and procedures for installation and assembly of all items provided.

If standard drawings or catalog cut sheets are submitted, the applicable items and devices furnished shall be clearly marked, e.g., arrows pointing to text, text highlighted, and/or items enclosed with boxes, separating the intended item from others on the page.

1.2.3 Submittal Schedule

Contractor shall prepare and submit a Submittal Schedule inclusive of all Drawings, calculations, procedures, and other documentation specified in these Contract
Documents. The Submittal Schedule shall be prepared and submitted in Microsoft Excel (*.xls) or other approved file format. The Submittal Schedule shall reflect submittal number, revision, description, anticipated submittal date, actual submittal date, District reference number (if applicable) and specification section number.

The Submittal Schedule shall be updated and maintained over the course of the Contract. The Submittal Schedule shall be updated and resubmitted monthly to reflect changes and for Progress Meetings, or as requested by Engineer.

1.2.4 District’s Review

The purpose for requiring Contractor submittals is to permit the District’s Engineer to monitor the Contractor’s progress and to determine conformance with the intent of these Specifications.

Contractors and Subcontractors who use unapproved documents do so at their own risk and may be required to repeat activities that were performed if the document used is subsequently rejected by Engineer.

Submittals reviewed by the Engineer do not become Contract Documents and are not Field Work Orders/Change Orders (FWO/CO).

Engineer’s review, acceptance, or Approval of schedules, Shop Drawings, lists of materials, and procedures submitted or requested by the Contractor shall not add to the Contract amount and additional costs shall be solely the obligation of the Contractor.

The District will not be precluded, by virtue of review, acceptance, or Approval, from obtaining a credit for fabrication and/or construction savings resulting from allowed concessions in the Work or materials provided. Any savings shall be mutually agreed upon by the Engineer and the Contractor and evidenced by an executed FWO/CO.

The Engineer’s review of Contractor submittals is not intended to be a rigorous engineering analysis of the Contractor’s design or proposal. Engineer reserves the right to require the Contractor to make changes to Contractor’s submittals, which may be necessary, in their opinion, to make the Work conform to the provisions and intent of these Specifications. Any additional cost to correct a submittal, including work to maintain the schedule that may result from any delay to review a resubmittal, shall be solely the obligation of the Contractor.

The District will not be responsible for furnishing engineering or other services to protect the Contractor from additional costs accruing from submittals.

1.2.5 Ownership

All documents (i.e., Shop Drawings, data, manuals, calculations, schedules, etc., as well as plans and procedures for installation or testing) shall become the property of the District. The District shall have full rights to reproduce and submit to others any
document for bids on future projects, notwithstanding any indication otherwise on the Drawing or elsewhere.

1.2.6  Language

All documents (i.e. Shop Drawings, data, manuals, plans, procedures, calculations, schedules, digital photographs, etc.) submitted to the Engineer shall be in the English language. Dual language is acceptable on Drawings, provided all information is also provided in English. All numeric data shall use foot-pound-second system of units of measurements. All elevations shall be dimensioned in feet.

1.2.6.1  Project Record

The Contractor shall maintain at the jobsite, one (1) complete set of Contract Documents including all Drawings (Contract Drawings, Reference Drawings, and Shop Drawings), Specifications, Addenda, FWO/COs that are part of the Contract as awarded and one (1) complete set of all Contractor prepared drawings.

Each of these documents shall be clearly marked “Project Record Copy,” and shall be maintained in a clean and neat condition available for District and Contractor personnel, and shall not be used for any other purpose during the performance of the Work.

The Contractor shall record on the Project Record Copy all deviations in the actual work from the Contract Drawings, Reference Drawings or Shop Drawings. This shall include changes to the Work resulting from any Change Orders, or which may be required during assembly, installation, or inspection of the Work.

Information shall be recorded concurrently with construction progress within 24 hours after receipt of information that a change to a Contract Drawing, Reference Drawing, or Shop Drawing has occurred. Work shall not be covered or concealed until the change is recorded.

Preservation:

1. The Contractor shall maintain documents in a clean, dry, legible condition and in good order. Record documents shall not be used for in-the-field purposes.
2. Documents shall be made available at all times for observation by the District and the Engineer.

1.2.6.2  As-Built Contract and Shop Drawings

Upon completion of the Work, the Contractor shall revise the Contract and Shop Drawings to accurately reflect As-Built conditions. Those drawings (Contract and Shop) shall conform to the Contract.
1.2.6.3 As-Built Reference Drawings

Upon completion of the Work, the Contractor shall provide the District with one (1) hard copy set of the Reference Drawings, with any As-Built marks done as part of the Work, in conformance with this section.

District-approved, As-Built Drawings (Contract and Shop; and Reference as required) shall be included as a deliverable for Substantial Completion for the Contract, and shall conform to Contract Closeout Submittals, Record Drawings, and this section.

1.3 Project Schedules

1.3.1 General

The Contractor shall prepare and maintain Project schedules. Schedules shall be prepared and maintained in a District approved software format. Schedule logic shall be included and the critical path calculated and indicated.

Schedules shall be updated to reflect all changes and to show progress. Updates shall indicate actual progress against a baseline schedule established at the beginning of the project. Additionally, the Schedule shall be updated and resubmitted within five (5) working days of any change known by the Contractor that could cause actual completion dates to exceed the Contract Time specified in the Contract Documents.

The Contractor shall assign such forces and perform the Work in such a manner as to assure compliance with the Approved Schedule and the Contract. The Contractor shall inform the Engineer of any Schedule changes.

1.4 Contract Close-Out Submittals

1.4.1 Record Documents

Record documents shall be submitted to the District, and shall include the following:

1. QA/QC Documentation.
2. Certificates of Compliance and Proper Installation.

Furnish duplicate copies of warranty documents that are executed and transferable from Subcontractors, suppliers, and manufacturers as applicable.

2.0 PRODUCTS (NOT USED)

3.0 EXECUTION (NOT USED)
4.0 LIST OF APPENDICES

Appendix 4.1 – Required Submittals
Appendix 4.2 – Request for Information (RFI) Form, Contractor only
Appendix 4.3 – Speedy Memo Form, District only
Appendix 4.4 – Record of Conversation Form
# Appendix 4.1 Required Submittals

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>ACTIVITY/DESCRIPTION</th>
<th>REQUIRED DATE:</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 11 00</td>
<td>QA/QC Package, including required assembly dimensions, NDE results, and pressure/leakage test reports.</td>
<td>Prior to shipping any parts to site</td>
</tr>
<tr>
<td>01 11 00</td>
<td>Work plan and Work Location</td>
<td>Within 3 working days after Contract’s execution</td>
</tr>
<tr>
<td>01 11 00</td>
<td>Milestone Schedule for 1&lt;sup&gt;st&lt;/sup&gt; Unit</td>
<td>Within 7 days after Contract’s execution</td>
</tr>
<tr>
<td>01 30 00</td>
<td>Submittal Schedule</td>
<td>Within 7 days after Contract’s execution</td>
</tr>
<tr>
<td>01 30 00</td>
<td>As-Built Record Drawings (which includes Contract and Shop Drawings; and Reference Drawings; updated Bill of Materials)</td>
<td>Required for Substantial Completion</td>
</tr>
<tr>
<td>01 45 00</td>
<td>Contractor Quality Control (CQC) Plan, including an Inspection and Test Plan (ITP)</td>
<td>At least 7 days prior to the start of any Work</td>
</tr>
<tr>
<td>01 45 00</td>
<td>Sample of Non-Conformance Report</td>
<td>At least 7 days prior to the start of any Work</td>
</tr>
<tr>
<td>01 45 00</td>
<td>Test Results</td>
<td>Within 2 days of completion of each test</td>
</tr>
<tr>
<td>01 45 00</td>
<td>Certification of Compliance</td>
<td>Receipt of signed Certification of Compliance is required for shipping release by the District</td>
</tr>
<tr>
<td>01 66 00</td>
<td>Bill of materials (BoMs), packing list, and schedule of shipment and delivery</td>
<td>Prior to shipping any parts to site</td>
</tr>
<tr>
<td>01 66 00</td>
<td>Shipping Release</td>
<td>Prior to shipping any parts to site</td>
</tr>
<tr>
<td>05 05 23</td>
<td>Weld Procedures</td>
<td>Prior to start of any welding</td>
</tr>
<tr>
<td>05 05 23</td>
<td>Welder Qualifications</td>
<td>Prior to start of any welding</td>
</tr>
<tr>
<td>09 90 04</td>
<td>Painting Data Sheets, Reports and Documentation</td>
<td>Prior to shipping any parts</td>
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APPENDIX 4.2: Request for Information (RFI), Contractor only (Sample)

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<thead>
<tr>
<th>REQUEST FOR INFORMATION (RFI)</th>
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<tr>
<td>Date:</td>
</tr>
<tr>
<td>To:</td>
</tr>
<tr>
<td>From:</td>
</tr>
<tr>
<td>Project:</td>
</tr>
<tr>
<td>Regarding:</td>
</tr>
<tr>
<td><strong>O - Description/Request:</strong></td>
</tr>
<tr>
<td>By:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>Requested Due Date:</td>
</tr>
<tr>
<td>Attachments:</td>
</tr>
<tr>
<td><strong>A - Response:</strong></td>
</tr>
<tr>
<td>By:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>Attachments:</td>
</tr>
<tr>
<td>Follow Up:</td>
</tr>
<tr>
<td>Variance:</td>
</tr>
<tr>
<td>DWG/Spec Revision:</td>
</tr>
<tr>
<td>Field Work Order/Change Order</td>
</tr>
<tr>
<td>Other:</td>
</tr>
<tr>
<td>By:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
<tr>
<td><strong>B - Response:</strong></td>
</tr>
<tr>
<td>By:</td>
</tr>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>Attachments:</td>
</tr>
<tr>
<td>Follow Up:</td>
</tr>
<tr>
<td>Variance:</td>
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<tr>
<td>DWG/Spec Revision:</td>
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<tr>
<td>Field Work Order/Change Order</td>
</tr>
<tr>
<td>Other:</td>
</tr>
<tr>
<td>By:</td>
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<tr>
<td>Date:</td>
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APPENDIX 4.3: Speedy Memo Form (District only - Sample)

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<tr>
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</table>

<table>
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</table>

<table>
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<th>From:</th>
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</table>

<table>
<thead>
<tr>
<th>Project:</th>
<th>Contract 20-05 Rocky Reach C2-C7 Wicket Gate Servomotor Refurbishment</th>
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</table>

<table>
<thead>
<tr>
<th>Regarding:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Description/Request:</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Requested Due Date:</th>
</tr>
</thead>
</table>

<table>
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<tr>
<th>Attachments:</th>
<th>By:</th>
</tr>
</thead>
</table>

<table>
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<th>Date:</th>
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**Response Assigned To** (Names(s) and/or Organization(s)):

<table>
<thead>
<tr>
<th>Response A:</th>
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</table>

<table>
<thead>
<tr>
<th>Attachments:</th>
<th>By:</th>
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<th>Date:</th>
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</table>

**CCPUD Action Required:**

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<tr>
<th>Follow Up</th>
<th>Variance</th>
<th>Field Order / Change Order</th>
<th>DWG/Spec Revision</th>
<th>Other:</th>
</tr>
</thead>
</table>

<table>
<thead>
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<th>Action Completed:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>By:</th>
<th>Date:</th>
</tr>
</thead>
</table>

Bid No. 20-05 Rocky Reach C2-C7 Wicket Gate Servomotor Refurbishment  
Section 01 30 00  
Page 15 of 16
### APPENDIX 4.4: Record of Conversation (Sample)

<table>
<thead>
<tr>
<th>RECORD OF CONVERSATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check one:</td>
</tr>
<tr>
<td>- Phone Call</td>
</tr>
<tr>
<td>- Personal Contact</td>
</tr>
<tr>
<td>Date:</td>
</tr>
<tr>
<td>Time:</td>
</tr>
<tr>
<td>ROC No. 2005-XXX-R001-0</td>
</tr>
<tr>
<td>Project:</td>
</tr>
<tr>
<td>Contract 20-05 Rocky Reach C2-C7 Wicket Gate Servomotor Refurbishment</td>
</tr>
<tr>
<td>Person(s) Talked with:</td>
</tr>
<tr>
<td>Company / Phone Number:</td>
</tr>
<tr>
<td>Conversation Summary:</td>
</tr>
<tr>
<td>Significant Decisions:</td>
</tr>
<tr>
<td>Required Actions/Follow-up:</td>
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<tr>
<td>Signature:</td>
</tr>
<tr>
<td>Date:</td>
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<td>Distribution:</td>
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</tbody>
</table>

END OF SECTION 01 30 00
SECTION 01 45 00
QUALITY CONTROL

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SECTION 01 45 00

QUALITY CONTROL

1.0 GENERAL
Contractor is fully responsible for quality control and quality assurance of offsite and onsite work. Contractor shall have in effect at all times a Quality Control Plan for all phases of design, manufacture, testing, assembly, inspection and installation in accordance with ISO 9000/9001 and/or ANSI/ASQC E1 and ANSI/ASQC E2. Contractor shall ensure that all subcontractors and suppliers are held to the same requirements.

The Quality Control Plan shall include plans, procedures, equipment, and organization necessary to produce an end product, which fully complies with the Contract requirements.

The Contractor Quality Control (CQC) Plan shall clearly establish the authority and responsibility of those responsible for the administration, inspections, tests and plan execution. Organizational charts showing the relationship(s) among the Contractor’s and Subcontractor’s, management, engineering, purchasing and quality assurance/quality control shall be submitted to the District.

Contractor shall maintain the CQC Plan organizational chart to reflect the actual organization and lines of authority throughout the duration of the Contract.

Persons performing quality functions shall be qualified (e.g., by training, education, or experience) and have sufficient and well defined authority to enforce quality requirements, to identify, initiate, recommend, and provide solutions to quality problems and to verify the effectiveness of the solutions.

The Contractor shall monitor quality control of suppliers, manufacturers, material, equipment, services, site conditions, and workmanship to produce Work of specified quality.

The Contractor shall comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

The Contractor shall comply with manufacturer’s instructions and procedures, where applicable.

The CQC Plan shall be available for review by the District at any time.

District reserves right to audit Contractor facilities for purpose of verifying compliance with District approved CQC Plan.
Rework caused by failure to follow approved CQC Plan shall be at Contractor’s expense.

Additional specifications and standards for special processes are specified in other sections of this document. Specifications for special processes located in other sections of this document are “in addition to” those specified in this section. They do not relieve Contractor from compliance with this section.

Should conflicts arise between different or overlapping standards and the technical specifications, District reserves the right to determine the applicable standard.

2.0 REFERENCES

   American National Standards Institute (ANSI)
   ANSI/ASQC E1  Quality Program Guidelines for Project Phase of Nonnuclear Power Generation Facilities
   ANSI/ASQC E2  Guide to Inspection Planning

   International Standards Organization (ISO)
   ISO 9000 Series  Quality Management and Quality Assurance Standards

3.0 RESPONSIBILITIES AND QUALIFICATIONS

Program documents shall be available for review by Engineer. The Quality Control plans shall clearly establish the authority and responsibility of those responsible for the quality program administration, inspections, tests, and plan execution. Organizational charts, that show the relationship(s) among Contractor’s and Subcontractors’ management, engineering, purchasing, construction, and quality assurance/quality control personnel, shall be submitted for review. During the entire Contract period, Contractor shall maintain the quality plan organizational chart to reflect the actual organization and lines of authority. Persons performing quality functions shall be qualified (e.g., by training, education, or experience) and have sufficient and well defined authority to enforce quality requirements, to identify, initiate, recommend, and provide solutions to quality problems, and to verify the effectiveness of the solutions. If ISO certified, Contractor shall submit a copy of its ISO certification(s) and those of subcontractors as requested by the District.

4.0 QUALITY CONTROL DOCUMENTATION BY CONTRACTOR

Quality Control (QC) documents are deliverable items. Contractor’s QC representative shall approve the quality documentation and submit it to the District. Contractor shall assemble all QC records into two identical sets. Each page of each document submitted shall be clearly identified by District's name, the station and unit, the Contract number, the equipment description and specific identification, and the manufacturer's name and address. Each individual document shall be in the English language, be legible and shall have quality sufficient for reproduction. No information shall be recorded closer than 5/8 in. to the left hand binding edge or closer than 1/4 in. to any other edge of the
Documents that have been submitted with a previous submittal on this Contract shall not be duplicated. However, a statement shall be furnished to District itemizing, by document, the documents previously furnished for each item of equipment and the date of that previous submittal.

5.0 CONTROL OF NONCONFORMANCES

As a part of its Quality Control Plan, Contractor shall identify, mark and control nonconforming materials, assemblies and equipment that do not meet standards, criteria, drawings or specifications. Contractor shall segregate nonconforming materials to prevent their use until the non-conformance is corrected. Contractor shall identify and segregate all such nonconforming items when practical to prevent inadvertent use.

The responsibility for the resolution of nonconformances shall be identified in Contractor’s Quality Control Plan for all phases of the Work. Engineer and District shall review and approve of disposition for nonconformances that cannot be reworked to specified requirements. Dispositions may include accept-as-is with an appropriate price deduction, repair, replace, scrap, or rework.

A Nonconformance Report (NCR) shall be written and submitted to the District for each nonconforming item. As a minimum, the NCR shall 1) describe the system or part in nonconformance, 2) make reference to the controlling plan, specification, or procedure in violation, 3) include the Contractor’s recommended disposition, and 4) signatures of the Contractor’s Quality and Engineering personnel. An NCR Form shall be submitted to the District for approval prior to first use.

6.0 CORRECTIVE ACTION

Contractor’s Quality Control Plan shall provide a method for reporting and analysis of significant conditions adverse to quality, and of repetitive instances of unsatisfactory quality. Action shall be taken by Contractor to determine the cause and to correct conditions adverse to quality. Contractor shall be responsible for all corrective action to remedy any unsatisfactory quality condition for the Work performed under this Contract.

7.0 QUALITY CONTROL RECORDS

7.1 GENERAL

Contractor’s Quality Control Plan shall define the quality program records that must be prepared and maintained. Such records shall include data, which could be required for future reference. This includes but is not limited to, as-built conditions, material certifications, shop and site tests and inspections, equipment specifications, equipment
performance; systems test data, engineering calculations, design drawings, installation records, and warranty.

The quality program records shall be stored by Contractor, electronically. All records shall be made available to District upon request for inspection or District's use.

All records required by this specification, applicable regulations, codes and standards, or generated as a result of Contractor's QC Program shall be retained in Contractor's file for a period of six (6) years after District's final acceptance of the Work and Contract Closeout.

7.2 RECORDS SYSTEM

Contractor shall establish and maintain a record system that provides for the identification of materials and correlation of those manufacturing, test, and inspection records and certificates required by this specification and the documents referenced herein. Reports of nondestructive tests and other inspections shall be written for each test/inspection. All reports shall show the approved procedure and revision used, applicable standards, the results, the date, the identification of the inspector or tester, and the item examined.

7.3 QUALITY CONTROL PLANS

7.3.1 General

The Contractor shall furnish for review by the District, before start of any work, the Contractor Quality Control (CQC) Plan. The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The District will consider an interim plan for the first 15 days of operation. Work will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

7.3.2 Content of the CQC Plan

The CQC plan shall include, as a minimum, the following to cover all Work including work by subcontractors, fabricators, and suppliers:

a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC system manager who shall report to the project manager or someone higher in the Contractor's organization. Project manager in this context shall mean the individual with responsibility for the overall management of the project including quality and production.
b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.

c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities and responsibilities. Copies of these letters shall also be furnished to the District.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, off-site fabricators, suppliers and purchasing agents.

e. An Inspection and Test Plan (ITP). The Contractor shall submit a separate ITP for work performed in the shop and in the field.

f. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. Laboratory facilities will be subject to approval by the District.

g. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

h. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.

i. Reporting procedures, including proposed reporting formats.

j. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks and has separate control requirements. It could be identified by different trades or disciplines, or it could be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

k. The CQC Plan shall also contain procedures for Control of Inspection Records, Traceability of Materials, Test Procedures, Packaging and Shipping Procedures, Storage and Handling Instructions, Notification and Hold Points, and Procedures for Control of Nonconforming Items.

l. The Quality Control Plan shall list all factory inspections and tests for each material, part, component, assembly or piece of equipment provided. Contractor shall perform standard industry inspections and tests and those inspections and tests specified herein. Contractor shall maintain quality assurance data on the equipment throughout the manufacturing process as described. The documents
shall travel with the equipment and show inspection results including satisfactory, unsatisfactory, and disposition. This data shall be available for inspection at all times.

7.3.3 Acceptance of Plan

Acceptance of the Contractor’s CQC plan is required prior to the start of Work. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The District reserves the right to require the Contractor to make changes in his CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

The Contractor shall submit a written Contractor Quality Control (CQC) Plan, which addresses those sections of ANSI/ACQC E1 and E2 or ISO 9000 Series applicable to activities performed by Contractor as related to this contract.

The CQC Plan shall be subject to approval and verification by District.

After acceptance of the CQC Plan, the Contractor shall notify the District in writing a minimum of seven calendar days prior to any proposed change. Proposed changes are subject to acceptance by the District.

7.4 THREE PHASE QUALITY CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. The controls shall be adequate to cover all construction operations, including both on-site and off-site fabrication, and shall be keyed to the proposed construction sequence. The controls shall include at least three phases of control to be conducted by the CQC system manager for all definable features of work, as follows:

7.4.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work and shall include:

a. A review of each paragraph of applicable specifications.

b. A review of the contract plans.

c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.

d. A check to assure that provisions have been made to provide required control inspection and testing.

e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawing or submitted data, and are properly stored.

g. A review of the appropriate activity hazard analysis to assure safety requirements are met.

h. Discussion of procedures for constructing the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that phase of work.

i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Project Manager.

j. The District shall be notified at least 24 hours in advance of beginning any of the required action of the preparatory phase. This phase shall include a meeting conducted by the CQC system manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC system manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

7.4.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

a. A check of preliminary work to ensure that it is in compliance with Contract requirements. Review minutes of the preparatory meeting.

b. Verification of full Contract compliance. Verify required control inspection and testing.

c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards.

d. Resolve all differences.

e. Check safety to include compliance with and upgrading of the safety plan and hazard analysis. Review the hazard analysis with each worker.

f. The District shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC system manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.

g. The initial phase shall be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.
7.4.3 Follow-up Phase

Daily inspections shall be performed to assure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. The inspections shall be made a matter of record in the CQC documentation. Final follow-up inspections shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon or conceal non-conforming work.

7.4.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work as determined by the District if the quality of on-going work is unacceptable; or if there are changes in the applicable CQC staff or in the on-site production supervision or work crew; or if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

7.5 COORDINATION MEETING

Before start of Work, and prior to acceptance by the District of the Quality Control Plan, the Contractor shall meet with the Project Manager or Authorized Representative and discuss the Contractor's quality control system. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of Contractor's Management and control with the District's Quality Assurance inspection. Minutes of the meeting will be prepared by the District and signed by both the Contractor and the District’s Project Manager. The minutes shall become a part of the Contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

8.0 DISTRICT QUALITY INTERFACE

District or designee has the right to observe any of Contractor’s Work including design, manufacture, installation, shop inspections and tests. District will assign a Project Quality Supervisor. Contractor shall coordinate all quality activities with District’s Project Quality Supervisor. District may perform or have performed on its behalf factory inspections during manufacture and testing. District or designee shall be provided with free access to Contractor’s and Subcontractor’s shops for such inspections. Quality documents maintained in any language other than English shall be translated to the English language at Contractor’s expense.
District’s exercise of or failure to exercise, its right to inspect, witness, test, or audit, and any subsequent approval by District or designee, shall not relieve Contractor of its obligation to comply with the terms and conditions of the Contract. Any request for approval for deviations or nonconformance to the Contract documents or Quality Control Plan shall be made to District in writing. Any approval of such a request must be in writing.

9.0 WITNESS AND HOLD POINTS

9.1 GENERAL

Engineer will review Contractor’s quality and test plans and establish Witness and Hold Points for the purposes of witnessing inspections and tests. In addition to Witness and Hold Points based on Contractor's Shop and Field Inspection and Test Plans and Quality Program, District may establish temporary Witness and Hold Points to ensure resolution of temporary quality problems.

Preliminary Witness and Hold Points are established in the various parts of these specifications and shall be required as a minimum. Additional Hold Points may be established during review of Contractor’s shop and field manufacturing and test plans. All costs to Contractor due to establishment of additional Witness and Hold Points shall be borne by Contractor.

If Contractor fails to comply with the notice requirements for Witness and Hold Points, or District or designee cannot perform the inspection activity upon their arrival at Contractor’s facility, Contractor shall be responsible for all direct and indirect District expenses occasioned thereby.

9.2 WITNESS POINTS

Witness Points require receipt of notification in writing at least five working days in advance of the scheduled time of performance for activities within North America and at least ten working days notice shall be provided for activities outside North America. Engineer or designee may witness the event; however, Contractor may proceed without their presence if directed by Engineer. District may require activities performed without proper notification to be repeated for Engineer’s observation at Contractor's expense.

9.3 HOLD POINTS

Mandatory Hold Points are those tests, inspections, and operations which require witnessing by District and beyond which operations shall not proceed without written consent of District. Contractor’s failure to stop at a Hold Point may be cause for rejection of those items for which notification was not provided, or Contractor may be requested to repeat the operation at its expense. Hold Points require receipt of notification as may be appropriate for District to arrange for inspection.

END OF SECTION 01 45 00
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SECTION 01 46 00

INSPECTIONS AND TESTS

1.0 GENERAL

All materials, products and components manufactured, procured or fabricated by Contractor as part of the Work shall be subjected to such tests and inspections as may be necessary to verify compliance with the requirements of the Contract Documents.

All expenses for the tests shall be fully borne by Contractor. Contractor shall prepare and provide all labor, material and equipment necessary for performing specified or required tests. Contractor shall submit the test results to Engineer for approval.

Inspections shall be performed in accordance with the Contractor’s approved Quality Plans. Inspection results shall be part of the quality documentation. Follow up inspections shall be conducted after correction of all deficiencies. Satisfactory follow up inspections shall be completed and documented prior to beginning subsequent work that may be effected by the unsatisfactory work. Contractor shall not build upon or conceal non-conforming work.

Contractor shall perform tests as specified or required to verify that the control measures are adequate and the work meets the requirements of the Contract and applicable standards and codes.

Approval of assemblies, tests and test procedures, etc., and acceptance of pertinent test certificates, inspection or waiving of inspections and tests shall in no way relieve Contractor of its contractual obligations for furnishing the Work in accordance with the provisions of these Contract Documents.

Contractor shall perform checks and tests in accordance with the following:

1. Shop tests as specified in the Individual equipment Sections.
2. In Process tests
3. Manufacturer’s and/or Contractor’s standard practices and recommendations
4. Reference and applicable testing standards
5. Mutual agreement of Contractor, District and Engineer based on conditions or circumstances that may arise in the shop or in the field

Contractor shall evaluate test results and advise Engineer immediately of any discrepancy between test results and test limits or the failure of any item to meet the test criteria.
Contractor at their expense shall furnish, set up and operate test equipment and facilities both in Contractor’s shops and on site. If facilities for conducting required tests are unavailable, Contractor may conduct tests elsewhere or have them performed by an independent agency subject to approval by Engineer.

Unless noted otherwise, the individual performing the non-destructive tests (NDT) shall, as a minimum, be ASNT-TC-1A Level 2 qualified, with a minimum of one (1) year of recent experience at this level.

Contractor shall protect all material and equipment during and after testing and checking to provide that subsequent testing of other equipment or systems does not disturb, damage, or otherwise interfere with functional capability of material and equipment.

In the event that test results do not fulfill the requirements specified in these Specifications or that any defects attributable to Contractor are found in test results, Contractor shall repair, adjust or correct and retest at its own expense to the satisfaction of Engineer. Repairs shall be subject to the approval of Engineer. Even in such an event, Contractor shall be responsible for maintaining the Project Schedule and Contract Time.

2.0 REFERENCES

American Society of Mechanical Engineers (ASME)

PTC 18 Performance Test Code – Hydraulic Turbines

American Society for Non-Destructive Testing

SNT-TC-1A Personnel Qualification and Certification in Nondestructive Testing

American Welding Society

QC1 Standard for AWS Certification of Welding Inspectors

Institute of Electrical and Electronic Engineers

1147 IEEE Guide for the Rehabilitation of Hydroelectric Power Plants

1248 IEEE Guide for the Commissioning of Electrical Systems in Hydroelectric Power Plants

1249 IEEE Guide for Computer-Based Control for Hydroelectric Power Plant Automation

National Institute of Standards and Technology (NIST)
3.0 TEST PLANS

Contractor shall submit for review and approval a Shop Inspection and Test Plan for tests to be performed.

Inspection and Test Plans (ITP) shall include a description of the test, applicable standard, and Contractor’s Quality Control Plans reference, sample size to be tested, test procedure and pass/fail criteria. The plans shall be in accordance with Contractor’s Quality Control Plan. The test plans shall include the tests shown in Contractor’s Quality Control Plan and specified herein. Engineer will review the ITPs and establish Notification or Hold Points for those tests, inspections, and operations to be witnessed by District. Contractor shall incorporate the Notification and Hold Points into the ITPs and resubmit them to Engineer. The ITPs shall be revised as necessary if the planned tests change. Any changes to the ITPs shall be resubmitted for approval.

4.0 TEST DOCUMENTATION

4.1 TEST PROCEDURES

Contractor shall submit test procedures for review and approval by Engineer. Tests performed to procedures not “approved” by Engineer may be required to be repeated using approved procedures at the discretion of Engineer.

The Contractor shall perform tests specified or required to verify that control measures are adequate to provide a product which conforms to contract requirements. Testing includes operation and/or acceptance tests when specified. A list of tests to be performed shall be furnished as a part of the CQC plan. The list shall give the test name, frequency, specification paragraph containing the test requirements, the personnel responsible for each type of test, and an estimate of the number of tests required. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the Quality Control report for the date taken. Specification paragraph reference,
location where tests were taken, and the sequential control number identifying the test shall be recorded. Actual test reports may be submitted later, if approved by the Project Manager, with a reference to the test number and date taken. An information copy of tests performed by an off-site or commercial test facility shall be provided directly to the Project Manager.

At the completion of all work or any increment thereof, the CQC system manager shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved plans and specifications. Such a list of deficiencies shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and shall include the estimated date by which the deficiencies will be corrected. The CQC system manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Project Manager. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time stated for completion of the entire work or any particular increment thereof if the project is divided into increments by separate completion dates.

Contractor shall perform checks and tests in accordance with the following:

1. Tests as specified in these Specifications
2. Manufacturer’s and/or Contractor’s standard practices and recommendations
3. Reference and applicable testing standards
4. Mutual agreement of Contractor and Engineer based upon conditions or circumstances that may arise in the shop or in the field

Contractor shall evaluate test results and advise Engineer immediately of any discrepancy between test results and test limits or the failure of any item to meet the test criteria.

Contractor at their expense shall furnish, set up and operate test equipment and facilities in Contractor’s shops or on site. If facilities for conducting required tests are unavailable, Contractor may conduct tests elsewhere or have them performed by an independent agency subject to approval by Engineer.

Contractor shall protect all material and equipment during and after testing and checking to provide that subsequent testing of other equipment or systems does not disturb, damage, or otherwise interfere with functional capability of material and equipment.

In the event that test results do not fulfill the requirements specified in these Specifications or that any defects attributable to Contractor are found in test results, Contractor shall repair, adjust or correct and retest at its own expense to the satisfaction of Engineer. Repairs shall be subject to the approval of Engineer. Even in such an
event, Contractor shall be responsible for maintaining the Project schedule and milestone completion dates.

4.2 DOCUMENTATION

The Contractor shall maintain current records of quality control operations, activities, and tests performed, including the work of subcontractors and suppliers. These records shall be on an acceptable form and shall include factual evidence that required quality control activities and/or tests have been performed, including but not limited to the following:

   a. Contractor/subcontractor and their area of responsibility.

   b. Test and/or control activities performed with results and references to specifications/plan requirements. The control phase should be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.

   c. List instructions given/received and conflicts in plans and/or specifications.

   d. Work performed today, giving location, description, and by whom.

   e. Material received with statement as to its acceptability and storage.

   f. Identify submittals reviewed, with contract reference, by whom, and action taken.

   g. These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the District daily within 24 hours after the date(s) covered by the report, except that reports need not be submitted within 24 hours for days in which no work is performed. As a minimum, one report shall be prepared and submitted for every seven days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the Contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC system manager. The report from the CQC system manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.
4.3 CERTIFICATION OF COMPLIANCE FOR MATERIALS AND TESTS

Certification of Compliance for Materials and Tests shall be furnished for products manufactured to a recognized standard or code prior to the use of such products in the Work.

Engineer may permit use of certain products or assemblies prior to sampling and testing if accompanied by a certification of compliance.

Certifications shall be signed by the manufacturer of the product and certify that the components involved comply in all respects with the requirements of the Specifications. Products used on the basis of a certification of compliance may be sampled and tested at any time. The fact that a product is used on the basis of a certification of compliance shall not relieve Contractor of responsibility for ensuring that the products conform to the requirements of the Contract Documents. Products not conforming to such requirements shall be subject to rejection whether in-place or not.

Engineer reserves the right to refuse permission for use of products on the basis of a certification of compliance.

5.0 MEASUREMENT AND TEST EQUIPMENT

Measurement and test equipment (meters, gauges, torque wrenches, sensors, etc.) supplied or used by Contractor for taking or recording of data shall:

1. Have accuracy equal to or greater than stated acceptance criteria tolerances for test or work being performed.

2. Have current calibration with traceability to National Institute of Standards and Technology (NIST). Calibration records shall be maintained as required by ANSI E-2 and submitted if requested by District.

3. Have traceability to national standards in the country of use, subject to approval by Engineer, where such equipment is supplied and used in facilities outside the United States.

6.0 SHOP TESTS

6.1 GENERAL

All materials, components and assemblies shall be completely shop tested in accordance with Contractor’s Quality Control Plan, Shop Inspection and Test Plan, and these Specifications.

6.2 TEST PROCEDURES

Contractor shall prepare and maintain complete detailed procedures for all shop inspections and tests. Tests and procedures identified in the specific equipment
sections shall be prepared or translated to the English language and submitted for review and approval. Other procedures shall be available for inspection at Contractor’s facilities and submitted upon request.

6.3 INSPECTION AND TEST DOCUMENTATION

The results of all inspections and tests shall be fully documented. Results for tests identified in these specifications shall be included in complete test reports and submitted to Engineer for review and approval. Approval of test results is a requirement for shipping release.

6.4 SHOP ASSEMBLY

Each major component assembly shall be completely assembled in Contractor’s shop prior to shipment. Contractor shall verify that all assembled components are within dimensional tolerances shown on design drawings approved by Engineer.

During shop assembly, all components shall be carefully plumbed and leveled. While assembled, components shall be match marked for convenient installation at the Site. Major components shall be stamped with the Unit number. No components shall be exchanged between Units following shop assembly and testing. Connections between components shall be shop-dowelled, where practical, or rough-drilled for dowelling at the Site.

END OF SECTION 01 46 00
SECTION 01 66 00

PACKING, SHIPPING, DELIVERY AND STORAGE

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SECTION 01 66 00

PACKING, SHIPPING, DELIVERY AND STORAGE

1.0 PACKING, SHIPPING AND DELIVERY

1.1 PACKING

Materials and equipment provided shall be suitably packed for shipment and storage including protection from dirt, moisture, weather, and damage.

Packing shall prevent the entrance of rodents and insects. Silica gel or other desiccant shall be provided to keep the internal parts dry. Provisions shall be provided for easy access for replacement of desiccant.

Packaging shall have points of lift identified with “Lift Here” marked in appropriate locations. Packages with a total weight greater than 100 lbs shall be marked with the package weight. Packages containing hazardous materials shall have “hazardous” marked on the package and shall have the proper Material Safety Data Sheets, and instructions for safe handling and storage. Items, which have a limited storage life, such as epoxy resins, shall ship immediately before use.

Spare parts shall be packed and crated firmly enough to withstand storage for a minimum of ten years. Those in need of rust preventive treatment shall be so treated. The spare parts shall be packed separately from other articles. Packages of spare parts shall carry notation, which clearly indicates that the contents are spare parts and shall be accompanied by a list of contents, and directions for storing.

1.2 PACKING LIST

Contractor shall provide a complete bill of materials, packing list, and schedule of shipment and delivery for all shipments. The final list shall include identification of items packed in each crate or container, storage requirements, and individual and total container weight. A packing list shall be attached to each shipment. Due to security restrictions on site, crates or containers without complete packing lists sufficient to identify all material shipped will not be permitted on site.

1.3 TRANSPORT

Contractor shall bear all costs of loading, permitting, transporting, duties, fees, taxes, unloading and handling for all required materials to the Contractor’s facility and to the District’s Rocky Reach Dam.

Contractor shall prepare all shipping and customs documentation and pay all shipping charges. Contractor shall accept responsibility for all loss or damage incurred during shipment, unloading, and storage regardless of nature or cause.
Shipments shall be made FOB to:

Public Utility District No. 1 of Chelan County  
ATTN: Mitchell Clark, Project Manager  
Rocky Reach Dam - Riverside Warehouse 5000 Hwy 97A North Wenatchee  
WA  98801

1.4 SHIPPING RELEASE

No shipments shall be made without inspection and/or written release from District. Contractor shall request release for shipment with submittal of all required shipping and inspection documentation. Materials manufactured to documents that have not been submitted for review by Engineer, documents returned marked “Not Approved”, or documents marked “Approved as Revised” without resolution of comments, shall not be shipped without prior approval of Engineer. These requirements also apply to shipments from Contractor's subcontractors when item(s) are to be shipped directly to the jobsite.

1.5 FINAL INSPECTION AND CHECK OF RECORDS

Contractor shall be responsible for inspecting the item(s) and checking the applicable records, prior to shipment, to verify that all items comply with the Specification requirements.

1.6 DELIVERIES

All servomotor deliveries will be offloaded by the District. Deliveries at Rocky Reach shall be made between the hours of 7:00 a.m. and 3:00 p.m. PST/PDT Monday through Friday. Contractor shall notify District Project Manager two (2) business days in advance of freight deliveries going directly to the powerhouse for security inspection and coordination purposes. Freight deliveries directly to the powerhouse outside of the above mentioned times shall be coordinated three (3) business days in advance with the District.

END OF SECTION 01 66 00
2.0 APPENDICIES
A. CERTIFICATE OF COMPLIANCE
B. SHIPPING RELEASE
APPENDIX A - CERTIFICATE OF COMPLIANCE

Contractor:
The Manufacturer(s) and Fabricator(s) of materials and products incorporated into the Work and furnished as specified in the Contract Documents hereby certify that the materials listed below:
1. Are as specified in the Contract Documents.
2. Are in accordance with all applicable codes, and standards.
3. Have been inspected and tested as specified in the Contract Documents and supplier’s quality program and are satisfactory.

All quality assurance and quality control documentation is properly completed and on file as required by the Contract.

Material/part:

<table>
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<tr>
<th>Supplier’s Information</th>
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<tbody>
<tr>
<td>Company Name:</td>
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<tr>
<td>Name</td>
</tr>
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Supplier:
Supplier’s Location:
Item Released:

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<tr>
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<tr>
<td>District Notified:</td>
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</tr>
<tr>
<td>Copy of Packing List Attached</td>
<td>Yes</td>
</tr>
<tr>
<td>Carrier:</td>
<td>Way Bill No</td>
</tr>
<tr>
<td>Anticipated Ship Date:</td>
<td>Anticipated Arrival Date:</td>
</tr>
<tr>
<td>Remarks:</td>
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The undersigned certify that the above parts and materials meet all applicable parts of the specifications, drawings, and Contract.

<table>
<thead>
<tr>
<th>Supplier:</th>
<th>Date:</th>
</tr>
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<tbody>
<tr>
<td>Contractor:</td>
<td>Date:</td>
</tr>
</tbody>
</table>

Released for shipping:

| District (or designee): | Date: |

This certificate of compliance does not constitute acceptance by District and does not release Contractor or the supplier from their obligations under the Contract.
## APPENDIX B - SHIPPING RELEASE

<table>
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<th>Reason:</th>
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<table>
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<th>No</th>
<th>Reason:</th>
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<tr>
<th>Carrier:</th>
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<tr>
<th>Anticipated Ship Date:</th>
<th>Anticipated Arrival Date:</th>
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### Remarks:

**The undersigned certify that the above parts and materials meet all applicable parts of the Specifications, Drawings, and Contract.**

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<th>Supplier:</th>
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<tr>
<th>Contractor:</th>
<th>Date:</th>
</tr>
</thead>
</table>

### Released for shipping:

<table>
<thead>
<tr>
<th>District (or designee):</th>
<th>Date:</th>
</tr>
</thead>
</table>

**This shipping release does not constitute acceptance by District and does not release Contractor or the supplier from their obligations under the Contract.**
DIVISION 05

SECTION 05 05 23

WELDING AND WELD REPAIR

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SECTION 05 05 23

WELDING & WELD REPAIR

1.0 GENERAL

1.1 REFERENCES

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Section VIII, Division 1</td>
<td>Rules for Construction of Pressure Vessels</td>
</tr>
<tr>
<td>B31.1</td>
<td>Power Piping</td>
</tr>
<tr>
<td>Section IX</td>
<td>Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators</td>
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</table>

AMERICAN SOCIETY FOR NONDESTRUCTIVE TESTING (ASNT)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>ASNT SNT-TC-1A</td>
<td>Personnel Qualification and Certification in Nondestructive Testing</td>
</tr>
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AMERICAN WELDING SOCIETY (AWS)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
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<tbody>
<tr>
<td>D1.1</td>
<td>Structural Welding Code – Steel</td>
</tr>
<tr>
<td>D14.4</td>
<td>Specification for Welded Joints in Machinery and Equipment</td>
</tr>
<tr>
<td>QC1</td>
<td>Standard for AWS Certification of Welding Inspectors</td>
</tr>
</tbody>
</table>

1.2 SUBMITTALS

Engineer approval is required for all submittals with an "EA" designation; submittals having an "FIO" designation are for information only, and shall be submitted as stated below. Submittals shall follow the requirements of Sections 01 46 00 and 01 30 00, as applicable.

1.2.1 Data

1.2.1.1 Deviations from Codes, Procedures, and Drawings; EA

Deviations from codes, procedures, and drawings, a minimum of 14 calendar days prior to their use.

1.2.1.2 Welding Repair Procedure; EA

Welding repair procedure for major repairs a minimum of 7 calendar days prior to the Work.
1.2.1.3 Stress-Relief Time-Temperature Charts; FIO
Stress-relief time-temperature charts, a minimum of 30 calendar days after stress relieving parts.

1.2.2 Instructions

1.2.2.1 Welding/Brazing Procedures, Specifications and Reports of Test Results; EA
Welding/brazing procedures, specifications and reports of test results, a minimum of 30 calendar days prior to the Work.

1.2.2.2 Applicable prequalified weld procedures; EA
Applicable prequalified weld procedures in the Code or AWS, a minimum of 7 calendar days prior to the performance of Work.

1.2.3 Statements

1.2.3.1 Qualification of Welders/Brazers; EA
Qualification of welders/brazers, a minimum of 7 calendar days prior to their performance of work.

1.2.3.2 Certification of Welding Inspectors; FIO
Certification of welding inspectors and qualifications for all assistant inspectors, a minimum of 30 calendar days prior to their performance of Work.

2.0 DELIVERY, STORAGE, AND HANDLING

2.1 GENERAL
All filler metals, electrodes, fluxes, and other welding/brazing materials shall be delivered to the site in manufacturers’ original packages and stored in a dry space until used. Packages shall be properly labeled and designed to give maximum protection from moisture and to insure safe handling.

SMAW electrodes shall be handled, stored and conditioned as outlined in AWS D1.1.

2.2 MATERIAL CONTROL
Materials shall be stored in a controlled access, clean, dry area that is weather-tight and is maintained at a temperature recommended by the manufacturer. The materials shall not be in contact with the floor and shall be stored on wooden pallets or cribbing. Storage and handling practices of welding consumables shall be in accordance with the manufacturer’s recommendations, or the applicable portions of the Code or AWS D1.1, whichever is the most stringent.
2.3 DAMAGED CONTAINERS

Low-hydrogen steel electrodes shall be stored in their sealed shipping container. If the seal is damaged during shipment or storage, and the damage is not immediately detected, the covered electrodes in that container shall be rebaked in accordance with the manufacturer's instructions prior to issuance or shall be discarded. If a container is damaged in storage and the damage is witnessed, the electrodes from that container shall be immediately placed in a storage oven. The storage oven temperature shall be as recommended by the manufacturer or the welding material specification.

2.4 PARTIAL ISSUES

When a container of covered electrodes is opened and only a portion of the content is issued, the remaining portion shall, prior to use, be placed in an oven and dried in accordance with AWS D1.1.

2.5 DAMAGED MATERIALS

Damaged materials shall be discarded. All covered electrodes which are oil or water-soaked, dirty, or on which the flux has separated from the wire shall be discarded.

3.0 WELDING

3.1 GENERAL

All welding, welded joints and structures fabricated by welding shall meet the requirements specified below. Contractor shall ensure that suppliers comply with these requirements as they apply to the equipment being manufactured. Deviations from applicable codes, approved procedures, and approved detail drawings will not be permitted without prior written District approval. Materials or components with welds made offsite will not be accepted if the welding does not conform to the requirements of this Specification. Procedure shall be developed by Contractor for welding all metals included in the Work. Welding shall not be started until welding procedures, welders, and welding operators have been qualified.

Selection of welding processes and development of weld procedures is part of the design process established by Contractor which shall take into account the stress levels and use of the specific component. It is the responsibility of Contractor to ensure that weld joints are designed and sized in accordance with the most advanced engineering standards and practices for each class of equipment.

Structural and non-structural welds shall be designed, produced, qualified, inspected, and repaired in accordance with ASME Section VIII, Division 1 of the Boiler & Pressure Vessel Code.

Pipe and pipe related welds shall be designed, produced, qualified, inspected, and repaired in accordance with the ASME B31.1.
All welded components and assemblies, which are to be machined, shall be stress relieved prior to final machining. The stress relief shall be performed in accordance with the requirements of the applicable welding specification referenced above.

As a minimum, ‘Safe Practices’ as stated in Annex J of AWS D1.1 shall be followed. Fumes and gases produced from welding, cutting, and allied processes are prohibited within the Rocky Reach powerhouse. Contractor shall provide and use exhaust/filtration equipment of sufficient capacity to meet this requirement. Welding screens/curtains shall be used at site to protect the casual passerby from welding operations.

Peening shall not be used unless specifically approved by Engineer. Welding shall only be done on materials above 50°F on dry surfaces.

Short circuiting arc GMAW is prohibited.

3.2 WELDING PROCEDURES

Contractor shall prepare a complete schedule of welding procedures consisting of detailed procedure specifications for each structure to be welded. Welding shall not be performed without an approved welding procedure. All welding shall be performed by the electric-arc method which will exclude the atmosphere from the molten metal, by a process at least equal to that required by the latest edition of the Standard Qualification Procedure of the American Welding Society.

Welding Procedure Specifications (WPS’s) for all welds shall be qualified per ASME Section IX. Contractor shall prepare written WPS’s and PQR’s that specify all the essential variables in a format similar to the sample forms noted in ASME Section IX. All WPS’s shall be approved by Engineer prior to use for fabrication. Contractor shall allow a minimum of seven (7) full working days per WPS for approval.

Contractor shall ensure that approved WPS’s are in the presence of welding personnel prior to production welding and that the contents of the WPS are being followed.

3.3 QUALIFICATION OF WELDERS

Contractor shall be responsible for the quality of the work performed by its welding organization. Welding Performance Qualification (WPQ’s) records for all welding personnel shall be qualified per ASME Section IX. Contractor shall prepare written WPQ's that specify all the essential variables in a format similar to the sample forms noted in ASME Section IX. All welders, welding operators and tack welders shall be tested and qualified by Contractor in accordance to Section IX and shall have in their possession, a valid qualification record for the welding positions and welding processes to be used.
Field welder and welding operator’s qualification test record shall be furnished to Engineer prior to the commencement of the Work. Factory welder and welding operator’s certificates shall be furnished to Engineer prior to the commencement of the Work, if requested. Welder qualification test records shall be maintained and kept current by Contractor for the duration of the Work.

When there is a specific reason to question the welder’s ability to make welds in accordance with these requirements, District may request that the welder in question be retested. Contractor shall retrain or replace a welder if the welder cannot maintain the quality level as specified in these requirements to the satisfaction of Engineer.

3.4 WELDING EQUIPMENT

All welding equipment, such as welding machines, torches, transformers, cables, electrodes, etc., for welding at the factory and at site shall be of reputable make and maintained in such condition as to enable qualified welders, welding operators, and tack welders to follow qualified welding procedures. Consumable material (electrodes etc.) shall be provided by Contractor. Only low hydrogen electrodes shall be used for SMAW. Filler metals shall be chosen by Contractor to suit the base metal and process used in accordance with above referenced standards.

For site operations, welding machines and leads shall be grounded at all times in a manner to prevent damage to turbine and generator parts from welding currents.

3.5 WELDING SHOWN ON DRAWINGS

Drawings submitted to Engineer for approval shall indicate the presence of welds. The following information shall be shown on, or supplied with, the drawings for each welded joint:

- Type and size of weld - using AWS symbols,
- Weld procedure employed,
- Examination procedures and acceptance criteria applied.

Contractor shall also submit a welding map for each fabrication or assembly being welded, which identifies the associated welding process, WPS/PQR, and materials.

3.6 CONTROL OF DEFORMATIONS

Contractor shall prepare detailed welding instructions for the major joints and for the weld overlay that will be applied at Site, to minimize distortions in the pieces that won’t be post weld heat treated for stress relief. Provisions shall be made to permit the checking and control of deformations during the welding process. The maximum permitted deformation values shall be determined as a function of the component to be welded and the tolerances and the gaps of the assembled and operating Unit.
3.7 PREPARATION FOR WELDING

Members and sections to be joined by welding shall be cut accurately to size, with their edges sheared, flame-cut or machined to suit the required type of welding and to allow full penetration. The cut surfaces shall expose sound metal free from lamination or carburized material, or other injurious defects. The surfaces of members or sections to be welded shall be free from rust, grease, and other foreign matters for a distance of at least 2 inches back from each edge of the weld.

3.8 TEMPORARY WELDS

Temporary welds shall be made under the controlled conditions prescribed herein for permanent work. All temporary welds shall be made by using welders qualified for permanent work as specified elsewhere in these Specifications. Preheat furnished for the temporary welds shall be the same as for permanent welds. In making temporary welds, arcs shall not be struck in other than weld locations. Each temporary weld shall be removed after serving its purpose, ground flush with adjacent surfaces and the surfaces restored to their original condition.

3.9 TACK WELDS

Tack welds that are to be incorporated into the permanent work shall be subject to the same quality and qualification requirements as the permanent welds. Preheating shall be performed as specified for permanent welds. Such tack welds shall be cleaned and fused thoroughly with the permanent welds. Multi-pass tack welds shall have cascaded ends. Defective tack welds shall be removed before permanent welding.

3.10 EXAMINATION OF WELDS

3.10.1 General

Contractor shall submit procedures for review which shall define the areas, extent, and type of nondestructive examination employed.

Inspectors shall be qualified to Level II or Level III of the American Society of Non-Destructive Testing. All welding shall be inspected to ensure that the welds conform to the requirements of this specification, the appropriate sections of ASME Section VIII, IX or AWS D14.4 and the approved welding procedure.

Inspections and tests shall be performed as necessary prior to welding, during welding, and after welding to ensure material and workmanship meet the requirements specified. In addition to visual inspection, all welds on weld-fabricated parts shall be given complete nondestructive examination. Supplemental radiographic examination shall include examination of critical high-stressed areas where interpretations of other methods are unclear, or where the integrity of the weld is doubtful.
Contractor shall perform, as a minimum, the following weld examinations at Contractor’s expense. Examinations shall be performed and accepted as specified herein.

<table>
<thead>
<tr>
<th>Weld Type</th>
<th>Test Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>All structural and nonstructural welds</td>
<td>Magnetic particle or liquid penetrant inspections</td>
</tr>
<tr>
<td>All pipe and related welds</td>
<td>Magnetic particle or liquid penetrant inspections</td>
</tr>
<tr>
<td>Full penetration welds on material thickness &gt; 1”</td>
<td>Full volumetric exam (either ultrasonic or radiographic), in addition to MT or PT</td>
</tr>
</tbody>
</table>

The nondestructive standards of welds shall be clearly indicated on the Drawings. Contractor shall submit all NDE records to District. The detailed program for nondestructive examination of welds shall be submitted for review.

The procedure for making, evaluating and reporting the radiographic testing (RT), ultrasonic testing (UT), magnetic particle inspection (MT), and liquid penetrant inspection (PT) of the welds shall conform to the requirements of ASME Section VIII, Division 1.

3.10.2 District Quality Assurance

All welds shall be subject to inspection by District. District reserves the right to require Contractor to conduct nondestructive examination of any weld by any of the methods listed below, at Contractor’s expense. District may require that coupons be cut from any location in any joint when doubt as to soundness cannot be resolved by non-destructive inspection.

As directed by District, nondestructive examination of designated welds shall be performed by one of the following methods:

1. Liquid penetrant inspection
2. Magnetic particle inspection
3. Ultrasonic inspection

The District reserves the right to hire a 3rd party inspection agency to perform a radiographic inspection on any weld. If a defect/s is located as a result of the radiographic inspection, Contractor shall pay for all costs associated with the repairs and the radiographic inspection.
3.10.3 Nondestructive Testing

3.10.3.1 General
Weldments shall be subject to inspection to determine conformance with the requirements of ASME and AWS Codes, and provisions stated elsewhere in these Specifications. All welds and nondestructive testing shall be inspected by a Contractor’s inspector. NDT personnel qualifications shall be submitted. Methods and procedures of inspection, the evaluation of indications/defects and acceptance standards for indications/defects shall conform with these Specifications. Inspection reports shall compare the “as-found” condition with the applicable standard.

3.10.3.2 Visual Examination (VT)
Prior to the use of any material, it shall be thoroughly visually examined to determine its suitability for use. All completed welds shall be cleaned and examined carefully for insufficient throat or leg sizes, cracks, undercutting, overlap, excessive convexity or reinforcement, contour and finish and other surface defects to insure compliance with the respective section of AWS D14.4. Defects shall be corrected or repaired as provided in the respective section of ASME Section VIII, IX or AWS D14.4. The individual performing the VT tests shall be an AWS certified welding inspector (CWI) with a minimum of 2 years experience within the last 3 years.

3.10.3.3 Liquid Penetrant Inspection (PT)
The penetrant tests and inspection shall conform to the requirements of Appendix 8, Section VIII of the ASME Code, except that penetration time is 15 minutes minimum below 50°F. All indications exceeding the acceptance standards permitted by Appendix 8 of the ASME Code shall be repaired and reinspected per Appendix 8, at Contractor’s expense. The individual performing the PT tests shall, as a minimum, be ASNT-TC-1A Level 2 qualified, with a minimum of one (1) year of current experience at this level.

3.10.3.4 Magnetic Particle Inspection (MT)
The magnetic particle tests and inspection shall conform to the requirements of Appendix 6, Section VIII of the ASME Code. All indications exceeding the acceptance standards permitted by Appendix 6 of the ASME Code shall be repaired and reinspected per Appendix 6, at Contractor’s expense. The individual performing the MT tests shall, as a minimum, be ASNT-TC-1A Level 2 qualified, with a minimum of one (1) year of current experience at this level.

3.10.3.5 Ultrasonic Inspection (UT)
The services of an independent party shall be employed to ultrasonically test (UT) as specified herein. The individual performing the work shall, as a minimum, be ASNT-TC-1A Level 3 qualified, or Level 2 qualified with three (3) years of current experience at this level. Appropriate test blocks simulating the material to be tested shall be prepared.
for equipment calibration. Appropriate test heads shall be prepared and used with the ultrasonic equipment. The ultrasonic tests and inspection shall conform to the requirements of Appendix 12, Section VIII of the ASME Code. All indications exceeding the acceptance standards permitted by Appendix 12 of the ASME Code shall be repaired and reinspected per Appendix 12, at Contractor’s expense. A certified written report by the independent party shall be prepared and submitted to District. The report shall set forth the UT procedures used, equipment used, a mapping of the areas tested and interpretation of results, specifically addressing lack of bond or fusion, cracks, voids, and slag, the size and description of surface discontinuities and their accumulated total surface area relative to the inspected surface area, and the size and description of subsurface discontinuities.

3.10.3.6 Radiographic Examination (RT)

The services of an independent party shall be employed to radiographically test (RT) as specified herein. The individual performing the work shall, as a minimum, be ASNT-TC-1A Level 3 qualified, or Level 2 qualified with three (3) years of current experience at this level. The examination and acceptance criteria shall be in accordance with UW-51, Section VIII of the ASME Code.

3.11 SURFACE FINISH OF WELDS

Welds shall in general be treated so that they display good appearance and a surface suitable for painting. Welds shall show uniform sections, smoothness of weld metal, feather-edges without overlap, and freedom from porosity. Structural welds shall be ground and blended to avoid stress raisers. All welds which require radiographic or other nondestructive examination shall be dressed by chipping and grinding as required for good interpretation of radiographic film or interpretation by other weld examination methods. Details of weld dressing and finishing and NDT testing shall be shown on the drawings submitted for approval.

END OF SECTION 05 05 23
DIVISION 09

SECTION 09 90 04

PAINTING

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Appendix 099004-1 – Paint System Data Sheet
DIVISION 09 – FINISHES

SECTION 09 90 04 - PAINTING

PART 1 – GENERAL

1.01 SUMMARY
A. Section Includes
1. This Section describes the performance requirements for painting systems.

1.02 REFERENCES

<table>
<thead>
<tr>
<th>Description</th>
<th>Standard/Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Institute of Steel Construction (AISC) / The Society for Protective Coatings (SSPC)</td>
<td></td>
</tr>
<tr>
<td>AISC 420-10/SSPC-QP 3 Certification Standard for Shop Application of Complex Protective Coating Systems</td>
<td></td>
</tr>
<tr>
<td>ASTM International (ASTM)</td>
<td></td>
</tr>
<tr>
<td>A380/A380M Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems</td>
<td></td>
</tr>
<tr>
<td>D3359 Standard Test Methods for Measuring Adhesion by Tape Test</td>
<td></td>
</tr>
<tr>
<td>D4285 Standard Test Method for Indicating Oil or Water in Compressed Air</td>
<td></td>
</tr>
<tr>
<td>D4417 Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel</td>
<td></td>
</tr>
<tr>
<td>D4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers</td>
<td></td>
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<tr>
<td>ASTM D5162 - 15 Standard Practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates</td>
<td></td>
</tr>
<tr>
<td>International Organization of Standards Laboratories (ISO)</td>
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<tr>
<td>ANSI/ISO/IEC 17025 General requirements for the competence of calibration laboratories</td>
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<tr>
<td>NACE International (NACE)</td>
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<td>SP0188 Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates</td>
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<td>National Conference of Standards Laboratories (NCSL)</td>
<td></td>
</tr>
<tr>
<td>ANSI/NCSL Z540.3 Requirements for the Calibration of Measuring and Test Equipment</td>
<td></td>
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<tr>
<td>The Society for Protective Coatings (SSPC)</td>
<td></td>
</tr>
<tr>
<td>PA 1 Shop, Field and Maintenance Painting of Metals</td>
<td></td>
</tr>
<tr>
<td>PA 2 Procedure for Determining Conformance to Dry Coating Thickness Requirements</td>
<td></td>
</tr>
</tbody>
</table>
1.03 SUBMITTALS

A. The following submittals shall be submitted in accordance with Sections 01 30 00 and 01 45 00.
B. Contractor shall submit, for review and approval, the following submittals:

1. Product Data Sheets
   a. For each paint system used herein, Contractor shall furnish the current Paint System Data Sheets (PSDS), Technical Data Sheets, and paint colors available (where applicable) for each product used in the paint system. A sample PSDS form is appended to the end of this Section.
   b. Contractor shall submit required information on a system-by-system basis, and provide copies of paint system submittals to the coating applicator. Indiscriminate submittal of manufacturer's literature only is not acceptable.

2. Reports and Documentation
   a. Inspection reports and data collection sheets for surface preparation and profile checks, coating thickness measurements for each coat, ambient conditions, and other pertinent records.
   b. Warranties: Manufacturer’s product warranties and additional warranties to be provided by Contractor.
   c. Certificate of Compliance.

1.04 ENVIRONMENT REQUIREMENTS

A. Do not apply paint in extreme heat, temperatures below 40 degrees F, nor in dust, smoke-laden atmosphere, damp or humid weather.

B. Measurement of Ambient Conditions
   1. Measuring ambient conditions entails obtaining an air temperature, surface temperature, percent relative humidity, and dew point temperature. The coating manufacturers shall be consulted to establish air temperature and relative humidity ranges (max & min) outside of which the coating materials should not be applied and cured. The ambient conditions must be obtained, documented, and compared with the coating manufacturer’s established ranges.

   2. Air temperature, relative humidity, and dew point shall be determined by instrumentation, including psychrometers that give direct read-out recordings of humidity and dew point. Measurements with these instruments shall be taken before Work begins each day and periodically throughout the day. The minimum frequency shall be every 4 hours, but the readings can be more often if weather conditions appear to be changing.

   3. Final blast cleaning and coating application shall not take place unless the surface temperature is at least 5 °F higher than the dew point temperature, and the relative humidity is less than 85%.

   4. Determination of surface temperatures shall be via surface temperature thermometers consisting of a bimetallic sensing element that is shielded from drafts, or direct reading thermocouple-type thermometers.

   5. All readings shall be taken at the actual location of the Work. However, for general readings the coldest and warmest point on the structure shall be used to ensure that coatings are not applied outside of their temperature limitations.
1.05 GENERAL REQUIREMENTS

A. Contractor furnished items and existing painted components which are reused shall be cleaned, prepared and coated as specified herein, unless otherwise approved by District.

B. Existing Unit components are painted with metal containing coatings that require special attention by Contractor.

C. Contractor shall provide surface treatment, priming, corrosion protection and painting of the equipment furnished. Unless otherwise specified, the surface preparation, coating and recoating, painting and curing shall be carried out in accordance with the latest manufacturer’s written instructions as approved by District, and these specifications.

D. All finished surfaces shall present a neat, pleasing appearance. Contractor shall supply full details regarding the extent of which cleaning, blasting, priming and painting will be carried out.

E. For each painting and coating system, the required surface preparation, prime coat, intermediate coats, and finish coat thicknesses are specified in the Protective Coatings System Schedule. Contractor shall apply coating systems in accordance to the coating manufacturers’ recommended dry-film thicknesses (DFT) or the specified minimum thicknesses, whichever is greater. Discrepancies between the specified DFT and the manufacturers’ recommended DFT shall be brought to the attention of District prior to applying coatings.

F. Contractor shall provide materials for the specified painting system, including primer, intermediate, and finish coats by the same manufacturer. Thinners, cleaners, driers and other additives shall be as recommended by the paint manufacturer for the particular coating system.

G. Coating application shall not be performed under adverse ambient conditions as specified by the product manufacturer that may affect the life, performance or appearance of the coating. Contractor shall follow the recommendations of the coating manufacturer for the selection of spray equipment, brushes, rollers, cleaners, thinners, mixing, drying time, temperature, and humidity of application, and safety precautions.

H. Contractor shall demonstrate that ambient conditions are within the product manufacturer’s guidelines by recording temperature, relative humidity, etc. from recently calibrated instruments at the time coatings are applied.

I. The establishment and maintenance of a calibration system to control the accuracy of all measuring and test equipment shall be in accordance with MIL-STD-45662. Calibration interval shall be one (1) calendar year or less, and clearly labeled on each measuring device.

J. Work as specified in this section shall conform to the requirements of SSPC-PA 1, Shop, Field and Maintenance Painting of Steel.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. The letter code will be found following the generic descriptions of materials outlined in the Specifications. General office addresses are given; contact them for information regarding their representative nearest the Project site.
B. MANUFACTURER CODE A - COATINGS MANUFACTURERS (Able to supply most heavy-duty industrial coatings and architectural paints):

1. International Protective Coatings, Houston, TX;
2. Carboline International;
3. Ameron International;
4. Devoe & Raynolds, Louisville, KY;
5. Tnemec Coatings, Kansas City, MO;
6. Sigma Coatings, Harvey, LA;
7. Sherwin Williams, Cleveland, OH; and
8. Steelcote®, St. Louis, MO.

2.02 COMPONENTS

A. Paint Materials

1. Products shall comply with federal, state, and local requirements limiting the emission of volatile organic compounds.
2. Material Quality: Manufacturer’s highest quality products shall be used and shall be suitable for the intended service.
3. Materials including primer and finish coats shall be produced by the same paint manufacturer. All paint materials shall have been manufactured within one year of the date of use. All paint shall be from the same batch number.
4. Thinners, cleaners, dryers, and other additives shall be selected and used as recommended by paint manufacturer of the particular coating.
5. Paint products as follows are listed according to their approximate order of appearance in the paint systems:

<table>
<thead>
<tr>
<th>Product</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epoxy Primer or Topcoat</td>
<td>Surface tolerant, two-component epoxy capable of 4 to 6 mils per coat, as recommended by the coating manufacturer.</td>
</tr>
<tr>
<td></td>
<td>MANUFACTURER CODE: A</td>
</tr>
<tr>
<td>Polyurethane Enamel</td>
<td>Two-component, aliphatic or acrylic based polyurethane, semigloss finish.</td>
</tr>
<tr>
<td></td>
<td>MANUFACTURER CODE: A</td>
</tr>
</tbody>
</table>

B. Colors

1. Color coding will be supplied by District prior to equipment fabrication.
2. Colors shall match existing plant piping color designations for the different types of service (air, water, oil, etc).
3. Formulate with colorants free of lead or lead compounds.
C. Protective Coating System Schedule

1. System No. 3 – Metals Exposed to Atmosphere:
   Shop or field apply this system to all atmospheric exposed metal surfaces and the following items or areas:
   a. Painted surfaces of Servomotors

<table>
<thead>
<tr>
<th>Surface Prep.</th>
<th>Paint Material</th>
<th>Min. Coats, Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent Cleaning, (SP1)</td>
<td>Epoxy Primer</td>
<td>1 coat, 4 MDFT</td>
</tr>
<tr>
<td></td>
<td>Epoxy Topcoat</td>
<td>1 coat, 4 MDFT</td>
</tr>
<tr>
<td></td>
<td>Polyurethane Enamel</td>
<td>1 coat, 3 MDFT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total 11 MDFT</td>
</tr>
</tbody>
</table>

Note: Solvent Clean (SP1) areas for spot repairs of shop-applied coating in accordance with paint manufacturer’s recommendations.

PART 3 – EXECUTION

3.01 GENERAL

A. Surface Preparation Inspection
   1. Inspect and provide substrate surfaces prepared in accordance with these Specifications and the printed directions and recommendations of paint manufacturer whose product is to be applied.
   2. Surfaces which do not meet the specified requirements shall be corrected at Contractor’s expense.

B. Assessing Compressed Air Cleanliness
   1. Compressed air used for blast cleaning, blow down, and coating spray atomization must be free from oil and moisture contamination. Contaminants of this type are effectively transferred to the surface with the air and blast cleaning media (abrasive) or by mixing it with the coating during application. Adequate moisture and oil traps shall be used on all lines to ensure that the air is dry and oil free so it does not interfere with the quality of the Work.
   2. Compressed air shall be tested and results interpreted for oil and water in accordance with ASTM D4285. Testing shall be conducted after air compressor(s) have been idle for over 30 minutes, prior to use for the Work. Records of testing shall be kept on file for District review, as requested.
   3. A thorough inspection of the surface after blast cleaning for signs of moisture or oil contamination shall be made, and these results need to be correlated with the results of the blotter test. In addition, the proper functioning of in-line moisture and oil traps shall be evaluated on a comparative basis from the results of the blotter test.
C. Factory Finished Items
   1. Repair abraded or otherwise damaged areas on factory-finished items as recommended by coating manufacturer. Carefully blend repaired areas into original finish. If required to match colors, provide full finish coat in field.

D. Surfaces not Requiring Painting
   Unless otherwise stated herein or shown, the following areas or items will not require painting:
   1. Concrete surfaces;
   2. Nonferrous and corrosion-resistant ferrous alloys such as copper, bronze, monel, aluminum, chromium plate, atmospherically exposed weathering steel, and stainless steel, except where:
      a. Required for electrical insulation between dissimilar metals;
      b. Aluminum and stainless steel are embedded in concrete or masonry, or aluminum is in contact with concrete or masonry.
   3. Concrete encased steel pipe;
   4. Existing unpainted ferrous components to be reused;
   5. Machined surfaces, nameplate placards, electric motors, pumps and their couplings, valves, instruments, etc.;
   6. Plastic and rubber materials; and
   7. Grease fittings.

E. Protection of Items not to be Painted
   1. Remove, mask, or otherwise protect aluminum surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted.
   2. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces.
   3. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process.
   4. Mask openings in motors to prevent paint and other materials from entering the motors.
   5. Protect all surfaces adjacent to or downwind of work area from overspray. Contractor shall be responsible for any damage resulting from overspray.

F. Other Surfaces
   Machined surfaces shall be protected with a rust preservative material suitable for the anticipated shipping and storage conditions.

G. Touch-Up
   Field touch-up of items left unpainted in the fabricators shop, such as facing surfaces at bolted connections, areas which were masked at field weld joints and surface damage which occurred during shipping and erection shall receive the same coating system specified herein or as approved by District. The touch-up coating and
painting shall be carried out as per these Specifications and reach the minimum DFT stipulated.

H. Application Safety

1. Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees) and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours. Safety provisions will conform to U.S. Department of Labor, Occupational Safety and Health Act, any equivalent state law, and all other applicable federal, state, county, and local laws, ordinances, and codes.

2. Contractor will comply with all safety training requirements promulgated or required for this project.

3. Where more than one coat of a material is applied within a given system, alternate color to provide a visual reference that the required number of coats have been applied.

3.02 SURFACE PREPARATION

A. Existing Painted Surfaces to be Repainted

1. Detergent wash and freshwater rinse.

2. Clean surfaces to be painted with a solvent to remove all visible oil, grease, dirt, or other soluble contaminants to SP1.

3. Apply one spot coat of specified primer to bare areas, overlapping prepared existing coating.

4. Apply one full finish coat of specified primer to entire surface.

5. If an aged, plural component material is to be top coated, contact coating manufacturer for additional surface preparation requirements.

3.03 PAINTING

A. Mixing

1. Prepare using all the contents of the container for each component as packaged by paint manufacturer.

2. No partial batches will be permitted.

3. Do not use multiple-component coatings that have been mixed beyond their pot life.

4. Provide small quantity kits for touchup painting and for painting other small areas.

5. Mix only components specified and furnished by paint manufacturer.

6. Do not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.

7. Keep paint materials sealed when not in use.
B. Application

1. General
   a. Allow sufficient time between coats to assure thorough drying of previously applied paint. Coating manufacturer shall be consulted to determine recoating intervals based from site conditions.

2. Shop-Painted Surfaces
   a. Handle and install shop-painted metals in a manner that reduces damage to the protective coating. Repair damaged coatings in accordance with this section and the coating manufacturer’s printed directions. Excessive damage to the exterior coating, as determined by District, will require an additional field-applied finish coat to achieve uniform appearance of the coating.
   b. Verify that coating applied to pipe will not interfere with pipe joint gasket sealing or coupling tolerances.
   c. Areas that require field welding shall be masked 4” on either side of the joint.

3. Prime Coat
   a. Prime coats found to be incompatible with finish coats or applied to improperly prepared surfaces shall be removed. The prime coat shall be re-applied at no additional cost to District.
   b. Apply prime coat immediately after blast cleaning and before any surface rusting occurs, or any dust, dirt, or any foreign matter has accumulated. Reclean surfaces by blast cleaning that have surface colored or become moist prior to coating application.

4. Stripe Coat
   a. Stripe coat all welds, edges, angles, and other irregular, difficult to reach surfaces.
   b. Stripe coat shall consist of one coat, brush applied, 3 mils minimum dry film thickness.
   c. Stripe coat color shall contrast primer to allow visual verification of application.

5. Intermediate and Finish Coats
   a. After proper application of the prime coat and stripe coats, apply one (1) full coat of the intermediate coat.
   b. Remove coats found to be incompatible with prime coats or applied to improperly prepared surfaces.
   c. Apply each coating application with paints that differ noticeably in coloration from each other on succeeding coating applications to ensure even coverage by shading or tinting, as appropriate, for the paint material and color. Shading or tinting shall be done by the paint manufacturer.
   d. Finished surfaces shall be free from holidays, pinholes, bubbles, runs, drops, ridges, waves, laps, excessive or unsightly brush marks, and variations in color, texture, and gloss. Verify absence of holidays,
pinholes, gaps, etc. by appropriate testing. Recoat and retest any areas failing these tests.

6. Film Thickness and Coverage
   a. Coverage is listed as either total minimum dry film thickness in mils or the spreading rate in square feet per gallon. Per coat determinations are listed as MDFTPC or SFPGPC.
   b. Number of Coats: Minimum required irrespective of coating thickness. Additional coats may be required to obtain minimum required paint thickness, depending on method of application, differences in manufacturers' products, and atmospheric conditions.
   c. Maximum film build per coat shall not exceed coating manufacturer's written recommendations.
   d. Film Thickness Measurements and Electrical Inspection of Coated Surfaces:
      1) Perform with properly calibrated instruments.
      2) Recoat and repair as necessary for compliance with the Specifications.
      3) All coats will be subject to inspection by District and coating manufacturer's representative.
   e. Give particular attention to edges, angles, flanges, and other similar areas, where insufficient film thicknesses are likely to be present, and ensure proper millage in these areas.

7. Damaged Coatings, Pinholes and Holidays
   a. Feather edges and repair in accordance with recommendations of paint manufacturer.
   b. Apply finish coats, including touchup and damage-repair coats, in a manner which will present a uniform texture and color-matched appearance.

8. Unsatisfactory Application
   a. If item has improper finish color or insufficient film thickness, clean and top coat surface with specified paint material to obtain specified color and coverage. Obtain specific surface preparation information from coating manufacturer.
   b. Hand or power sand visible areas of chipped, peeled, or abraded paint, and feather the edges. Follow with primer and finish coat in accordance with the Specifications. Depending on extent of repair and appearance, a finish sanding and topcoat may be required.
   c. Evidence of runs, bridges, shinners, laps, or other imperfections shall be cause for rejection.
   d. Repair defects in coating system per written recommendations of coating manufacturer.
   e. Leave all staging up until District has inspected surface or coating. Replace staging removed prior to approval by District.
3.04 HANDLING AND TRANSPORTING OF COATED ITEMS

A. When packing for shipment, use spacers and other protective devices to separate items to prevent damaging the coated surfaces during transit and unloading. If wood spacers are used, remove wood splinters and particles from the coated surfaces after separation. Use padded chains or ribbon binders to secure the loaded items and minimize damage to coated surfaces.

B. Handle coated items with care during loading/unloading, installation, and erection operations to minimize damage. Do not place or store coated items on the ground or on top of other work unless ground or work is covered with a protective covering or tarpaulin. Place coated items above the ground upon platforms, skids, or other supports.

C. Cover coated items one-hundred percent (100%) with protective coverings or tarpaulins to prevent deposition of road salts, fuel residue, and other contaminants in transit.

APPENDICES

Appendix 099004-1 – Paint System Data Sheet
Appendix 099004-1 – Paint System Data Sheet

Attached products technical data sheet (if applicable) to this sheet for each paint system submittal.

<table>
<thead>
<tr>
<th>Paint Material (Generic)</th>
<th>Product Name/Number (Proprietary)</th>
<th>Min. Coats Coverage</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Provide manufacturer’s recommendations for the following parameters at temperature (F)/relative humidity:

<table>
<thead>
<tr>
<th>Temperature/RH</th>
<th>50/50</th>
<th>70/30</th>
<th>90/25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Induction Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pot Life</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Shelf Life</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Drying Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curing Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. Recoat Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. Recoat Time</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Provide Manufacturer’s recommendations for the following:

- Mixing Ratio: ___________________________________________________________
- Maximum Permissible Thinning: __________________________________________

<table>
<thead>
<tr>
<th>Item</th>
<th>Temperature Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
</tr>
<tr>
<td>Ambient</td>
<td></td>
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<tr>
<td>Surface</td>
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<tr>
<td>Surface Profile Requirements</td>
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</tr>
</tbody>
</table>

Attach additional sheets detailing manufacturer’s recommended storage requirements and holiday testing procedures.

END OF SECTION 09 90 04