

PROVISIONAL SPECIFICATIONS

Sludge Pumping Stations No. 1 and 2 Rehabilitation

Contract No. PC-780

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SECTION 01030 – PROVISIONAL

SUMMARY OF WORK

Provisional Specification Summary:

1.3.01: Add Subsection

1.6.01: Add Subsection

(Update text as shown.)

1.3 DESIGN ENGINEER: Add Subsection “1.3.01: General Description of Work to be Performed”

The following items will be completed as part of the rehabilitation of Sludge Pumping Stations No. 1 and 2:

Demolition and removal of sludge pumps (SP-13, 14, 15, 16, 17, 19, 20), plunger pump 18, sludge piping, valves and supports, water supply piping, valves and supports, and associated appurtenances in SPS1 and SPS2.

Demolition of pump and motor concrete pad supports of pumps SP-13 through SP-20 at SPS1 and SPS2 and replacement with new concrete pads.

Installation of new sludge pumps, sludge piping, valves and supports, water supply piping, valves and supports, and associated appurtenances in SPS1 and SPS2.

Installation of metering equipment and digital timers on new sludge piping lines in SPS1 and SPS2.

Demolition and removal of air compressor system control panels and associated piping in SPS1.

Demolition and removal of air system panel and associated piping in SPS2.

Increase duct floor opening size at SPS2 Mechanical Room floor.

Demolition of existing monorail at SPS1 Pump Room.

Removal and replacement of seal water booster pumps and associated piping in SPS1 and SPS2.

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Removal and replacement of sump pumps and associated piping in SPS1 and SPS2.

Demolition of Heating, Ventilating and Air Conditioning (HVAC) Unit, ductwork and controls in SPS1 and SPS2.

Independent heating, ventilating and dehumidification systems will be designed to supply air to the electrical room and mechanical room of SPS-1. SPS-1 basement pump area ventilation will be established per NFPA 820 requirements. This would avoid classifying the dry well areas as Class 1, Division 2, Group D.

Independent heating, ventilating and dehumidification systems will be designed to supply air to the MCC room, electrical room, elevator machine room toilet room and mechanical room of SPS-2. SPS-2 basement pump area ventilation will be established per NFPA 820 requirements. This would avoid classifying the dry well areas as Class 1, Division 2, Group D.

Replacement of exterior doors and wall repairs in SPS1 and SPS2.

New Roofing and related accessories (flashing, coping, etc.) for SPS1 and SPS2.

New roof access ladder for SPS1.

Replacement of selected existing louvers and provision of new louvers for SPS1 and SPS2 as shown on construction drawings.

Rehabilitation of the bathroom in SPS2, including replacement of existing plumbing fixtures, bathroom accessories, flooring, wall finish, and suspended ceiling.

Replacement of existing sink and base cabinet with new sink and base cabinet in the basement of SPS1.

Cleaning and repainting of guardrail and handrail at SPS1 and SPS2.

Replacement of existing removable railing on the first floor of stairwells at SPS1 and SPS2.

Installation of new canopy system over outdoor transformers at SPS1. New canopy includes concrete foundations, steel columns, steel beams, steel joists, steel deck, and canopy drainage system (gutter and downspout).

Concrete sidewalk removal and installation at SPS1 and SPS2.

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Construction of new site drainage structures and site grading at SPS1 and SPS2.

Removal and installation of protection posts at SPS1 and SPS2.

Earthwork, including soil erosion control, at SPS1 and SPS2.

Rehabilitation of electric elevator and associated equipment in SPS2.

Demolition of the existing outdoor transformers, primary switches and busways at SPS1.

Demolition of existing electrical elements in SPS1 and SPS2.

Installation of new outdoor primary switches, transformers busways and indoor low voltage switchgear in SPS1.

Provide temporary power to Ovation and any equipment, controls or instrumentation that must remain in service during the construction period.

Installation of a new unit substation in SPS-2.

Installation of new Motor Control Centers (MCC) in SPS1 and SPS2.

Installation of electrical conduits, cables and receptacles in SPS1 and SPS2.

Installation of lighting panels and light fixtures in SPS1 and SPS2.

Relocation of the power feeds to Movable Dams 1 & 2 and Sluice Gates 41 through 44 from Scum Building #8 to the new MCCs in SPS1.

Installation of all electrical conduits, boxes, cables, disconnect switches, wiring devices and control items required to complete the installation of all items installed, replaced or modified under this project.

All other electrical work and appurtenances.

Demolition of existing instrumentation and control (I&C) elements in SPS1 and SPS2.

Installation and configuration of new instruments in SPS1 and SPS2.

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Installation of new Instrumentation Control Panels in SPS1 and SPS2.

Installation of new instrument wiring to the existing Ovation RIO cabinets in SPS1 and SPS2.

Installation of a new Remote Operator Station (ROS) in SPS2.

Reprogramming of the Ovation system to facilitate any instrumentation and control system modifications.

1.6 WORK SEQUENCE: Add Subsection “1.6.01: Sequence of Construction Events”

Prior to commencement of work, the Contractor shall provide a construction sequence for the work outlined in subsection 1.3.01 to the Engineer for review. Upon the Engineers approval, the Contractor may proceed with the rehabilitation work.

Contractor is responsible for developing a system shutdown and isolation plan for the work under consideration. The plan shall include at a minimum:

- Equipment included in shutdown
- Valves, gates, or temporary isolation devices to be used
- Temporary diversions, if necessary
- Temporary power and loads
- Description of any phasing work
- Calculations as necessary
- Schedule with durations of isolations/shutdowns

The system shutdown and isolation plan shall be reviewed and approved prior to the commencement of work.

Shutdowns of the Sludge Pumping Stations may not occur at the same time to ensure at least four of the Primary Circular Clarifiers No. 13-18 will be in service at all times.

Contractor shall apply for request for shutdown of Primary Circular Clarifiers No. 13 and 14.

Shut down Sludge Pumping Station No. 1.

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Begin rehabilitation work on Sludge Pumping Station No. 1 outlined in subsection 1.3.01.

Once rehabilitation work has been completed, tested and start-up completed on Sludge Pumping Station No. 1, request Primary Circular Clarifiers No. 13 and 14 and Sludge Pumping Station No. 1 to be back in service.

Contractor shall apply for request for shutdown of Primary Circular Clarifiers No. 15 and 16.

Shut down Sludge Pumping Station No. 2.

Begin rehabilitation work on Sludge Pumping Station No. 2 outlined in subsection 1.3.01.

Once rehabilitation work has been completed, tested and start-up completed on Sludge Pumping Station No. 2, request Primary Circular Clarifiers No. 15 and 16 and Sludge Pumping Station No. 2 to be brought back in service.

Shutdowns of the Sludge Pumping Stations must be coordinated through DWSD.

End of Provisional Section

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SECTION 02140 – PROVISIONAL

DEWATERING

Provisional Specification Summary:

- 1.1: *Add grounding water control system to the specification*
- 3.2: *Add grounding water control system to the specification*
- 3.4: *Add grounding water control system to the specification*

(Update text as shown.)

1.1 SCOPE

Replace the following text: “design of dewatering systems”, with “design of dewatering or groundwater control systems” in the 1st sentence of the paragraph

3.2 PREPARATION

Replace the following text: “dewatering systems” to “dewatering or groundwater control systems in this paragraph.

3.4 PERFORMANCE

Replace the following text: “with dewatering systems” with “with dewatering or groundwater control systems” in the 1st sentence of the 4th paragraph.

End of Provisional Section

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SECTION 02211 – PROVISIONAL

EXCAVATING, FILLING AND GRADING

Provisional Specification Summary:

- 2.2.05: *Modify text as shown*
- 2.2.06 *Modify text as shown*
- 2.2.07 *Modify text as shown*
- 2.2.08 *Modify text as shown*
- 2.2.09 *Modify text as shown*

(Update text as shown.)

2.2.05 Bank-run Gravel: **Revise** reference to Current MDOT 2003 Standard Specifications for Construction

2.2.06 Class II Granular Material: **Revise** reference to Current MDOT. 2003 Standard Specifications for Construction

2.2.07 Select Borrow: **Revise** reference to Current MDOT 2003 Standard Specifications for Construction

2.2.08 Sand: **Revise** reference to Current MDOT 2003 Standard Specifications for Construction

2.2.09 Aggregate Base Material: **Revise** reference to Current MDOT 2003 Standard Specifications for Construction

End of Provisional Section

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SECTION 03100 – PROVISIONAL

CONCRETE FORMWORK

Provisional Specification Summary:

- 1.2.01 *Add references to the list*
- 1.4.01 *Add Paragraph*
- 2.1.01 *Add new paragraph 2.1.01*
- 3.1.01 *Revise text*
- 3.1.02 *Add Paragraphs*
- 3.1.04 *Add Paragraph*

1.2.01 Governing Standards. **Add** the following references to the list:

ACI SP-4, “Formwork for Concrete.”

ACI 305, “Hot Weather Concreting.”

ACI 317, “Standard Specifications for Tolerances for Concrete Construction and Materials.”

ACI 350, “Code Requirements for Environmental Engineering Concrete Structures.”

1.4.01 Drawings and Data. **Add the following text to 1st paragraph:**

Submit all formwork and shoring shop drawings and their associated calculations. The shop drawings and the associated calculations shall be stamped by a Professional Engineer registered in the State of Michigan.

Add the following new paragraph:

2.1.01 Formwork Design Requirements – General. Produce shop drawings showing details of form type including tunnel and shaft forms, methods of form construction erection and removal, design computations, location of form joints, form ties, and shoring. Keep a copy of drawings in field office during form erection.

Provide and design formwork to support vertical and horizontal loads and lateral pressure resulting from placement and vibration of concrete in accordance with ACI - 347.

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Provide and design formwork to locate bracing which will maintain form stability, and to comply with the tolerances specified.

Provide and design formwork to anticipate deflection and creep due to weight and pressure of fresh concrete and construction loads. Camber shall be designed into the formwork to compensate for anticipated deflection and creep due to the weight and pressure of the fresh concrete, prestressing loads, and construction loads.

Provide and design forms with openings to allow placement and consolidation of concrete without segregation. Provide drop chutes or drop pipes to prevent accumulation of hardened concrete on forms and reinforcement above fresh concrete and to prevent concrete segregation.

Provide and design forms to conform to expansion and construction joint locations indicated, and to match architectural lines.

External corners shall be chamfered $\frac{3}{4}$ -inch unless otherwise noted.

Forms for all exposed surfaces shall be such as to provide an as-cast concrete surface, and equivalent to a rough form finish as specified in Section 10.2.1 of ACI 301.

3.1 INSTALLATION. Change the last sentence of the 1st paragraph from: “...complying with the following ACI 347 limits” to read “...complying with the following ACI 117 limits”.

3.1.02 Placement. Add the following paragraphs:

During cold weather remove ice and snow from within the forms. Do not use de-icing salts. Do not use water to clean out forms unless formwork and concrete construction proceed within heated enclosed areas.

Obtain approval before framing openings in structural members, which are not indicated on Drawings.

Install waterstops continuous without displacing reinforcement. Install waterstop a minimum of 2 inches clear of reinforcing steel. Tie through hogrings or grommets to reinforcing steel.

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3.1.04 Removal of Forms. Add to the following paragraph:

Submit calculations, based on in-situ concrete strength and modulus at the time of form removal, to demonstrate that the fresh concrete can sustain all construction loads that act upon it without over-stress and excessive deformation.

End of Provisional Section

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SECTION 03200 – PROVISIONAL

CONCRETE REINFORCEMENT

Provisional Specification Summary:

- 1.2.01 Add text
- 1.3.02 Replace subsection
- 1.4.01 Replace text
- 2.1.06 Add new Paragraph 2.1.06
- 3.2.01 Revise Text
- 3.2.02 Add Paragraph

(Update text as shown.)

1.2.01 Governing Standards.

After ACI SP-66, Add: “ACI Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.”

Before ACI 318 Add: “ACI 301, “Specifications for Structural Concrete” “

After ACI 318 Add: “ACI 350, “Environmental Engineering Concrete Structures.”

1.3.02 Testing Agency Services. **Replace subsection with the following:**

Employ, at contractor’s expense, an independent testing agency acceptable to the Engineer to perform specified tests, which include testing of existing reinforcing steel as required, and other services required for quality assurance. Testing agency shall meet ASTM E329 requirements.”

1.4.01 Drawings and Data. **Replace the following portion of the paragraph:**

“... shall be included as provided in Master Specification Section 01330.”

With

“... shall be included as provided in the Specifications herein.”

Add the following new paragraph:

2.1.06 Mechanical Couplers. Dowel Bar Replacements (D.B.R.) - Positive-locking, straight or taper-threaded bars and couplers to develop at least 125 percent of the

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specified yield strength of the reinforcing bar. Flanged coupler with nail holes for form attachment and internal coupler thread protection. System shall possess a current and valid International Code Council Evaluation Service Report. Acceptable Manufacturers: Erico Lenton, Form Saver; Dayton Richmond, DB-SAE; or as approved.

3.2.01 Placement.

Add the following paragraph:

“Lap splices, embedment lengths and standard hooks to be in accordance with “Lap Splice, Embedment Length and Standard Hooks” dimension table on the Structural Legend and General Notes sheet of the contract drawings.”

Add the following paragraph: “Place, support, and secure reinforcement against displacement. Do not deviate from required position. Comply with CRSI's recommended practice for placing reinforcing bars. As a minimum, tie alternate bar intersections.”

Replace the 3rd paragraph on page 03200-7:

“For concrete surfaces exposed to sewage and sewage atmosphere, and

with the following:

“Reinforcing steel cover requirements to be in accordance with “Typical Reinforcing Bar Clearance Table” on the Structural Legend and General Notes sheet of the contract drawings.”

Replace the 8th paragraph on page 03200-7:

“Welded wire fabric designated as load-carrying reinforcement shall be overlapped wherever successive mats or rolls are continuous in such a way that the overlap measured between outermost cross wires of each fabric sheet is not less than the spacing of the cross wires plus 2 inches (5.08 cm) It shall be supported as required for reinforcing bars.”

with the following:

“Welded wire fabric designated as load-carrying reinforcement shall be overlapped wherever successive mats or rolls are continuous in such a way that the overlap

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shall be at least two full meshes. It shall be supported as required for reinforcing bars”

Do not field-cut reinforcement without the Engineer's permission.

Clean reinforcement of loose rust, mill scale, ice, earth, and other material, which affect bond with concrete.

3.2.02 Splicing. Add the following paragraph after the last paragraph:

“Mechanical Splices shall be used only where shown on the drawings or when approved by the Engineer.”

End of Provisional Section

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SECTION 03600 – PROVISIONAL

GROUT

Provisional Specification Summary:

- 1.1: *Replace Paragraph*
- 2.1.01: *Add Text*
- 2.1.02: *Add Tex*
- 2.1.03: *Modify text*
- 2.1.04: *Replace*
- 3.1.02: *Delete paragraphs*

1.1 **SCOPE. Replace last paragraph of the section with**

“Grout for Masonry is covered in Master Specification 04820, Reinforced Unit Masonry Assemblies.

2.1.01 Nonshrinking Grout: **Add** the following text at the end of second paragraph, before “or equal”: “Sikagrout 328”.

2.1.02 Precision Fluid Non-Shrink Grout with Extended Working Time. **Add** the following text at the end of second paragraph, before “or equal”: “Sikagrout 328”.

2.1.03 Mettalic Fluid Grout with Extended Working Time. **Correct** the word “wen” to “wet” second paragraph and **add** the word “to” between “20” and “30”.

Replace paragraph with the following:

2.1.04. Epoxy Grout. Two-component epoxy resin bonding system capable of developing a minimum bond strength of 1,100 psi in 48 hours; ASTM C881 Type IV, Grade 3, Class B and C; Euclid Chemical Company EUCO 452 GEL; or as approved.

3.1.02 Epoxy Grout. Delete the 3rd (“If an anchor bolt sleeve ...”) thru 5th (“Where indicated on the drawings ...”) paragraphs and from the 11th (“Forms should extend a minimum ...”) thru the last paragraph of 3.1.02.

End of Provisional Section

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SECTION 05120 – PROVISIONAL

STRUCTURAL STEEL

Provisional Specification Summary:

2.1	Add text
2.2.02	Add text
2.4.05	Add new Paragraph 2.4.05
2.5.01	Add new Paragraph 2.5.01

(Update text as shown.)

2.1 PERFORMANCE AND BASIS OF DESIGN REQUIREMENTS.

Add the following text after the third sentence of the second paragraph:

“For reactions not indicated on the drawings, design the connections to support 1/2 the total allowable uniform load of the beam as given in AISC ASD 9th Edition Part 2. The allowable uniform load shall be based on the beam’s section properties, yield strength, span, and assuming continuous lateral supported.”

2.2.02 Steel.

Add the following text at the end of the first paragraph:

“... or ATSM A992/A992M.”

Add new Paragraph 2.2.05 as follows:

2.4.05 Bituminous Coating. SSPC – paint 12, solvent type bituminous mastic, normally free of sulfur compound for 15 mil dry film thickness per coat.

Add new Paragraph 2.5.01 as follows:

2.5.01 Aluminum surfaces. All surfaces in contact with concrete or steel to receive bituminous coating.

End of Provisional Section

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SECTION 05311 – PROVISIONAL

STEEL ROOF DECK

Provisional Specification Summary:

- 2.2.01: *Replace text*
- 2.2.02: *Delete subsection.*
- 2.4: *Add Paragraph 2.4*
- 2.5: *Add Paragraph 2.5*
- 3.1: *Replace text as shown.*

PART 2 - PRODUCTS

2.2.01 Wide Rib Type B Deck. **Replace** the last two sentences of the paragraph (“Sheet steel for decking,”) **with** “Sheet steel thickness and rib depth for decking, before galvanizing, shall be as indicated on the drawings. Material shall be by one of the following manufacturers:

United Steel Deck, Inc.,
Vulcraft,
Or Equal”

2.2.02 Deep Rib Type N Deck. **Delete subsection in its entirety.**

2.4 Cold Galvanizing Compound for Galvanized Surfaces. ZRC Products Company, or as approved.

2.5 Fasteners. Galvanized hardened, self-tapping.

3.1 INSTALLATION. **Replace** the first sentence in the first paragraph of this subsection (“Roof deck shall be installed strictly ...”) with “Verify existing conditions prior to beginning Work. Erect metal deck in accordance with SDI Manual manufacturer's instructions. Bear deck on masonry support surfaces with 4 inch minimum bearing. Bear deck on steel supports with 1-1/2 inch minimum bearing. Align and level. Weld in accordance with AWS D1.1.”

Replace the last paragraph of this subsection (After erection, all damaged and marred ...) with “Install sheet steel closures and angle flashings to close openings between deck and walls, columns, and openings. Position roof sump pans with flange bearing on top surface of deck. Fusion-weld at each deck flute. Place metal cant strips in position and fusion-weld. Immediately after welding deck and other

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metal components in position, coat welds, burned areas, and damaged surface coating with two coats of cold galvanizing compound which imparts cathodic action against corrosion. Surface preparation and application shall be in accordance with the manufacturer's instructions.

End of Provisional Section

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SECTION 07210 - PROVISIONAL

THERMAL PROTECTION AND BUILDING INSULATION

Provisional Specification Summary:

- | | |
|-----|--|
| 1.1 | <i>Replace Paragraph</i> |
| 2.4 | <i>Delete Sections and all subsections</i> |

(Update text as shown.)

1.1 SCOPE. Replace paragraph as follows:

This section covers vapor and air retarders, board insulation, batt insulation, loose glass fiber insulation foamed-in-place insulation. Refer to the drawings for insulation locations.

2.4 EXTERIOR FINISHED INSULATION SYSTEM. Delete this section and all its subsections. Not Applicable.

End of Provisional Section

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SECTION 11320 – PROVISIONAL

RECESSED IMPELLER PUMPS

Provisional Specification Summary:

- 2.1: Add Paragraph
- 2.3: Revise Text
- 2.5.07: Revise text
- 2.8.02: Add Paragraph

(Update text as shown.)

2.1 PREFORMANCE AND BASIS OF DESIGN REQUIREMENTS: Add the following paragraph:

The eight (8) pumps shall be specially designed, constructed, and installed for the service intended and shall comply with the following minimum conditions:

Maximum Motor Size, HP	125
Maximum Full Load Speed, RPM	1200
Minimum Suction Nozzle, in.	6
Minimum Discharge Nozzle, in.	6
Operating Requirements	
Design Point	1150 gpm at 121 ft Total Head 40% Min. Pump Efficiency
Second Operating Point	Not less than 550 gpm at 131ft Total Head 28% Min. Pump Efficiency
Third Operating Point	2200 gpm at 100 ft Total Head 41% Min. Pump Efficiency

**2.3 ACCEPTABLE MANUFACTURERS: Revise first sentence to read:
“Pumps shall be Wemco Pump Co.; Model C or approved equal.”**

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2.5.07 Mounting: **Revise** first sentence of first paragraph to read:
“Mounting shall be vertical...”

End of Provisional Section

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SECTION 11650 – PROVISIONAL

SUMP PUMPS

Provisional Specification Summary:

2.2: *Add Paragraph*

2.3: *Revise Text*

(Update text as shown.)

2.2 PERFORMANCE AND BASIS OF DESIGN REQUIREMENTS: Add the following paragraph:

Sump pumps shall be specially designed, constructed, and installed for the service intended and shall comply with the following minimum conditions:

Sludge Pumping Station No. 1 Sump Pumps:

Number of Units:	1
Flow at Design Point:	175 gpm
Total Head at Design Point:	18 ft.
Pump Speed at Design Point:	1800 RPM
Efficiency at design Point:	33%
Sphere Diameter:	2 inch
Discharge Size:	3 inch
Motor Maximum Horsepower:	7.5 HP
Motor Speed:	1750 RPM

A floor plate shall be designed to support the pump. The floor plate shall meet the dimensions of the 30-inch diameter sump pit and completely cover the sump opening.

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Sludge Pumping Station No. 2 Sump Pumps:

Number of Units:	2
Flow at Design Point:	175 gpm
Total Head at Design Point:	25 ft.
Pump Speed at Design Point:	1800 RPM
Efficiency at design Point:	33%
Sphere Diameter:	3 inch
Discharge Size:	4 inch
Motor Maximum Horsepower:	7.5 HP
Motor Speed:	1750 RPM

2.3 ACCEPTABLE MANUFACTURERS. Revise section to read as follows:
Submersible sump pumps from Chicago Pumps, Hydromatic, KSB or equal are acceptable.

End of Provisional Section

Provisional Specifications—which are issued separately from the Master Specifications on a per contract basis—shall supersede and govern over all other specifications or contract documents. All other wording in the Master Specifications that is not specifically stated to be modified in the Provisional Specifications shall remain in effect as is. The Provisional Specification Summary is included to clarify and/or highlight changes.

SECTION 15098 – PROVISIONAL

PLUG VALVES

Provisional Specification Summary:
Part 2: Add Subsection

(Update text as shown.)

Add the following subsection:

2.4 PLUG VALVE SCHEDULE. The plug valve schedule for the Rehabilitation of Sludge Pumping Stations No. 1 and 2 are summarized in the tables below.

Sludge Pumping Station No. 1

Location	Valve Type	Valve Size (in)	Operator	Quantity
Suction Header	Plug	12	Manual	5
Suction Line	Plug	8	Manual	4
Discharge Line	Plug	6	Manual	4
Discharge Line	Plug	6	Chain	8
Discharge Header	Plug	12	Chain	1
Drain Line	Plug	8	Chain	1
Flushing Connection	Plug	1 ¼	Manual	5

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Sludge Pumping Station No. 2

Location	Valve Type	Valve Size (in)	Operator	Quantity
Suction Header	Plug	12	Manual	5
Sludge Line B	Plug	8	Manual	1
Sludge Line C	Plug	12	Manual	1
Sludge Line D	Plug	12	Manual	1
Sludge Line E	Plug	8	Manual	1
Suction Line	Plug	8	Manual	4
Flushing Connection	Plug	1 1/4	Manual	7
Discharge Line	Plug	6	Manual	12
Discharge Line	Plug	6	Chain	4
Discharge Header	Plug	12	Chain	6
Dewatering Line	Plug	6	Chain	1

End of Provisional Section

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SECTION 15820 - PROVISIONAL

DEHUMIDIFICATION SYSTEMS

Provisional Specification Summary:

- 1.5.03: Add subsection as indicated below*
- 1.8: Add section as indicated below*
- 1.8.01: Add section as indicated below*
- 1.9: Add section as indicated below*
- 2.5: Delete section and all subsections.*
- 2.6: Update text as indicated below.*
- 2.6.01: Update section as indicated below.*
- 2.6.02: Update section as indicated below. Replace with the text indicated.*
- 2.6.06: Update section as indicated below.*
- 2.11: Update section as indicated below. "Factory performance testing shall be provided using government standards".*
- 2.10: Add text as indicated below.*

(Update text as shown.)

1.5.03 Add Subsection "Testing". Add Text for "Testing" Subsection.

ADD SECTION "1.8 WARRANTY". In addition to the General Warranty, the equipment manufacturer shall warrant against parts and labor and any defect in material, construction, or performance of the Dehumidifiers and appurtenances for a period of five (5) years from the date of acceptance for the Dehumidifiers and (its components) appurtenances without any cost to the owner.

1.8 WARRANTY ADD SUB SECTION "1.8.01 WARRANTY SUBMITTAL". Submit a Written warranty signed by manufacturer agreeing to repair, restore, or replace defective work and maintain as specified in this section, within the specified warranty period without any cost to the owner".

ADD SECTION "1.9 MAINTENANCE SERVICE".

1. Concurrent with Parts and labor Warranty, Manufacturer shall provide Five (5) year Full Maintenance program. Maintenance program shall include monthly service visits on each unit subject to the following.

- a. Filter changes
- b. Digital Performance Log

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- c. Check and /or replacement of belts
- d. Check, Lubrication and/or replacement of fan bearing assemblies.
- e. Check and/or adjustment/replacement of electrical or control components.
- f. Check and/or adjustment/replacement of refrigerant components.
- g. Check and /or repair of refrigerant leaks including replacement of refrigerant.
- h. Check and/or adjustment/replacement of damper and operators.
- i. Check and/or adjustment/replacement of cabinetry seals, latches, panels etc.
- j. Check and/or cleaning of interior unit coil surfaces.

2. The above at a minimum shall appear on a Monthly Maintenance Sheet for each unit. Verification of maintenance via this sheet shall bear Witness signature of DWSD representative and turned in monthly in hard copy and/or digital copy in quantities up to Five (5) sets as determined by the DWSD. Sheet and format to be approved by DWSD prior to commencement of Five (5) Year Program.

3. Repair or replacement of components shall appear on a Service Report Sheet (separate from Monthly Maintenance Sheet) with description of issue, resolution, unit involved, dates etc. Sheet and format to be approved by DWSD prior to commencement of Five (5) Year Program.

4. Repair/service response to units that are non-functional or requiring service shall be made within 48 hours after notification, Monday – Friday during normal working hours.

5. Building Safety Panel and components supplied by manufacturer shall be warranted for a period concurrent to the five (5) year unit warranty described above and include Quarterly Maintenance/Repair provisions described as follows:

- a. Check and/or adjustment/replacement of sensors, panel components wiring etc.

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b. Quarterly Service Sheet listing components checked and verified for proper operation.

c. Repair Sheet listing component(s) repaired.

d. Repair/service response to units that are non-functional or requiring service shall be made within 48 hours after notification, Monday – Friday during normal working hours. Service and Repair Sheets shall be submitted monthly and bear Witness Signature by DWSD Representative.

2.5 DESICCANT DEHUMIDIFIERS. **Delete Section** “Desiccant Dehumidifiers in its entirety, along with subsections. Not Applicable.

2.6 REFRIGERANT DEHUMIDIFIERS. **Replace paragraph with the following paragraph:** Refrigerant dehumidifiers Shall be Rush Air or approved equal. Each unit shall be of the packaged, self-contained, closed loop, refrigerant type, completely factory assembled, piped, wired, and tested at the factory. Units shall be complete with supply fan, fan motor, compressor, DX-evaporator coil, refrigerant reheat coil, condenser coil, refrigeration valves, and electrical control. All Refrigerant Dehumidifiers systems shall have Hot gas reheat, utilizing at least one refrigerant circuit. Refrigerant shall be R-134a” 2.6.01 Delete and add the following subsection “CASINGS”

2.6.01 Casings. **Delete and add the following paragraph:** “The unit casing shall be 2" double wall constructed of 20 ga, 304 Stainless Steel for both inner and outer liner. Unit floor shall be double wall 14 ga, 304 Stainless Steel. In addition, Unit frame, unit coil frames and all structural components shall be constructed of 304 Stainless Steel. Removable panels and access doors shall be 2" double wall constructed utilizing 20 ga 304 Stainless Steel for both inner and outer skins.”
Insulation: Insulation shall be 2" thick closed cell foam

2.6.02 Coils. **Delete and add the following paragraph:** “All unit coils to include, evaporator coils, Hot-gas Reheat coil, condenser coils, condensing unit coils, heating coils: tubes shall be fabricated of 1/2 inch 304 stainless steel with a minimum wall thickness of 0.020inch . Coil fins shall be a minimum of 0.010 inch fabricated of 304 stainless steel. Coil casings and coil drainpans shall be fabricated of 16 ga 304 stainless steel. Coil connections shall be fabricated of 304 stainless steel with a min wall thickness of 0.020inch. Coil drainpan shall be a minimum of 4" positively sloped 16 ga 304 stainless steel and of double wall construction.”

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2.6.06 Accessories. Add the following paragraph to the end of this section.

“Refrigerant piping and specialties: All refrigerant piping and specialties shall be constructed of 304 Stainless Steel. All brazing per ASME standards. Copper or Copper with corrosion coatings will not be acceptable. Remote Condenser Refrigerant piping and specialties: All refrigerant piping and specialties shall be constructed of 304 Stainless Steel. All brazing per ASME standards.”

2.10 CONTROLS. Add the following paragraph to the end of this section.

“Enclosures for modules and controllers shall meet or exceed the classification governing the space in which the devices are to be placed.”

2.11 SHOP TESTING. Add the following paragraph to the end of this section.

“Factory performance testing shall be provided using the governing standards of ARI, ASHRAE and SMACNA. These tests will be performed with the option of witnessing by the owner or owner’s representative. Complete test procedure must be submitted for approval prior to testing. Approved testing procedures may then be scheduled. The following items will be tested:”

Run Test

A. Test machine under load that meets or exceeds design criteria

1. Design Outside Air conditions (Dry Bulb /Wet Bulb)
2. Design Return Air/Exhaust Air Conditions (Dry Bulb /Wet Bulb)
3. Design Ambient Conditions for Condenser (Dry Bulb)
4. Design Discharge Conditions. (Dry Bulb /Wet Bulb)
5. Measure, Calculate total Tonnage

B. Verify moisture removal

1. Measure moisture removal from dehumidification coil.

C. Energy consumption

1. Measure unit kW.
2. Measure unit Amperage

D. Air Flow

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1. Fan performance
 2. Measure CFM of Fan
- E. Cabinet deflection
1. Largest panel deflection test, per SMACNA
- F. Air Leakage
1. SMACNA Class 6
- G. Component Verification
1. Match components to submittal data.

End of Provisional Section

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SECTION 16050 – PROVISIONAL GENERAL ELECTRICAL REQUIREMENTS

Provisional Specification Summary:

- 2.15: *Add paragraph*
3.1: *Replace Subsection*

Add the following paragraph to the end of subsection 2.15

Low voltage dry-type transformers shall meet the Energy Policy Act of 2005 minimum efficiency standards.

Replace subsection 3.1 with the following

3.1 Power System Analysis. A report including The Short Circuit Study, Protective Device Coordination, and Arc Flash Analysis for the new electrical equipment to be installed under this project has been provided with the design package. Any substitutions or modifications that may affect the results of this report shall be submitted to the Engineer for approval prior to installation of these items.

3.1.1 Short Circuit Study. All new electrical distribution equipment furnished under this contract shall have a short circuit current rating (SCCR) greater than the short circuit currents calculated in the Short Circuit Study and greater than or equal to the SCCR values shown on the design drawings.

3.1.2 Protective Device Coordination. The contractor shall be responsible furnishing, installing and configuring all breakers, fuses, relays and other protective devices to match the coordination curves and functions provided in the Protective Device Coordination. Any modifications to the settings of existing devices shall also be included with this work.

Relays and Breakers with adjustable settings as a minimum shall be furnished with all functions, options, and adjustable parameters required by the Protective Device Coordination, design drawings or applicable equipment specification.

3.1.3 Arc Flash Analysis. All equipment listed in the results of the Arc Flash Analysis shall be furnished with an arc flash label.

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An additional label shall be provided for any main breakers or panels where the Arc Flash Hazard Category on the line side of the breaker is greater than the Arc Flash Hazard Category on the bus side. This additional label shall indicate that the power source feeding the breaker or panel must be turned off before any work that would create an Arc Flash Hazard condition may be performed.

Design and placement of labels shall be in accordance with NFPA 70-2008, NFPA 70E-2009, ANSI Z535.4-1998 and MIOSHA. The arc flash labels shall clearly indicate the DWSD contract number, equipment name, voltage, PPE clothing category and arc flash hazard boundary.

End of Provisional Section

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SECTION 16310 – PROVISIONAL

SECONDARY INTEGRAL UNIT SUBSTATIONS

Provisional Specification Summary:

- 1.2.02: *Replace last sentence*
- 2.1: *Replace Subsection*
- 2.4.05: *Add paragraph*
- 2.6: *Replace Subsection*

Replace the last sentence of 1.2.02 with:

Working space in front of the unit substations shall meet the minimum requirements of the 2008 NFPA 70: National Electrical Code.

Replace subsection 2.1 with:

2.6 ACCEPTABLE MANUFACTURERS. The equipment shall be as manufactured by Square D/Schneider Electric, Siemens Energy and Automation, General Electric or ABB.

Add subsection 2.4.05 as follows:

2.4.05 Efficiency. Each transformer shall meet the minimum efficiency standards required by the U.S. Department of Energy (10 CFR Part 431).

Replace subsection 2.6 with the following:

2.6 SECONDARY OUTGOING LINE SECTION. The secondary outgoing line section shall be factory installed on, or close-coupled to, the transformer. It shall consist of an air-filled terminal compartment, a secondary switchgear section and all other equipment indicated on the drawings or as required.

2.6.01 Air-Filled Terminal Compartment. The air-filled terminal compartment shall consist of a full-height NEMA rated enclosure with features as required. The compartment shall enclose the transformer low voltage bushings and terminal connectors for secondary cables or bus.

A 480-120 volt control power transformer with primary and secondary breakers, for space heaters or for fan cooling, shall be provided in the compartment.

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2.6.02 Secondary Switchgear. The switchgear section shall be a main-tie-main configured low voltage, metal-enclosed switchgear with draw-out type power circuit breakers. The sides and rear of the enclosure shall be covered with removable bolt-on plates. Bus bars shall be tin-plated copper with bolted connections at joints and sized for the ampere ratings indicated on the design drawings. The switchgear assembly including all breakers, buses, terminations and any other power distributing conductors shall be rated to withstand and interrupt an available fault current of 65,000 amps.

2.6.03 Draw-out Circuit Breakers. Low voltage draw-out power circuit breakers shall be provided in the frame ratings, quantities and configurations shown on the design drawings. Electronic trip units shall be provided with each breaker according to the requirements of subsection 2.6.04. Power monitoring devices shall be provided where indicated on the design drawings.

2.6.04 Electronic Trip Units. Each trip unit shall be supplied with a trip plug sized to the trip rating indicated on the design drawings. The trip units shall have adjustable time-overcurrent settings that include: long-time pickup and time delay, short-time pickup and time delay, and an instantaneous pickup capable of being turned off.

Each trip unit shall also be provided with ground fault protection with an adjustable pickup not exceeding 1200 A, and adjustable time delay. A neutral current transformer shall be included where required for proper ground fault protection.

Each breaker trip unit shall be capable of communicating the status of the breaker (Open/Closed/Tripped), trip settings and trip event data through the plant's existing process network using either a direct Ethernet connection or by sending the information through its associated power monitoring device as described in section 2.6.06.

2.6.05 Automatic Transfer System. An automatic transfer system shall be provided to facilitate automatic or manual operation of the main-tie-main configuration of the switchgear. The system shall be controlled through a PLC with a touch-screen interface for manual control of the system. The transfer system shall be capable of monitoring the synchronization of the two main power feeds and performing a closed transition when safe to do so without damaging any equipment. The Owner shall be provided with backup copies and loading procedures for any software programs used to control or interface with the system.

2.6.06 Power Monitoring. Information from all power monitoring devices located within the substation shall be made available for communication through the plant's

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existing Ethernet process network utilizing an open data format compatible with the Ovation DCS system.

Each main and feeder breaker shall be provided with power metering devices capable of measuring the voltage, phase currents, frequency, kilowatts, (kilo)watt-hours, power factor, total harmonic distortion, and the first seven harmonics as a minimum.

Trip units with integral power metering that are capable of providing all required functions listed in the paragraph above may be supplied for the feeder breakers. Separate power monitoring units shall be provided for the incoming feeds to the main breakers. If capable, the power metering units may be used to communicate information from their associated breaker's trip unit to the network.

End of Provisional Section

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**SECTION 17530 – PROVISIONAL
PRESSURE AND LEVEL INSTRUMENTS**

Provisional Specification Summary:
Part 3.2.21: Replace Subsection

PART 3 - EXECUTION

Add the following subsection:

3.2.21 Pressure Indication/Control.

Instrument Category:	Pressure
Instrument Type:	In-Line Pressure Sensor PE
Power Supply:	N/A
Signal Input:	N/A
Signal Output:	N/A
Process Connection:	N/A
Classification:	N/A
Description:	The pressure sensor for the sludge lines shall be full line size with a flexible sleeve for transmitting pressure through a captive fluid to a pressure gauge, switch, or transmitter. The sensor shall have a stainless steel flange for bolting directly into the pipeline and shall have the same pressure rating as the pipe flange. The flange shall have through-bolt holes to allow positive alignment in the pipeline. The sensor shall have an auxiliary tapped and plugged port to allow connection to other equipment.

The inside diameter of the sensor shall be the same as that of the mating pipe with full and

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uninterrupted flow. There shall be no dead ends or crevices.

The pressure-sensing ring shall measure pressure for 360 degrees around the full inside circumference of the pipeline. The sensing ring shall also be clamped into the body for the full radial width of the sensor. Sensing ring material shall be Buna-N rubber. Sensing fluid shall be ethylene glycol.

Manufacturer: Red Valve Co., Ronningen-Petter, or approved equal.

Special Requirements: The pressure sensor and indicating gauge, switch or transmitter shall be factory assembled, calibrated and certified as a unit before shipping to the site. Pressure sensors shall be installed as shown on the drawings.

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SECTION 17540 – PROVISIONAL

ANALYTICAL INSTRUMENTS

Provisional Specification Summary:

3.2.08: *Modify Subsection*

3.2.08 Combustible Gas Detector.

Modify subsection as described below

Replace:

“Signal Output: 4-20 MA”

With:

“Signal Output: Dry contacts for Alarm and Fault signals”

Replace:

“Special Requirements: The contractor shall wire so as to “gang” alarm output to provide single relay contact closure depicting a unified alarm condition on any area. The Contractor is responsible for determining sensor application type and front panel display calibration. Provide sensor to meet area classification as required for each location.”

With:

“Special Requirements: The alarm output contact shall close upon an alarm condition sensed by any of the gas sensors. The fault relay contact shall open upon loss of power to the unit or any malfunction of the gas detector or sensors. PLC based systems that are not a standard package of the manufacturer shall use Allen-Bradley MicroLogix 1200 controllers with Ethernet communication capability.”

End of Provisional Section

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