ATTENDANCE AT PRE-BID CONFERENCE IS MANDATORY

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CLAYTON EDWARDS, P.E., DIRECTOR
WATER AND SEWER DEPARTMENT

Note: The Drawings attached hereto as part of these Specifications are for information purposes only. The Authority makes no representation or guarantee with respect to the accuracy of any information contained in the Drawings. It is the Contractors responsibility to verify information on the drawings to ensure the equipment installed or controlled by work performed under this Contract performs as specified herein.

Water and Sewer Department
175 E. 2nd Street
Tulsa, Oklahoma 74103
(918) 596-9845

DRAWINGS
Project Location

Southside Wastewater Treatment Plant

- Digester 1 & 2 Building
- Digester 3 & 4 Building
- Gravity Thickener Complex
- Primary Clarifier 1 & 2 Building
- Primary Clarifier 3 & 4 Building
- RDT Building
- Digester 1
- Digester 2
- Digester 3
- Digester 4

Project Locations
<table>
<thead>
<tr>
<th>Drawing</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>Hydronic Schematic in Digester 1&amp;2 Building (Existing)</td>
</tr>
<tr>
<td>1-2</td>
<td>Hydronic Schematic in Digester 1&amp;2 Building (Proposed)</td>
</tr>
<tr>
<td>1-3</td>
<td>Hydronic Plumbing in Digester 1&amp;2 Building (Existing)</td>
</tr>
<tr>
<td>1-4</td>
<td>Hydronic Plumbing in Digester 1&amp;2 Building (Existing)</td>
</tr>
<tr>
<td>1-5</td>
<td>Hydronic Plumbing at Sludge Heat Exchanger, Elevation View, Looking West (Proposed)</td>
</tr>
<tr>
<td>1-6</td>
<td>Hydronic Plumbing at Sludge Heat Exchanger, Elevation View, Looking North (Proposed)</td>
</tr>
<tr>
<td>1-7</td>
<td>Control Panel at Sludge Heat Exchanger (Proposed)</td>
</tr>
<tr>
<td>1-8</td>
<td>Electrical Wiring in Digester 1&amp;2 Building (Existing)</td>
</tr>
<tr>
<td>1-9</td>
<td>Electrical Wiring in Digester 1&amp;2 Building (Existing)</td>
</tr>
<tr>
<td>1-10</td>
<td>Electrical Wiring in Digester 1&amp;2 Building (Existing)</td>
</tr>
<tr>
<td>1-11</td>
<td>Sludge Heat Exchanger (Existing)</td>
</tr>
<tr>
<td>1-12</td>
<td>Small Piping and Valves at Sludge Heat Exchanger, Elevation View, Looking North (Proposed)</td>
</tr>
<tr>
<td>1-13</td>
<td>Sludge Heat Exchanger (Existing)</td>
</tr>
<tr>
<td>3-1</td>
<td>Hydronic Schematic in Digester 1&amp;2 Building (Existing)</td>
</tr>
<tr>
<td>3-2</td>
<td>Hydronic Plumbing in Digester 1&amp;2 Building (Existing)</td>
</tr>
<tr>
<td>3-3</td>
<td>Hydronic Plumbing at Main Circulator Pump in Digester 1&amp;2 Building (Proposed)</td>
</tr>
<tr>
<td>3-4</td>
<td>Air Vent for Main Circulator Pump (Proposed)</td>
</tr>
<tr>
<td>4-1</td>
<td>Sludge Piping Schematic (Existing)</td>
</tr>
<tr>
<td>4-2</td>
<td>Sludge Piping in the Basement of the Digester 3&amp;4 Building, Plan View (Existing)</td>
</tr>
<tr>
<td>4-3</td>
<td>Sludge Piping in the Basement of the Digester 3&amp;4 Building, Elevation View (Existing)</td>
</tr>
<tr>
<td>4-4</td>
<td>SCADA View of the Sludge Piping in the Digester 3&amp;4 Building (Existing)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drawing</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-1</td>
<td>Scum Pit Level Indicator at Gravity Thickener Complex (Existing)</td>
</tr>
<tr>
<td>5-2</td>
<td>Scum Pit Level Indicator at Gravity Thickener Complex (Existing)</td>
</tr>
<tr>
<td>5-3</td>
<td>Scum Pit Level Indicator at Gravity Thickener Complex (Existing)</td>
</tr>
<tr>
<td>5-4</td>
<td>SCADA View for Scum Pit Level Indicator at Gravity Thickener Complex (Existing)</td>
</tr>
<tr>
<td>6-1</td>
<td>Floc Tank Drain Valves in RDT Building, Plan View (Existing)</td>
</tr>
<tr>
<td>6-2</td>
<td>Floc Tank Drain Valves in RDT Building, Elevation View (Existing)</td>
</tr>
<tr>
<td>6-3</td>
<td>Floc Tank Drain Valves in RDT Building, Elevation View (Proposed)</td>
</tr>
<tr>
<td>9-1</td>
<td>External Draft Tubes on Digester 1 (Existing)</td>
</tr>
<tr>
<td>10-1</td>
<td>Modifications to Scum Pits at the Primary Clarifier 3&amp;4 Building, Photograph (Existing)</td>
</tr>
<tr>
<td>10-2</td>
<td>Modifications to Scum Pits at the Primary Clarifier 3&amp;4 Building, Plan View (Existing)</td>
</tr>
<tr>
<td>10-3</td>
<td>Modifications to Scum Pits at the Primary Clarifier 3&amp;4 Building, Plan View, Covers Closed (Proposed)</td>
</tr>
<tr>
<td>10-4</td>
<td>Modifications to Scum Pits at the Primary Clarifier 3&amp;4 Building, Plan View, Covers Open, Safety Grate Closed (Proposed)</td>
</tr>
</tbody>
</table>

Index of Drawings
Hydronic Schematic in Digester 1&2 Building (Proposed)

WPC 20-4, Bid Items 1 and 2, Drawing 1-2

See Sections 4.1.4.3, 4.2.4.3, and 4.1.4.4 of Technical Specifications

Drawing not to scale
Hydronic Plumbing in Digester 1&2 Building
(Existing)
WPC 20-4, Bid Item 1, Drawing 1-3

Existing hydronic plumbing at Sludge Heat Exchangers

See Section 4.1.4.3 in Technical Specifications
See Sections 4.1.4.3 and 4.1.4.5 in Technical Specifications

Existing hydronic plumbing at Sludge Heat Exchangers

Location of "Sludge In" temperature probe
Hydronic Plumbing at Sludge Heat Exchanger
Elevation View, Looking West (Proposed)

WPC 20-4, Bid Items 1 and 2, Drawing 1-5

See Sections 4.1.4.3, 4.1.4.5, and 4.2.4.3 of Technical Specifications
Hydronic Plumbing at Sludge Heat Exchanger, Elevation View, Looking North (Proposed)

WPC 20-4, Bid Item 1, Drawing 1-6

See Sections 4.1.4.3 and 4.1.4.7 of Technical Specifications
CONSULTING ENGINEER: BLACK & VEATCH BRITON, KIRKLES & LANE, INC.
SPECIFICATION SECTION: #18
APPLICATION: SLUDGE HEATING
CAPACITY: THREE CAT.
RATING:
EXCHANGER: 2,000-4,000 BULBS
BASED ON INLET WATER (PER PASS) AT 125 GPH AND HEAT
INLET SLURGE (PER PASS) AT 200 GPH AND 150°F
NUMBER OF TUBES 20
SIZE OF SLURGE TUBE & DOUBLE PASS
SIZE OF WATER TUBE & DOUBLE PASS
SURFACE AREA:
EXCHANGER INTERIOR SLURGE TUBE 2.25 x 2.25 FT.
HEAT EXCHANGER OUTLET SLURGE TUBE 3.50 x 3.50 FT.
WATER SIDE: 19.00 FT. W.C. (AT 200 GPH)
SLURGE SIDE 2.63 FT. W.C. (AT 200 GPH)
OPERATING PRESSURE: EXCHANGER - 49 PSI MAXIMUM

Remove all existing small piping and valves. Install plugs at each unused location. See Drawing 1-12 for the locations that will be utilized.

Existing small piping and valves

Existing small piping and valves

Remove existing thermometers and provide blanking plate.

Note: each sludge heat exchanger has additional small piping and valves that are not shown on this drawing.

Sludge Heat Exchanger (Existing)
WPC 20-4, Bid Item 1, Drawing 1-11

See Sections 4.1.2 and 4.1.4.6 in Technical Specifications

Modified from: ES 87-12, O&M
Small Piping and Valve S at Sludge Heat Exchanger, Elevation View, Looking North (Proposed)

WPC 20-4, Bid Item 1, Drawing 1-12

Drawing not to scale

See Sections 4.1.4.8 of Technical Specifications

Proposed Pressure Relief Valve for Water (40 psi)
Proposed Pressure Relief Valve for Sludge (30 psi)

Install pipe unions and support struts (as needed) to allow removal of the hard pipe in order to gain access to the return bends of the heat exchanger.

Water Outlets
Sludge Inlets

Both pressure relief valves (for water and sludge) are hard piped to the floor and terminated with elbow oriented towards nearby floor drain.

Concrete Pad

Floor

Tee fitting
Stainless steel ball valve

Flushing connection should include two (2) 90-degree elbows. The first elbow should be oriented out (to the south). The second elbow should be oriented down. Provide support strut (if needed). The hard piping should terminate with a female hose connection oriented down.

Male end of hose should connect to hard piping here.

Flexible hose for flush connection should be long enough to reach the floor and terminate with a female hose connection.

Two (2) proposed Sludge Drains with stainless steel ball valve and open-end flexible hose long enough to reach a nearby floor drain.

Water Inlets
Sludge Outlets

Male end of hose should connect to hard piping here.

Steel pipe unions and support struts (as needed) to allow removal of the hard pipe in order to gain access to the return bends of the heat exchanger.
Sludge Heat Exchanger
(Existing)
WPC 20-4, Bid Items 1, Drawing 1-13

See Sections 4.1.4.6 in Technical Specifications
Existing hydronic plumbing at Main Circulator Pumps

See Section 4.3.4.3 in Technical Specifications

Hydronic Plumbing in Digester 1&2 Building
(Existing)
WPC 20-4, Bid Item 3, Drawing 3-2
Hydronic Plumbing at Main Circulator Pump in Digester 1&2 Building (Proposed)

WPC 20-4, Bid Item 3, Drawing 3-3

See Section 4.3.4.3 of Technical Specifications
Air Vent for Main Circulator Pump (Proposed)
WPC 20-4, Bid Items 3, Drawing 3-4
The image is a Sludge Piping Schematic (Existing) for WPC 20-4, Bid Item 4, Drawing 4-1. It shows various components and flow paths within a sludge treatment system. The legend on the right side of the diagram provides symbols for different types of equipment and flow paths, such as plug valves, check valves, sludge sludge transfer pumps, etc. The diagram is modified from SA 83-21 O&M and specific references to the Technical Specifications are noted. The diagram includes a location of the proposed sludge flowmeter. The notes on the diagram include:

1. All plug valve numbers in the coagulation facility preceded by 45-PV(#).
2. All check valve numbers in the coagulation facility preceded by 45-CV(#).
3. All plug valve numbers in existing digester building preceded by 45-PV(#).
4. All check valve numbers in existing digester building preceded by 45-CV(#).
5. All gate valve numbers in existing digester building preceded by 45-GV(#).
Location of proposed local display on west wall.

Location of proposed sludge flowmeter

Modified from: SA 83-21, Drawing CM6

See Section 4.4.4.3 of Technical Specifications

Sludge Piping in the Basement of the Digester 3&4 Building, Elevation View (Existing)
WPC 20-4, Bid Item 4, Drawing 4-3
Approximate location of existing level sensor.

Normal liquid level in scum pit should be between: 630.0 feet (high) and 618.0 feet (low)

Top of Scum Pit

See Section 4.5.4.3 of Technical Specifications

Scum Pit Level Indicator
at Gravity Thickener Complex (Existing)
WPC 20-4, Bid Item 5, Drawing 5-2
Top of Scum Pit is Elevation 634.5 feet

Approximate location of existing level sensor.

Normal liquid level in scum pit should be between: 630.0 feet (high) and 618.0 feet (low)

Modified from: SA 83-21, Drawing T3

See Section 4.5.4.3 of Technical Specifications

Scum Pit Level Indicator
at Gravity Thickener Complex (Existing)
WPC 20-4, Bid Item 5, Drawing 5-3
Existing Floc Tank Drain Valves

Modified from: ES 2002-07, Contact B, Sheet 31
See Section 4.6.4.3 of Technical Specifications

Floc Tank Drain Valves in RDT Building,
Plan View (Existing)
WPC 20-4, Bid Item 6, Drawing 6-1
Floc Tank Drain Valves in RDT Building
Elevation View (Existing)
WPC 20-4, Bid Item 6, Drawing 6-2

Modified from: ES 2002-07, Contact B, Sheet 32

See Section 4.6.4.3 of Technical Specifications
Other piping is not shown in this sketch. The purpose of the valve is to drain the floc tank.

6 inch PEC valve with shaft horizontal

ENK Neck Extension for G-Series Actuators

GS-6 Actuator

Floc Tank Drain Valves in RDT Building
Elevation View (Proposed)
WPC 20-4, Bid Item 6, Drawing 6-3

See Section 4.6.4.3 of Technical Specifications
External Draft Tubes on Digester 1
(Existing)

WPC 20-4, Bid Item 9, Drawing 9-1

Modified from: ES 2020-04, Contact 2, Sheet 28

See Section 4.9.4.3 of Technical Specifications
Modifications to Scum Pits at the Primary Clarifier 3&4 Building, Photograph (Existing)

- Small upper concrete curb is to be removed.
- Sluice gate is to be removed.
- Scum mixer is to be removed.
- Lower curb is to remain in place.
- Green odor control piping is to be reinstalled and connected to the modified back cover.
- Back cover and support brackets are to be modified and reinstalled in the same location.
- Electrical conduit is to be removed.
- Front cover and support brackets are to be removed.
- Green odor control piping is to be reinstalled and connected to the modified back cover.

South Scum Pit is shown. North Scum Pit is similar but opposite hand.

Drawing Not to Scale

See Section 4.10.2 of Technical Specifications

WPC 20-4, Bid Item 10, Drawing 10-1
Green odor control piping is to be reinstalled and connected to the modified back cover.

Back cover and support brackets are to be modified and reinstalled in the same location.

Green odor control piping is to be reinstalled and connected to the modified back cover.

Front cover and support brackets are to be removed.

Electrical conduit is to be removed.

Small upper concrete curb is to be removed.

Sluice gate is to be removed.

Scum mixer is to be removed.

Lower curb is to remain in place.

South Scum Pit is shown. North Scum Pit is similar but opposite hand.

Modifications to Scum Pits at the Primary Clarifier 3&4 Building, Plan View (Existing)
WPC 20-4, Bid Item 10, Drawing 10-2

See Section 4.10.2 of Technical Specifications

Drawing Not to Scale
Green odor control piping is to be reinstalled and connected to the modified back cover.

Existing back cover is installed under the proposed top-mount frame.

Green odor control piping is to be reinstalled and connected to the modified back cover.

Hinge for covers on west side

Handle for covers on east side

Top-mount frame of proposed cover anchored to top of lower curb

Lower curb is to remain in place.

Handles are centered near the edge of each cover

South Scum Pit is shown. North Scum Pit is similar but opposite hand.

See Section 4.10.4.3 of Technical Specifications

Modifications to Scum Pits at Primary Clarifier 3&4 Building, Plan View, Covers Closed (Proposed)
WPC 20-4, Bid Item 10, Drawing 10-3
Green odor control piping is to be reinstalled and connected to the modified back cover.

Existing back cover is installed under the proposed top-mount frame.

Green odor control piping is to be reinstalled and connected to the modified back cover.

Covers shown open

Safety Grate shown closed

Top-mount frame of proposed cover anchored to top of lower curb

Lower curb is to remain in place.

Hinges for Safety Grate on north and south side

North Scum Pit is shown. North Scum Pit is similar but opposite hand.

See Section 4.10.4.3 of Technical Specifications

WPC 20-4, Bid Item 10, Drawing 10-4
Location of Existing Flow Meter

See Section 4.14.4.3 of Technical Specifications