

**ADDENDUM #4**Bid Number: #140-2017

Date: October 26, 2017

Subject: West Hickman 7 Wet Weather Storage  
Facilities Improvements (Contract No. 2)Address inquiries to:  
Brian Marcum  
[brianm@lexingtonky.gov](mailto:brianm@lexingtonky.gov)  
(859) 258-3325**TO ALL PROSPECTIVE SUBMITTERS:**

Please be advised of the following clarifications to the above referenced Bid:

**1. QUESTIONS**

	Questions	Answers
1.	Mechanical Bar Screens – Section 11420-1.04.A – State that Headworks should bid their MS2 screen. Their MS2 is a lighter duty screen than the MS1. The specifications seem to be written around the MS1 product. Specifically the requirement of the lower sprocket called for in section 11420.2.01.C.6-9. I would recommend Headworks be required to bid their MS1 product.	The Headworks MS2 screen listed is correct. Changes are made to Specification Section 11420 to match a Headworks MS2 Screen.
2.	Note 23 on Sheet 01D-02 list both a corp. stop assembly and pressure gauge assembly. Do you want both as detailed sheet 03C-05; a corp stop per the "Typical Chemical Injection Assembly", and a pressure gauge per the "Pressure Gauge Mounting Detail"?	Note refers to the Pressure Gauge Mounting Detail on Sheet 03C-05 not the Chemical Injection Assembly. Drawing revisions to the Pressure Gauge Mounting Detail is provided.
3.	Is the 6" DI drain piping shown sheet 01D-01 the same piping as the 4" sanitary drain piping shown sheet 01P-01?	Yes. See Addendum No. 3.
4.	Per Keynote #1 on Sheet 01S-02, we find no details on sheet 01D-01 for the grating and aluminum plank type. Are the channels in the screening room to be covered by grating or aluminum planking?	As called out on Sheet 01D-01, the aluminum plank grating is required as detailed on Sheet 03C-05.
5.	We find a discrepancy between plan notes and specifications regarding the Activated	Drawings are revised to require FRP ductwork. See Drawing revisions.



	Carbon Odor Equipment ductwork. Your plan notes in sheet "01D" call out the duct as PVC, your specification section 13252 DIV 15. Specification 15892 calls for the ductwork to be fiberglass. Please clarify your plan notes.	
6.	While reviewing the specs for the actuators on this project I noticed two sluice gates on the actuator schedule that are not listed on the slide gate schedule. Could you clarify where these sluice gates are on the project? They are labeled SLG-203 and SLG-301.	These gates will be removed from Specification Section 16225. See below.
7.	3.03 Schedule does not state whether the hoist is to be chain or wire rope and the trolley says to refer to the drawings. I don't see any drawing that says whether the trolley is to be plain, hand geared or motorized.	3.03 Schedule will be revised in Specification Section 14301. See below.
8.	Drawing 01E-05 says everything in the pump station area is to be Class 1, Division 1, group D rated. Drawing 01D-01 says exterior rated. Is it one of the other or both? If the hoist and trolley are to be rated for Class 1, Division 1 hazardous environment, then the hoist will have to be electric wire rope.	Since this drawing is only indicating Lower Level information, notes only apply to the pump station lower level not above the wet well top slab except within the hatch envelope. The hoist and trolley will be above the hatch envelope and therefore are unclassified. Exterior rated is making reference to outside use versus inside a building.
9.	Would you consider naming Crispin in the specs for the plug valves and the check valves for this project?	No
10.	On drawing 00S-03 it shows three different options for Control Joints. However, the specs say that the sawing of Contraction Joints is not permitted unless noted otherwise on drawings. Does the typical section permit the use of saw-cutting for Control Joints if not labeled anywhere else on the Plan Views, etc.? Nowhere does it specify the maximum distance for the Control Joints. Please provide this info.	For the Wet Weather Pump Station (01 Series Drawings) all joints have been called out on the drawings. Where (SJ) is called out, the Contractor can choose to either form the joint or saw cut it adhering to the provided details. For the Wet Weather Storage Tank building (02 Series Drawings) where construction joints are not called out the Contractor can submit a plan with requested locations so that they can be considered. Use Specification Section 03290 Section 3.01 for guidance on construction joint location and spacing.



11.	I believe I've looked through all documents for WH7 and cannot find where Fairbanks Nijhuis has been added as a WWS/PS approved submersible pump supplier. Is there an opportunity for us to be added to the bid form via addendum?	Fairbanks Nijhuis will be added to the bid form for this project.
12.	Spec Section 11375, Paragraph 2.07. Will it be required for both of the two blowers to be operating to meet the design SOR or 610 lbs./hour as stated in paragraph 1.02.A, or will it be required that one of the two blowers be used to meet this requirement?	Specification Section 11375 will be revised to delete the requirement specified in Subpart 1.02 General. See below.
13.	Plan Sheet 02D-15 shows the flow control vault with (2) motor operated 16-inch plug valves. One valve is drawn to have the electric motor operator mounted on a floor stand on top of the vault. The other valve is drawn to have the operator installed directly on top of the valve which ultimately puts the electric motor operating inside the vault. Is the drawing correct as shown or should both operators be installed in consistent manner, either inside or outside of the vault? Please clarify.	Values and operators shall be installed as shown.
14.	Specification 16225 for Electric Valve and Gate Actuators contains a schedule under Part 2.02.R This schedule lists PV-231. I believe this valve to be the 12-inch plug valve shown on plan document 03C-04 in the plug valve vault which is located on the 12-inch force main drain line. P&ID drawing 01Y-03 calls this valve to be 20-inch. Please clarify the size of the valve.	The force main drain line is 12", therefore the plug valve would be a 12-inch. See revised Drawings 01Y-03.
15.	Sheet 00S-01, Item G.4.4., indicates slabs-on-grade are to be underlain by 4" of angular sand and 8" of #57 Stone, (or shot rock). The structural drawing 01S-04 illustrate 6"-12" Compacted Stone Backfill directly beneath the concrete slabs. Please clarify what is intended.	Sheet 00S-01, Item G4.4. References a requirement that covers work that is Not Indicated Otherwise. See revised Drawing 00S-01.



16.	Sheet 01S-05 includes notes stating “#57 Stone down to existing rock elevation @ all slabs and strip footings”. However, the section cuts where these notes are used do not depict this condition. (Stone backfill is shown at a depth of 3’-8” beneath the slabs.) Please clarify what is intended.	Slabs require a minimum of 3’-8” stone backfill when not in rock. When in rock slabs require a minimum of 6” to 12” stone backfill. Footers require stone fill down to existing rock elevation. See revised Drawing 01S-05.
17.	Sheet 03A-02, Door and Frame Schedule, Door No. PS-8, the width is indicated as 3’-0”. Sheet 01A-01, shows Door No. PS-8 as a 6’-0” wide door. Which is correct?	Door PS-8 width shall be revised to 6’-0”. See revised Drawing 03A-02.
18.	Sheet 03A-01, Typical Wall Section, please confirm CMU foam insulation in cores is only required in exterior walls with temperature controlled space on the inside of the wall. No foam fill is required at interior walls or at the generator areas.	Foam fill is required as indicated except the two outside walls at the Generator areas. See revised Drawing 03A-01.
19.	Spec 07175 calls for Water Repellents at exterior masonry, however the split-face block at both buildings have an integral water-repellent admixture (per spec 04200). Please confirm that the 07175 water repellent is not required?	Water repellents are required at all masonry walls per Specification Section 07175.
20.	Specification 13200, Section 1.04A5, states the design shall include all appurtenances to prevent uplift. Is the intent of this statement to call out the pressure relief valves only? Please confirm there are no other appurtenances that this statement may include.	The intent of this specification section is to allow the tank foundation designer to use any means necessary to design a tank foundation that will prevent uplift of the tank including at a minimum 16 PRV’s. Other means may include additional PRV’s, thicker concrete sections, etc. Uplift shall be based on water level at ground surface and the tank empty.
21.	Sheet 02D-10 shows the 20” odor control piping mounted on the tank dome and calls for light gauge fabricated stainless steel. What scheduled pipe should we assume for weight?	The light gauge fabricated stainless steel pipe shall be Type 304, Schedule 10. See revised Drawing 02D-10.
22.	Is an expansion joint specified to accommodate wall movement on the 16” mixing pump inlet and outlet lines? None are shown on Sheet 02D-09.	Flexible expansion joints are added to the 16” lines into and out of the Wet Weather Storage Tank. See revised Drawing 02D-09.



23.	Specification 13200, Section 1.06C1, calls for a minimum amount of reinforcing steel equal to 0.50% of the gross cross sectional area. However, the bar size and spacing called out in Section 1.06C5 greatly exceeds this amount. Please clarify which specification is required.	Specification Section 13200 is revised to clarify reinforcing steel requirements. See changes made to specifications.
24.	Specification 01750, Section 3.1B2, says the cost of providing water for the testing of concrete structures for water tightness will be paid by the contractor. Please confirm if this specification includes the leak testing of the 5.0 MG Wet Weather Storage Tank?	The cost of providing water for leak testing of the Wet Weather Storage Tank shall be paid by the Contractor per the specifications. See changes made to specification Section 01750.
25.	Section 13200-12, Part 2.11, Coatings" states we are to provide an interior coating system. The industry standard does not require prestressed concrete tanks to be coated on the interior. Will you consider removing this item?	Interior tank coatings were removed in Addendum No.3
26.	Project Drawing 00C-01 illustrates overhead power lines adjacent to the tank site on the west side. Will these power lines be moved or shielded to provide a safe working environment?	The Contractor is responsible for providing a safe working environment. The Contractor shall contact the utility company concerning shielding of power lines if the Contractor deems it necessary per the Safety Plan.
27.	Please clarify the design water depth: Is it 36'-0" as specified in Section 13200-1.06.B of the tank specs and shown in the "Profile" section in Sheets 00C-03 and -04, or 38"-0" as shown in the "Section-Elevation" in Sheet 02D-01 (SWD = 38'-0")?	Drawing 02D-01 is revised to indicate a wall height of 38"-0". See revised Drawing 02D-01.
28.	Can we assume that the reference to Section 1.07B in Section 13200-1.06.C.5 of the tank specs is in error, and that the correct reference is 1.06B?	Specification Section 13200-1.06.C.5 is revised. See changes made to specification.
29.	With respect to the perimeter drain at the base of the wall recommended in Section 8.3 of the August 4 geotechnical report, please advise (a) Is this drain mandatory; (b) What is the required drain diameter; and (c) are there provisions for the collected water to be effectively discharged – either by gravity	<p>(a) Drain is mandatory as shown on Drawings 02C-01 and 03C-06.</p> <p>(b) See Drawings 02C-01 and 03C-06.</p> <p>(c) See Drawings 02C-01 and 03C-06</p>



	or by pumping – to a remote low point.	
30.	Please confirm that the note "All Floor Slab in Rock" in the "Section-Elevation of Sheet 02D-01 does not preclude the use of the 12"-thick crushed stone layer between the bedrock and the underside of the tank specified in Note 4 in the same drawing.	The reference is made to indicate that there shall be no soil between rock and the floor slab only the minimum of 12" of No. 2 stone and 4" of No. 57 stone.
31.	Can we assume that 16 floor PRV's specified in Section 13200-1.06.C.5 of the tank specs and in Sheet 02D-01 are adequate to prevent net buoyancy, and that no other criteria (such as a design groundwater or flood elevation) are necessary?	The intent of this specification section and the drawings is to allow the tank foundation designer to use any means necessary to design a tank foundation that will prevent uplift of the tank including at a minimum 16 PRV's. Other means may include additional PRV's, thicker concrete sections, etc. Uplift shall be based on water level at ground surface and the tank empty.
32.	Background: (a) Given that the bottom of excavation around the tank perimeter is 12" below the 15" – thick footing (namely at elevation 986.75'), and (b) assuming temporary excavation slopes of 1.5H:1.V through the existing fill, the top of temporary excavation on the west side of the tank (elevation 1000' +/-) will come within 26' to 28' of the toe of the existing 14.5% +/- up embankment that leads to the On Ramp (at elevation 1008' +/-). "(see Fig.1 attached)" Question: With respect to the existing 14.5% +/- up embankment leading to the On Ramp (at elevation 1008' +/-), please advise if the stability of this embankment will be adversely affected by the temporary tank excavation the top of which will come with 26' to 28' of the toe of the embankment.	A stability study was not completed for excavations on this project. Contractor will be required to provide excavations that protect existing facilities.
33.	Specification: 11421 Sub Section: 1.03.C. Rake travel speed (feet per minute) Low Speed : 23 ft/min. High Speed: 46 ft/min.	Specification revised accordingly, see addenda.



	Duperon Corporation Comment: Rake travel speed: minimum @ 2.33 ft/min Maximum @ 9.33 ft/min	
34.	<p>Specification: 11421 Sub Section:1.03.D Screenings compactor Number of units: 1 Number of hopper inlets per unit: 1 Screw length, minimum (ft): 30 ft Minimum capacity (cf/hr), total: Maximum 133 ft<sup>3</sup>/hr Feed concentration, % dry solids content: 0 - 5% Compactor discharge concentration, % dry solids content: 25 - 30% Minimum screenings volume reduction, %: 35 - 40% Minimum screw diameter, inches: 11 - 1/4" Maximum screw rotational speed, rpm: 15 rpm Duperon Corporation Comment: Washer Compactor w/debris extension: Total 30 ft with 3/4 Hp motor Max capacity @ 30 ft<sup>3</sup>/ hr Max Screw rotation @ 2.2 rpm dual screw dia. @ 8" discharge concentration: *Dry solid content @ 30-60% *Volume reduction @80%</p>	Specification revised based on comments, not all values have been changed, see addenda.
35.	<p>Specification: 11421 Sub Section:1.06.C.2 In case the Owner rejects said equipment, then the Contractor hereby agrees to repay to the Owner all sums of money paid to him for said rejected equipment on progress certificates or otherwise on account of the lump sum prices herein specified, and upon the receipt of said sum of money the Owner will execute and deliver to the Contractor a bill of sale of all its rights, title, and interest in and to said rejected equipment; provided, however, that said equipment shall not be removed</p>	No change to this paragraph.



	<p>from the premises of the Owner until the owner obtains from other sources the equipment to take the place of the rejected. The Owner hereby agrees to obtain said other equipment within a reasonable time and the Contractor agrees that the Owner may use the equipment furnished by him without rental or other charge until said other new equipment is obtained.</p> <p>Duperon Corporation Comment: Warranty for material and workmanship is offered and included. Reimbursement for potentially rejected equipment by the Owner is not included.</p>	
36.	<p>Specification: 11421 Sub Section:1.08 The Contractor guarantees and warrants that during the first one year of operation , the mechanical screens and screenings compactors will operate satisfactorily and continuously according to the operating conditions and performance requirements specified herein, and that after due notice has been given by the Owner, he or the equipment manufacturer will proceed, within a reasonable time, to adjust, regulate, repair and renew at his own expense or perform such work as is necessary to maintain the guaranteed capacities, efficiencies and performances.</p> <p>Duperon Corporation Comment: One year warranty for standard material and workmanship along with five year warranty on all rotating parts is included.</p>	No change, exact wording of manufacturer warranty and contractor warranty shall be reconciled between them.
37.	<p>Specification: 11421 Sub Section: 2.01.A.4 The unit shall be supported and anchored on the operating floor and rest on the bottom of the channel.</p> <p>Duperon Corporation Comment: The unit shall be supported and anchored on the operating floor and at the bottom of</p>	Specification revised accordingly, see addenda.





	the channel.	
38.	<p>Specification: 11421 Sub Section: 2.01.A.7 The bottom seal shall consist of a neoprene seal to prevent the flow from passing under the screening.</p> <p>Duperon Corporation Comment: The unit is anchored to the channel floor at the toe of the unit to prevent the flow from passing under the screen. The channel bottom plate directs flow into the screen.</p>	Specification revised accordingly, see addenda.
39.	<p>Specification: 11421 Sub Section: 2.01.A.9 Screen enclosure covers which are easily removable shall be provided with handles and turn locks for no tool required access. A 14 gauge. (minimum thickness) #4 brushed satin finish 304 stainless steel enclosure shall be installed to cover the screen above the operating deck level. Front Enclosure shall have continuously hinged stainless steel doors with polycarbonate viewing pane for access to equipment. Removable panels shall be constructed of 304 stainless steel with a minimum thickness of 16 gauge. Alignment notches shall be included to support repositioning of removable panels. Rear Enclosure shall have hinged removable doors and shall be secured with a lift-slide-latch handle. Rear removable door shall include an integral viewing door that shall be secured with a lift-slide-latch handle to provide access for a quick look inside.</p>	Specification revised accordingly, see addenda.
40.	<p>Specification: 11421 Sub Section: 2.01.B.1 Screen bars shall be constructed of 304 stainless steel and be "tear-shaped" with a hydraulic coefficient shape factor of 0.76 and the minimum dimensions of 0.25 inch x 0.75 inch x 0.13 inch.</p> <p>Duperon Corporation Comment:</p>	Specification revised for 316SS, see addenda.



	Screen bars shall be constructed of 316 stainless steel.	
41.	<p>Specification: 11421 Sub Section: 2.01.C.6 Staging Scrapers shall be 1 inch thick x 5 inches x screen width UV Stable U H MW-PE with a serrated edge.</p> <p>Duperon Corporation Comment: Staging Scrapers shall be 1 inch thick x 4 inches x screen width UV Stable U H MW-PE with a serrated edge.</p>	Specification revised accordingly, see addenda.
42.	<p>Specification: 11421 Sub Section: 2.01.D.5 All ball or roller bearings shall be L10 rated and manufactured by a member of the Antifriction Bearing Manufacturer's Association for 100,000 hour life (minimum). At least one bearing on each shaft shall be of the combined radial and thrust type.</p> <p>Duperon Corporation Comment: Bearing shall be greased ball bearing type, non self-aligning, sealed and lubricated and shall have a 24/7/365 L10 life of 20 years when in compliance with stated O&amp;M recommendations. Non-sealed bearings are not acceptable.</p>	Specification revised accordingly, see addenda.
43.	<p>Specification: 11421 Sub Section: 2.01.D.6 The rake mechanism shall be capable of 2 cleaning speeds. Normal (slow) speed shall have between a 10 to 15 second cleaning interval (between rakes) and high (fast) speed shall have between a 5 to 10 second cleaning interval.</p> <p>Duperon Corporation Comment: Screen operates continuously, speed is controlled by set points established by water level differential. Discharge intervals vary from once every minute to once every 15 seconds (or 4 times a minute).</p>	Specification revised accordingly, see addenda.
44.	<p>Specification: 11421 Sub Section: 2.01.E.1-5</p> <p>1. Speed reducers shall shaft mounted and</p>	Specification revised accordingly, see addenda.



<p>shall be of the cycloidal and spiral bevel gearing type fully enclosed in a weatherproof casing of cast iron or welded steel. Reducers shall have ball or roller bearings throughout with all moving parts immersed in oil. Shafts shall be of high strength alloy steel ground to required tolerances. Bevel gearing shall be in compliance with ANSI/AGMA Standards 2003-A86 and shall be carbonized to a hardness of 58-62 HRC for durability. All ball or roller bearings shall be L10 rated and manufactured by a member of the Antifriction Bearing Manufacturer's Association for 1 00,000 hour life (minimum). At least one bearing on each shaft shall be of the combined radial and thrust type.</p> <p>2. Reducer units shall meet the standards of the American Gear Manufacturers Association for such equipment under moderate shock, 24 hour, Class II service with a service factor of 1.25 (minimum) and an AGMA rating plate showing compliance shall be affixed to each unit. The output capacity of the speed reducer shall be equal to the motor horsepower less reducer losses.</p> <p>3. Speed reducers running on a positive circulation of lubricating oil shall have sight windows for inspection of oil flow. A drain shall be provided in each casing. A sight glass shall be provided such that oil level may be inspected from operator access level. The gearbox shall not be vented to the outside atmosphere.</p> <p>4. All seals shall be double lip, spring- loaded type and made of nitrile rubber.</p> <p>5. Speed reducers and motors requiring coupling shall be coupled by means of approved all metal flexible couplings,</p>	
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	<p>furnished and installed complete with coupling guards, if not otherwise guarded.</p> <p>Duperon Corporation Comment:</p> <p>Speed reducer shall be a double-reduction, cycloidal style and shall comply with all applicable AGMA standards. The speed reducer shall be capable of a 4/1 speed range with variable output speeds between 0.50 to 2.2 output RPMs (in high flow conditions). The speed reducer shall produce an output torque of 11,417 in.lb. and have a gear ratio of 809:1.</p>	
45.	<p>Specification: 11421 Sub Section: 2.02.E.3</p> <p>Augers shall float mounted in a UHMW thrust and plane bearing arrangement that allows movement for accommodation of irregular debris. Stainless steel fasteners shall be provided to hold the auger support in place.</p> <p>Duperon Corporation Comment:</p> <p>Augers shall float mounted in a Delrin (or equivalent) thrust and plane bearing arrangement that allows movement for accommodation of irregular debris. Stainless steel fasteners shall be provided to hold the auger support in place.</p>	Specification revised accordingly, see addenda.
46.	<p>Specification: 11421 Sub Section: 2.02.I</p> <p>1. Speed reducers shall be of the helical or bevel gear type fully enclosed in a weatherproof casing of cast iron or welded steel. Reducers shall have ball or roller bearings throughout with all moving parts immersed in oil. Shafts shall be of high strength alloy steel ground to required tolerances. Bevel gearing shall be in compliance with ANSI/AGMA Standards 2003-A86 and shall be carbonized to a hardness of 58-62 HRC for durability. All ball or roller bearings shall be L10 rated and manufactured by a member of the Antifriction Bearing Manufacturer's</p>	Specification revised accordingly, see addenda.



	<p>Association for 100,000 hour life (minimum). At least one bearing on each shaft shall be of the combined radial and thrust type.</p> <p>2. Reducer units shall meet the standards of the American Gear Manufacturers Association for such equipment under moderate shock, 24-hour, Class II service with a service factor of 1.4 (minimum) and an AGMA rating plate showing compliance shall be affixed to each unit. The output capacity of the speed reducer shall be equal to the motor horsepower less reducer losses.</p> <p>3. Speed reducers running on a positive circulation of lubricating oil shall have sight windows for inspection of oil flow. A drain shall be provided in each casing. A sight glass shall be provided such that oil level may be inspected from operator access level.</p> <p>4. Speed reducers and motors requiring coupling shall be coupled by means of approved all-metal flexible couplings, furnished and installed complete with coupling guards, if not otherwise guarded.</p> <p>Duperon Corporation Comment: Speed Reducer: Shall have a maximum output of 2.2 RPM, 809:1 reduction ratio with 18,900 in-lb. of output torque.</p> <p>i. Thrust Bearings: Shall be Delrin (or equivalent), self-lubricating and be capable of withstanding minimum 2000 Lb. of thrust load (each auger) at 2.2 RPM for life of machine.</p> <p>j. Screw supports: Shall be UHMW plane type, self-lubricating and fastened into place using stainless steel fasteners.</p> <p>k. Spur Gears: Shall be 17-4 PH stainless steel.</p>	
47.	<p>Specification: 11421 Sub Section: 2.02.J.2</p> <p>2. Zero Speed Switch</p> <p>a. Provide non-contacting, proximity-type</p>	Specification revised to replace zero speed switch, see addenda.



	<p>speed switch on the screw press to detect zero speed condition. The zero speed switch shall consist of a sensor with internally mounted pre-amplifier</p> <p>Duperon Corporation Comment: Duperon doesn't use a zero speed switch and there is no place to mount one. Machine will fault out from settings in the VFD.</p>	
48.	<p>Specification: 11421 Sub Section: 2.03.C C. Electrical Requirements: Motors Screen Screenings Compactor VFD Rating Horsepower, Max Speed, rpm Enclosure Insulation Inverter Duty Service Factor Space Heater Motor Winding Temperature Switch 2.04 VARIABLE FREQUENCY DRIVES Yes 460V, 3ph, 60 Hz 5 1800 TEFC-XP Class H Yes 1.0 No No No 460V, 3ph, 60 Hz 5 1800 TEFC-XP Class H No 1.15 No</p>	Specification revised accordingly, see addenda.



	<p>No</p> <p>Duperon Corporation Comment: Compactor will be controlled with a VFD and the motor will be inverter duty. Both motors for the screen and compactor will have a temperature switch in the motor per NEMA 7 requirement.</p>	
49.	<p>Specification: 11421 Sub Section: 2.05.A 2.05 CONTROL PANELS</p> <p>A. Each screen and each compactor shall be provided with a separate Local Control Station (LCS) located at the equipment. Controls for each LCS shall include the following features:</p> <ol style="list-style-type: none"> <li>1. NEMA 7 rating suitable for a Class I, Division 1 hazardous location.</li> <li>2. Screen LCS shall have FORWARD and JOG-REVERSE pushbuttons and a maintained type mushroom-head emergency stop button.</li> <li>3. Compactor LCS shall have RUN and JOG-REVERSE pushbuttons and a maintained type mushroom-head emergency stop button</li> <li>4. In addition each compactor shall have a remote Emergency Stop Station (LLCS).</li> </ol> <p>Duperon Corporation Comment: On plan drawing 01Y-02 is calls for a local station with an HOR and FOR switch. Two stations will be provided one for the screen and one for the compactor and will contain an HOR, FOR and Estop.</p>	Specification revised accordingly, see addenda.
50.	<p>Specification: 11421 Sub Section: 2.05.G.5.c Upon detection of a jam, by high motor current, the screen shall attempt to dislodge the item by alternating and reversing the motor a preset period of time before stopping and alarming. Upon overload the screen shall alarm and shutdown</p> <p>Duperon Corporation Comment: Machine doesn't auto reverse but instead flexes around large debris.</p>	Specification revised accordingly, see addenda.



51.	<p>Specification: 11421 Sub Section: 2.05.H.3.b</p> <p>b. Wash cycle:</p> <ol style="list-style-type: none"> <li>1 ) Wash water supply is activated: O N/OFF mode with adjustable timers for each operational condition</li> <li>2) Drive runs forward also controlled by timers with adjustable O N/OFF sequence</li> <li>3) Wash cycle is followed by discharge cycle: screw is running forward for an adjustable time</li> <li>4) Pan wash is activated</li> <li>5) Wash cycle finished</li> </ol> <p>Duperon Corporation Comment: There is only one spray wash on the compactor and it will run when the machine is running.</p>	Specification revised accordingly, see addenda.
52.	<p>Specification: 16446 Sub Section: 2.03</p> <p>2.03 DESIGN</p> <p>A. Hardware: The drive hardware shall employ the following power components:</p> <ol style="list-style-type: none"> <li>1. Diode or fully gated bridge on the input.</li> <li>2. DC bus inductor on all ratings 5.5kW (7.5 HP) or greater.</li> <li>3. Switching logic power supply operating from the DC bus.</li> <li>4. Phase to phase and phase to ground MOV protection.</li> </ol> <p>Duperon Corporation Comment: The small horse power drives provided with the screen equipment might not contain all of these design parameters.</p>	This paragraph notes items that apply for all VFDs and those that only apply for larger units. Without specific details on the design parameters that might not be met by smaller VFDs, a more specific response is not possible.
53.	<p>Specification: 17311 Sub Section: 2.07</p> <p>PLC SOFTWARE</p> <p>A. Provide a PLC configuration and application development software package complete with documentation and disks. The PLC software package and associated licensing and/or activation shall be installed on the computers shown on the drawings.</p> <p>B. The software package shall allow on-line/off-line program development,</p>	Contractor is responsible for distribution of scope of supply between subcontractors and suppliers.





	<p>annotation monitoring, debugging, uploading, and downloading of programs to the PLCs.</p> <p>C. All required hardware (including cables, cable adapters, etc.) for connection to PLCs shall be furnished.</p> <p>D. All software licenses required to achieve the functionality described in the Specifications shall be provided.</p> <p>E. The software package shall include a software license agreement allowing the Owner the right to use the software as required for any current</p> <p>Duperon Corporation Comment: Software will not be provided with this package as the integrator has the latest version and it required to talk to this PLC.</p>	
54.	Are EPA MWDBE forms with bid forms?	No, but the attached Lexington-Fayette Urban County MWDBE forms shall be submitted.

## 2. CLARIFICATIONS

- A. Construction is scheduled to be completed by December 31, 2018. This is revised from Addendum #2.

## 3. DRAWINGS

- A. Sheet 00G-05, Project Specific Notes, shall add revisions and updates to the **SWPPP/Erosion and Sediment Control Revisions**, to Specification Sections 02371 and 02372. See Attached.
- B. Sheet 03C-05, Standard Details, Pressure Gauge Mounting Detail is revised. See Attached.
- C. Sheet 01D-01, Pump Station Upper Floor Plan, **Key Note 24.** shall be revised to require FRP versus PVC ductwork. See Attached.
- D. Sheet 01D-02, Pump Station Upper Floor Plan, **Key Notes 4, 5, and 6** shall be revised to require FRP versus PVC ductwork. See Attached.
- E. Sheet 01D-03, Pump Station Upper Floor Plan, **Key Note 7.** shall be revised to require FRP versus PVC ductwork. See Attached.



- F. Sheet 01D-04, Pump Station Upper Floor Plan, **Key Note 14.** shall be revised to require FRP versus PVC ductwork. See Attached.
- G. Sheet 02D-01, Storage Tank Sections and Detail, **Section-Elevation** shall be revised to indicate a 38'-0" wall height. Notes 6. and 7. are added to the Typical Wall Section notes. See Attached.
- H. Sheet 02D-09, Storage Tank Details, **Section 1 Mixing Pump Inlet Piping and Section 2 Mixing Pump Outlet Piping** has been revised to include flexible expansion joints. See Attached.
- I. Sheet 02D-10, Storage Tank Details, **Section 2 Odor Control Piping** shall be revised to include the 20" Odor Control Piping light gauge fabricated stainless steel type and wall thickness. See Attached.
- J. Sheet 02D-15, Flow Control and Chemical Feed Vaults Plan and Sections, **Key Notes 6.** shall be revised to indicate that the valve is a plug valve. See Attached.
- K. Sheet 00S-01, Pump Station / Storage Tank Structural General Notes, Article G4.4. shall be revised to include "Unless Shown Otherwise". See Attached.
- L. Sheet 01S-05, Pump Station Overall Sections, **Section 1 and 2** shall be revised as shown. See Attached.
- M. Sheet 03A-01, **Building Sections and Details** shall be revised. See Attached.
- N. Sheet 03A-02, **Building Details and Schedules** shall revised Door PS-8 to 6'-0" wide. See Attached.
- O. Sheet 02E-07, Storage Tank Power Plan, **Wet Weather Storage Tank Power Plan** shall be revised to provide for a redundant pressure transducer system at the Wet Weather Storage Tank with controls displayed in the electrical control room. See Attached.
- P. Sheet 02E-08, Pump Station Upper Floor Plan – Power, **Upper Level Power Plan** shall be revised to provide for a redundant pressure transducer system at the Diversion Structure with controls displayed in the electrical control room. See Attached.
- Q. Sheet 01Y-01, Pump Station Diversion Box P&ID, **Diversion Box** shall be revised to provide for a redundant pressure transducer system at the Diversion Structure with controls displayed in the electrical control room. See Attached.
- R. Sheet 01Y-03, Pump Station P&ID, **Wet Weather Pump Station** shall be revised to indicate a 12" force main plug valve (PV-231). See Attached.
- S. Sheet 02Y-01, Storage Tank Modulating Structure P&ID, **Wet Weather Storage Tank** shall be revised to provide for a redundant pressure transducer system at the Wet Weather Storage Tank with controls displayed in the electrical control room. See Attached.



#### 4. SPECIFICATIONS

- A. Section 00410, Bid Form, **West Hickman 7 WWS (Contract No.2) Equipment Manufacturer (Circle One) – Bid Basis** page 00410-32 shall be revised by adding Fairbanks Nijhuis to Solids Handling Submersible & Dry Pit Pumps, deleting Continental Carbon Group and adding Other (List) to Odor Control Chemical Feed System. Attached is revised page 00410-32.
- B. Section 01210, Allowances, Part 1 – General, **Subpart 1.06 Defined Allowances, Paragraph A.** shall be deleted and replaced as follows:
- “A. Defined allowances shall include cost to Contractor of specific projects and materials ordered by LFUCG under allowance and shall include taxes, freight, and delivery to the project site. Defined allowances are the same as Cash Allowances as defined in Article 11.02 of the General Conditions.”
- C. Section 1210, Allowances, Part 1 – General, **Subpart 1.07 Undefined Allowances, Paragraph A.** shall be deleted and replaced as follows:
- “A. Undefined allowances shall include work for which the scope is not yet determined. The allowance amount is not guaranteed and is solely for the purpose of determining an initial Contract Price. Undefined allowances are the same as Contingency Allowances as defined in Article 11.02 of the General Conditions.”
- D. Section 01750, Testing Concrete Structures for Watertightness, Part 3 – Execution, **Subpart 3.2 Testing for Leakage, Paragraph A.2.** shall be added as follows:
- “2. Watertightness testing for concrete structures shall be completed on the Diversion Structure, Wet Weather Screen Channels and Wet Well to Elevation 978.0, and on the Wet Weather Storage Tank to Elevation 1024.5.”
- E. Section 02515, **Valves** shall be deleted in its entirety and replaced. See Attached.
- F. Section 11310, Solids Handling Submersible Sewage Pumps, Part 1 – General, **Subpart 1.03 Manufacturer, Paragraph A.** shall be deleted and replaced as follows:
- “A. The pumping units shall be provided by a single manufacturer with a minimum of five (5) year’s experience in designing and manufacturing pumping equipment of similar type, size



and capacity. The pumps shall be manufactured by the Xylem Corporation Flygt Division, Sulzer-ABS, KSB, Fairbanks Nijhuis, or approved equal.”

- G. Section 11310, Solids Handling Submersible Sewage Pumps, Part 2 – Products, Subpart 2.02 Pumping Requirements shall be deleted and replaced as follows:

“A. Pumps shall be N-series as manufactured by Xylem Corporation, Flygt Division, Model NP3301.090-MT3-636 (Wet Weather Pumps) based on the following system curve:

Location	No. of Pumps	Shut-off Head (Min) (Ft)	System Point #1		System Point #2		System Point #3		Max. Speed (RPM)	Motor HP/Max Each Pump
			Total Flow (GPM)	Head (Ft)	Total Flow (GPM)	Head (Ft)	Total Flow (GPM)	Head (Ft)		
Wet Weather Pumps	4	118	0	61	3,500	69	5,905 <sup>1</sup>	78	1185	70
Mixing Pumps	3	65	2,200 <sup>2</sup>	8	—	—	4,440 <sup>3</sup>	32	1185	60

Notes: <sup>1</sup> Based on 3 pumps operating in parallel. <sup>2</sup> Based on 1 pump operating at a reduced speed. <sup>3</sup> Based on 1 pump operating at full speed.

- A. Power supply shall be 460 volts, 3-Phase, 60 Hz, 4 wire service.
  - B. Motors shall be 460 volt, 3 phase, 60 Hz.
  - C. Each pump shall be operated by VFD – see Specifications Division 16
  - D. Maximum allowable NPSHr at Design Point Number 3 is 23.
  - E. The pumps shall operate throughout the entire operating range with the maximum vibration velocity in inches per second RMS unfiltered, measured in the field, shall be less than the requirements of ANSI/HI 11.6-latest edition.
  - F. Mixing Pumps are to be dry pit submersible.”
- H. Section 11375, Jet Aeration Header System, Part 1 – General, **Subpart 1.02 General** shall be deleted in its entirety.
- I. Section 11420, **Mechanical Screens and Screenings Compactors** shall be deleted in its entirety and replaced. See Attached.



- J. Section 11421, **Mechanical Screens and Screenings Compactors Duperon** shall be deleted in its entirety and replaced. See Attached.
- K. Section 13200, Prestressed Concrete Storage Tank, Part 1 – General, Subpart 1.06 Design Criteria, Subpart C.5 first sentence shall be revised to reference Section 1.06B.
- L. Section 13200, Prestressed Concrete Storage Tank, Part 1 – General, Subpart 1.06 Design Criteria, Subpart C.5.b. and c. shall be revised as follows:

“b. Minimum top reinforcing steel: #5 at 7” c/c, each way  
c. Minimum bottom reinforcing steel: Not required”

- M. Section 14301, Monorails and Trolleys, Part 3 – Execution, **Subpart 3.03 Schedule** shall be deleted and replaced as follows:

“A. Hoist, trolley, and monorail systems include but are not necessarily limited to the following:

TAG NUMBER	LOADING (TONS)	HOIST	TROLLEY	HOOK HEIGHT (FT)*	LIFTING HEIGHT (FT)*	HP	OPERATING SPEED FPM
	2	1 Motor (WR)	Motor Driven	See Drawings	36.0	4/0.59	20

\* Distances listed are approximate as they will vary depending on hoist and trolley selection.

C = Chain  
HG = Hand Geared  
WR = Wire Rope  
NA = Not Applicable”

- N. Section 16225, Electric Valve and Gate Actuators, Part 2 – Products, Subpart 2.02 Actuator Construction, Paragraph R. Schedule Tag No.’s SLG-203 and SLG-301 WW #2 Sluice Gate and Final Sluice Gate, respectively, shall be eliminated from the specification.



- O. Section 17311, PLC Hardware and Software, Part 2 – Products, **Subpart 2.08 Operator Interface Terminals (OIT)**, Paragraph B.1.a. shall be revised as follows:

“a. Allen-Bradley Panel View Plus 6 series, 1500 model”

- P. Section 17480, Instrument Lists and Report, Part 1 – General, **Subpart 1.04 Instrument Schedule** shall be revised as follows:

**“1.04 INSTRUMENT SCHEDULE**

Primary Element	Location	Tag	Loop Description	Comments
Submersible Level	Diversion Structure <sup>1</sup>	LE/LIT-101	Diversion Box Level	0 – 8'
Level Sensor	Mechanical Bar Screen	LIT-111A	Channel Influent Level Transmitter	By Mfr
Level Sensor	Mechanical Bar Screen	LIT-111B	Channel Effluent Level Transmitter	By Mfr
Level Sensor	Manual Bar Screen	LIT-112A	Channel Influent Level Transmitter	By Mfr
Level Sensor	Manual Bar Screen	LIT-112B	Channel Effluent Level Monitor	By Mfr
Float Switch	Wet Well	LSL-202	Wet Well Low Level	Elev. 965.0
Float Switch	Wet Well	LSH-202	Wet Well High Level	Elev. 974.0
Float Switch	Wet Well	LSHH-202	Wet Well High High Level	Elev. 976.0
Level Sensor	Wet Well	LT-201	Wet Well Level	0 – 20'
Float Switch	Vault Vault	LSH-203	Valve Vault High Level	Elev. 971.0
Float Switch	Wet Well	LSL-210	Wet Well Sump Low Level	Elev. 956.0
Level Sensor	Storage Tank <sup>1</sup>	LE/LIT-401	Storage Tank Level	0 – 35'
Float Switch	Storage Tank	LSH-402	Storage Tank High Level	Elev. 1023.0
Float Switch	Storage Tank	LSHH-402	Storage Tank High High Level	Elev. 1025.0
Float Switch	Modulating Structure	LSL-410	Sump Low Level	By Mfr
Float Switch	Modulating Structure	LSH-410	Sump High Level	By Mfr
Float Switch	Modulating Structure	LSHH-410	Sump High High Level	By Mfr
Level Sensor	Bioxide Tank #1	LE/LIT-610	Tank Level	0 – 10'
Level Sensor	Bioxide Tank #2	LE/LIT-620	Tank Level	0 – 10'
Float Switch	Bioxide Containment	LS-600	Flood Level	Elev. 998.0
Float Switch	Mixing PS Sump Pump	LSL-930	Mixing PS Sump Low Level	Elev. 982.0
Float Switch	Mixing PS Sump Pump	LSH-930	Mixing PS Sump High Level	Elev. 985.0
Float Switch	Mixing PS Sump Pump	LSHH-930	Mixing PS High High Level	Elev. 990.0
Flow Switch	Shower/Eyewash	FS-640	Shower/Eyewash	



			Flow Switch	
Temperature Switch	PS Electrical Room	TE/TSH-131	High Temp Alarm	
Temperature Switch	Tank Electrical Room	TE/TSH-431	High Temp Alarm	
Pressure Switch	PS Odor Control	PSL-501	Fan Suction Low Pres SW	By Mfr
Pressure Switch	PS Odor Control	PSH-502	Fan Discharge Pres SW	By Mfr
Pressure Transmitter	PS Odor Control	PT-503	Fan Discharge Pres Transmitter	By Mfr
Pressure Switch	Tank Odor Control	PSL-511	Fan Suction Low Pres SW	By Mfr
Pressure Switch	Tank Odor Control	PSH-512	Fan Discharge High Pres SW	By Mfr
Pressure Transmitter	Tank Odor Control	PT-513	Fan Discharge Pres Transmitter	By Mfr
Pressure Transmitter	ST Discharge Pipe	PIT-411	Tank Level	0 – 35'
Smoke Detector	Screen Room	SD-121	Smoke Alarm	
Smoke Detector	Screen Room	SD-122	Smoke Alarm	
Gas Detector	PS Electrical Room	AIT-201	Common Gas Alarm	
Gas Sensors	PS Screen Room	AS-141A,B,C	LEL, H2S, O2	
Gas Sensors	Pump Wet Well	AS-221A,B,C	LEL, H2S, O2	
Gas Sensors	PS Valve Vault	AS-222A,B,C	LEL, H2S, O2	
Gas Sensors	PS Odor Control Room	AS-510A, B, C	LEL, H2S, O2	
Gas Sensors	Loadout Area	AS-142A, B, C	LEL, H2S, O2	
Gas Detector	Storage Tank Odor Control Room	AIT-561	Common Gas Alarm	
Gas Sensors	Storage Tank Odor Control Room	AS-561A, B, C	LEL, H2S, O2	
Gas Detector	Mixing Pump Station	AIT-901	Common Gas Alarm	
Gas Sensors	Mixing Pump Station	AS-901A,B,C	LEL, H2S, O2	

**Note:** A second redundant unit is required at the Diversion Structure and Storage Tank."

Q. Section 17480, Instrument Lists and Report, Part 1 – General, **Subpart 1.05 Input/Output Schedule** shall be revised as follows:

**"1.05 INPUT/OUTPUT SCHEDULE**

TAG	DESCRIPTION	TYPE	RTU	MODULE	CHANNEL
LIR-101	DIVERSION BOX LEVEL <sup>1</sup>	AI	PS	1	0
ZI-101	DIVERSION BOX WEIR GATE POSITION FEEDBACK <sup>1</sup>	AI	PS	1	1
ZI-102	DIVERSION BOX SLIDE GATE POSITION FEEDBACK	AI	PS	1	2
ZI-110	MECHANICAL SCREEN INFL GATE POSITION FEEDBACK	AI	PS	1	3
ZI-111	MECHANICAL SCREEN EFFL GATE POSITION FEEDBACK	AI	PS	2	0
ZI-112	MANUAL SCREEN INFL GATE POSITION FEEDBACK	AI	PS	2	1



ZI-113	MANUAL SCREEN EFFL GATE POSITION FEEDBACK	AI	PS	2	2
LIR-111A	MECHANICAL BAR SCREEN BS-110 INFL LEVEL	AI	PS	2	3
LIR-111B	MECHANICAL BAR SCREEN BS-110 EFFL LEVEL	AI	PS	3	0
LIR-112A	MANUAL BAR SCREEN BS-112 INFL LEVEL	AI	PS	3	1
LIR-112B	MANUAL BAR SCREEN BS-112 EFFL LEVEL	AI	PS	3	2
	SPARE	AI	PS	3	3
SI-201	WW PUMP NO. 1 P-201 SPEED FEEDBACK	AI	PS	4	0
SI-202	WW PUMP NO. 2 P-202 SPEED FEEDBACK	AI	PS	4	1
SI-203	WW PUMP NO. 3 P-203 SPEED FEEDBACK	AI	PS	4	2
SI-204	WW PUMP NO. 4 P-204 SPEED FEEDBACK	AI	PS	4	3
LIR-201	WET WELL LEVEL	AI	PS	5	1
	SPARE	AI	PS	5	0
	SPARE	AI	PS	5	2
	SPARE	AI	PS	5	3
ZC-101	DIVERSION BOX WEIR GATE WG-101 POSITION COMMAND <sup>1</sup>	AO	PS	6	0
ZC-102	DIVERSION BOX SLIDE GATE SG-102 POSITION COMMAND	AO	PS	6	1
	SPARE	AO	PS	6	2
	SPARE	AO	PS	6	3
ZC-110	MECHANICAL SCREEN INFL GATE POSITION COMMAND	AO	PS	7	0
ZC-111	MECHANICAL SCREEN EFFL GATE POSITION COMMAND	AO	PS	7	1
ZC-112	MANUAL SCREEN INFL GATE POSITION COMMAND	AO	PS	7	2
ZC-113	MANUAL SCREEN EFFL GATE POSITION COMMAND	AO	PS	7	3
SC-201	WW PUMP NO. 1 P-201 SPEED CONTROL	AO	PS	8	0
SC-202	WW PUMP NO. 2 P-202 SPEED CONTROL	AO	PS	8	1
SC-203	WW PUMP NO. 3 P-203 SPEED CONTROL	AO	PS	8	2
SC-204	WW PUMP NO. 4 P-204 SPEED CONTROL	AO	PS	8	3
YR-101	WEIR GATE SG-101 IN REMOTE <sup>1</sup>	DI	PS	9	0
XA-101	WEIR GATE SG-101 ALARM <sup>1</sup>	DI	PS	9	1
ZSO-101	WEIR GATE SG-101 OPEN POSITION <sup>1</sup>	DI	PS	9	2
ZSC-101	WEIR GATE SG-101 CLOSED POSITION <sup>1</sup>	DI	PS	9	3
YR-102	SLIDE GATE SG-102 IN REMOTE	DI	PS	9	4
XA-102	SLIDE GATE SG-102 ALARM	DI	PS	9	5





ZSO-102	SLIDE GATE SG-102 OPEN POSITION	DI	PS	9	6
ZSC-102	SLIDE GATE SG-102 CLOSED POSITION	DI	PS	9	7
YR-110	SLIDE GATE SG-110 IN REMOTE	DI	PS	9	8
XA-110	SLIDE GATE SG-110 ALARM	DI	PS	9	9
ZSO-110	SLIDE GATE SG-110 OPEN POSITION	DI	PS	9	10
ZSC-110	SLIDE GATE SG-110 CLOSED POSITION	DI	PS	9	11
YR-111	SLIDE GATE SG-111 IN REMOTE	DI	PS	9	12
XA-111	SLIDE GATE SG-111 ALARM	DI	PS	9	13
ZSO-111	SLIDE GATE SG-111 OPEN POSITION	DI	PS	9	14
ZSC-111	SLIDE GATE SG-111 CLOSED POSITION	DI	PS	9	15
YR-112	SLIDE GATE SG-112 IN REMOTE	DI	PS	10	0
XA-112	SLIDE GATE SG-112 ALARM	DI	PS	10	1
ZSO-112	SLIDE GATE SG-112 OPEN POSITION	DI	PS	10	2
ZSC-112	SLIDE GATE SG-112 CLOSED POSITION	DI	PS	10	3
YR-113	SLIDE GATE SG-113 IN REMOTE	DI	PS	10	4
XA-113	SLIDE GATE SG-113 ALARM	DI	PS	10	5
ZSO-113	SLIDE GATE SG-113 OPEN POSITION	DI	PS	10	6
ZSC-113	SLIDE GATE SG-113 CLOSED POSITION	DI	PS	10	7
YID-110A	MECHANICAL BAR SCREEN IN AUTO	DI	PS	10	8
YID-110B	MECHANICAL BAR SCREEN RUN STATUS	DI	PS	10	9
XA-110	MECHANICAL BAR SCREEN FAULT	DI	PS	10	10
YID-120A	COMPACTOR IN AUTO	DI	PS	10	11
YID-120B	COMPACTOR RUN STATUS	DI	PS	10	12
XA-120	COMPACTOR FAULT	DI	PS	10	13
	SPARE	DI	PS	10	14
	SPARE	DI	PS	10	15



YID-201A	WW PUMP NO. 1 P-201 RUN STATUS	DI	PS	11	0
YID-201B	WW PUMP NO. 1 P-201 IN HAND	DI	PS	11	1
YID-201C	WW PUMP NO. 1 P-201 VFD/PLC SELECTOR SW STATUS	DI	PS	11	2
XA-201	WW PUMP NO. 1 P-201 COMMON ALARM	DI	PS	11	3
YID-202A	WW PUMP NO. 2 P-202 RUN STATUS	DI	PS	11	4
YID-202B	WW PUMP NO. 2 P-202 IN HAND	DI	PS	11	5
YID-202C	WW PUMP NO. 2 P-202 VFD/PLC SELECTOR SW STATUS	DI	PS	11	6
XA-202	WW PUMP NO. 2 P-202 COMMON ALARM	DI	PS	11	7
YID-203A	WW PUMP NO. 3 P-203 RUN STATUS	DI	PS	11	8
YID-203B	WW PUMP NO. 3 P-203 IN HAND	DI	PS	11	9
YID-203C	WW PUMP NO. 3 P-203 VFD/PLC SELECTOR SW STATUS	DI	PS	11	10
XA-203	WW PUMP NO. 3 P-203 COMMON ALARM	DI	PS	11	11
YID-204A	WW PUMP NO. 4 P-204 RUN STATUS	DI	PS	11	12
YID-204B	WW PUMP NO. 4 P-204 IN HAND	DI	PS	11	13
YID-204C	WW PUMP NO. 4 P-204 VFD/PLC SELECTOR SW STATUS	DI	PS	11	14
XA-204	WW PUMP NO. 4 P-204 COMMON ALARM	DI	PS	11	15
YID-251	WW SUMP PUMP NO. 1 SP-251 RUN STATUS	DI	PS	12	0
YID-252	WW SUMP PUMP NO. 1 SP-251 IN REMOTE	DI	PS	12	1
XA-251	WW SUMP PUMP NO. 1 SP-251 ALARM	DI	PS	12	2
YID-261	WW SUMP PUMP NO. 2 SP-261 RUN STATUS	DI	PS	12	3
YID-262	WW SUMP PUMP NO. 2 SP-261 IN REMOTE	DI	PS	12	4
XA-261	WW SUMP PUMP NO. 2 SP-261 ALARM	DI	PS	12	5
LAL-210	WW SUMP PIT LOW LEVEL ALARM	DI	PS	12	6



ZSO-231	WW PLUG VALVE PV-231 OPEN POSITION	DI	PS	12	7
ZSC-231	WW PLUG VALVE PV-231 CLOSED POSITION	DI	PS	12	8
YID-500	WW ODOR CONTROL FAN B-500 RUN STATUS	DI	PS	12	9
XA-500	WW ODOR CONTROL FAN B-500 RUN OVERLOAD	DI	PS	12	10
AAH-142	PUMP STATION LOADOUT ROOM GAS ALARM	DI	PS	12	11
AAH-510	PUMP STATION ODOR CONTROL ROOM GAS ALARM	DI	PS	12	12
AAH-222	PUMP STATION VALVE VAULT GAS ALARM	DI	PS	12	13
AAH-221	PUMP STATION WET WELL GAS ALARM	DI	PS	12	14
AAH-141	PUMP STATION SCREEN ROOM GAS ALARM	DI	PS	12	15
SDA-123	PUMP STATION SCREEN ROOM SMOKE ALARM	DI	PS	13	0
LAL-202	PUMP STATION WET WELL LOW LEVEL ALARM	DI	PS	13	1
LAH-202	PUMP STATION WET WELL HIGH LEVEL ALARM	DI	PS	13	2
LAHH-202	PUMP STATION WET WELL HIGH HIGH LEVEL ALARM	DI	PS	13	3
LAH-203	PUMP STATION VALVE VAULT HIGH LEVEL ALARM	DI	PS	13	4
YI-701	PUMP STATION GENERATOR IN AUTO	DI	PS	13	5
YA-701	PUMP STATION GENERATOR PRE-SHUTDOWN ALARM	DI	PS	13	6
YR-701	PUMP STATION GENERATOR RUN STATUS	DI	PS	13	7
XA-701	PUMP STATION GENERATOR SHUTDOWN ALARM	DI	PS	13	8
LAL-701	PUMP STATION GENERATOR LOW FUEL ALARM	DI	PS	13	9
ZI-702A	PUMP STATION ATS IN NORMAL POSITION	DI	PS	13	10
ZI-702B	PUMP STATION ATS IN EMERGENCY POSITION	DI	PS	13	11
TAH-131	PUMP STATION ELECTRICAL ROOM HIGH TEMP ALARM	DI	PS	13	12
	SPARE	DI	PS	13	13
	SPARE	DI	PS	13	14



	SPARE	DI	PS	13	15
	SPARE	DI	PS	14	0
	SPARE	DI	PS	14	1
	SPARE	DI	PS	14	2
	SPARE	DI	PS	14	3
	SPARE	DI	PS	14	4
	SPARE	DI	PS	14	5
	SPARE	DI	PS	14	6
	SPARE	DI	PS	14	7
	SPARE	DI	PS	14	8
	SPARE	DI	PS	14	9
	SPARE	DI	PS	14	10
	SPARE	DI	PS	14	11
	SPARE	DI	PS	14	12
	SPARE	DI	PS	14	13
	SPARE	DI	PS	14	14
	SPARE	DI	PS	14	15
MC-110	MECHANICAL BAR SCREEN ENABLE COMMAND	DO	PS	15	0
HS-201	PUMP NO. 1 P-201 RUN COMMAND	DO	PS	15	1
HS-202	PUMP NO. 2 P-202 RUN COMMAND	DO	PS	15	2
HS-203	PUMP NO. 3 P-203 RUN COMMAND	DO	PS	15	3
HS-204	PUMP NO. 4 P-204 RUN COMMAND	DO	PS	15	4
HS-251	WET WELL NO. 1 SUMP PUMP RUN COMMAND	DO	PS	15	5
HS-261	WET WELL NO. 2 SUMP PUMP RUN COMMAND	DO	PS	15	6
MCO-231	PLUG VALVE PV-231 OPEN COMMAND	DO	PS	15	7
MCC-231	PLUG VALVE PV-231 CLOSE COMMAND	DO	PS	15	8
	SPARE	DO	PS	15	9
	SPARE	DO	PS	15	10
	SPARE	DO	PS	15	11
	SPARE	DO	PS	15	12
	SPARE	DO	PS	15	13
	SPARE	DO	PS	15	14
	SPARE	DO	PS	15	15
LI-401	WW STORAGE TANK LEVEL <sup>1</sup>	AI	ST	1	0
ZI-421	WWST DISCHARGE VALVE MCV-421 POSITION FEEDBACK	AI	ST	1	1
LI-610	WWST BIOXIDE STORAGE TANK NO. 1 T-610 LEVEL	AI	ST	1	2



LI-620	WWST BIOXIDE STORAGE TANK NO. 2 T-620 LEVEL	AI	ST	1	3
SI-801	WWST BLOWER NO. 1 B-801 SPEED FEEDBACK	AI	ST	2	0
SI-811	WWST BLOWER NO. 2 B-811 SPEED FEEDBACK	AI	ST	2	1
SI-901	WWST MIXING PUMP NO. 1 M-901 SPEED FEEDBACK	AI	ST	2	2
SI-911	WWST MIXING PUMP NO. 2 M-911 SPEED FEEDBACK	AI	ST	2	3
SI-921	WWST MIXING PUMP NO. 3 M-921 SPEED FEEDBACK	AI	ST	3	0
LI-411	WT STORAGE TANK LEVEL (SECONDARY)	AI	ST	3	1
	SPARE	AI	ST	3	2
	SPARE	AI	ST	3	3
ZC-421	WWST DISCHARGE VALVE MCV-421 POSITION COMMAND	AO	ST	4	0
SC-901	WWST MIXING PUMP NO. 1 M-901 SPEED COMMAND	AO	ST	4	1
SC-911	WWST MIXING PUMP NO. 2 M-911 SPEED COMMAND	AO	ST	4	2
SC-921	WWST MIXING PUMP NO. 3 M-921 SPEED COMMAND	AO	ST	4	3
SC-801	WWST BLOWER NO. 1 B-801 SPEED COMMAND	AO	ST	5	0
SC-811	WWST BLOWER NO. 2 B-811 SPEED COMMAND	AO	ST	5	1
	SPARE	AO	ST	5	2
	SPARE	AO	ST	5	3
LAH-402	WW STORAGE TANK HIGH LEVEL ALARM	DI	ST	6	0
LAHH-402	WW STORAGE TANK HIGH HIGH LEVEL ALARM	DI	ST	6	1
YR-421	WWST DISCHARGE VALVE MCV-421 IN REMOTE	DI	ST	6	2
XA-421	WWST DISCHARGE VALVE MCV-421 ALARM	DI	ST	6	3
ZSO-421	WWST DISCHARGE VALVE MCV-421 OPEN POSITION	DI	ST	6	4
ZSC-421	WWST DISCHARGE VALVE MCV-421 CLOSED POSITION	DI	ST	6	5
XA-410	WWST FLOW CONTROL VAULT SUMP PUMP ALARM	DI	ST	6	6
LAHH-410	WWST FLOW CONTROL VAULT SUMP HIGH LEVEL ALARM	DI	ST	6	7
TAH-431	WWST ELECTRICAL ROOM HIGH TEMP ALARM	DI	ST	6	8
ZSO-422	WWST PLUG VALVE PV-422 OPEN POSITION	DI	ST	6	9
ZSC-422	WWST PLUG VALVE PV-422 CLOSED POSITION	DI	ST	6	10
XA-630	WWST CHEMICAL FEED SYSTEM ALARM	DI	ST	6	11
XA-640	WWST SHOWER/EYEWASH FLOW ALARM	DI	ST	6	12
YID-	WWST ODOR CONTROL FAN B-510 RUN STATUS	DI	ST	6	13



510					
XA-510	WWST ODOR CONTROL FAN B-510 RUN OVERLOAD	DI	ST	6	14
YA-710	WWST GENERATOR PRE-SHUTDOWN ALARM	DI	ST	6	15
YR-710	WWST GENERATOR RUN STATUS	DI	ST	7	0
XA-710	WWST GENERATOR SHUTDOWN ALARM	DI	ST	7	1
LAL-710	WWST GENERATOR LOW FUEL ALARM	DI	ST	7	2
ZI-711A	WWST ATS IN NORMAL POSITION	DI	ST	7	3
ZI-711B	WWST ATS IN EMERGENCY POSITION	DI	ST	7	4
YID-801A	WWST BLOWER NO. 1 B-801 RUN STATUS	DI	ST	7	5
YID-801B	WWST BLOWER NO. 1 B-801 IN REMOTE	DI	ST	7	6
YID-801C	WWST BLOWER NO. 1 B-801 VFD/PLC SEL SW STATUS	DI	ST	7	7
XA-801	WWST BLOWER NO. 1 B-801 ALARM	DI	ST	7	8
YID-811A	WWST BLOWER NO. 2 B-811 RUN STATUS	DI	ST	7	9
YID-811B	WWST BLOWER NO. 2 B-811 IN REMOTE	DI	ST	7	10
YID-811C	WWST BLOWER NO. 2 B-811 VFD/PLC SEL SW STATUS	DI	ST	7	11
XA-811	WWST BLOWER NO. 2 B-811 ALARM	DI	ST	7	12
	SPARE	DI	ST	7	13
	SPARE	DI	ST	7	14
	SPARE	DI	ST	7	15
YID-901A	WWST MIXING PUMP NO. 1 M-901 RUN STATUS	DI	ST	8	0
YID-901B	WWST MIXING PUMP NO. 1 M-901 IN REMOTE	DI	ST	8	1
YID-901C	WWST MIXING PUMP NO. 1 M-901 VFD/PLC SEL SW STATUS STATUSRUN STATUS	DI	ST	8	2
XA-901	WWST MIXING PUMP NO. 1 M-901 ALARM	DI	ST	8	3
YID-911A	WWST MIXING PUMP NO. 1 M-911 RUN STATUS	DI	ST	8	4
YID-911B	WWST MIXING PUMP NO. 1 M-911 IN REMOTE	DI	ST	8	5
YID-911C	WWST MIXING PUMP NO. 1 M-911 VFD/PLC SEL SW STATUSRUN STATUS	DI	ST	8	6



XA-911	WWST MIXING PUMP NO. 1 M-911 ALARM	DI	ST	8	7
YID-921A	WWST MIXING PUMP NO. 1 M-921 RUN STATUS	DI	ST	8	8
YID-921B	WWST MIXING PUMP NO. 1 M-921 IN REMOTE	DI	ST	8	9
YID-921C	WWST MIXING PUMP NO. 1 M-921 VFD/PLC SEL SW STATUS RUN STATUS	DI	ST	8	10
XA-921	WWST MIXING PUMP NO. 1 M-921 ALARM	DI	ST	8	11
AAH-561	WWST ODOR CONTROL ROOM GAS ALARM	DI	ST	8	12
AAH-901	WWST MIXING PS GAS ALARM	DI	ST	8	13
XA-930	WWST MIXING PS SUMP PUMP SP-930 ALARM	DI	ST	8	14
LAHH-930	WWST MIXING PS SUMP HIGH HIGH LEVEL ALARM	DI	ST	8	15
	SPARE	DI	ST	9	0
	SPARE	DI	ST	9	1
	SPARE	DI	ST	9	2
	SPARE	DI	ST	9	3
	SPARE	DI	ST	9	4
	SPARE	DI	ST	9	5
	SPARE	DI	ST	9	6
	SPARE	DI	ST	9	7
	SPARE	DI	ST	9	8
	SPARE	DI	ST	9	9
	SPARE	DI	ST	9	10
	SPARE	DI	ST	9	11
	SPARE	DI	ST	9	12
	SPARE	DI	ST	9	13
	SPARE	DI	ST	9	14
	SPARE	DI	ST	9	15
HS-801	WWST BLOWER NO. 1 B-801 RUN COMMAND	DO	ST	10	0
HS-811	WWST BLOWER NO. 2 B-811 RUN COMMAND	DO	ST	10	1
HS-901	WWST MIXING PUMP NO. 1 M-901 RUN COMMAND	DO	ST	10	2
HS-911	WWST MIXING PUMP NO. 2 M-911 RUN COMMAND	DO	ST	10	3
HS-921	WWST MIXING PUMP NO. 3 M-921 RUN COMMAND	DO	ST	10	4
	SPARE	DO	ST	10	5
	SPARE	DO	ST	10	6
	SPARE	DO	ST	10	7
	SPARE	DO	ST	10	8



	SPARE	DO	ST	10	9
	SPARE	DO	ST	10	10
	SPARE	DO	ST	10	11
	SPARE	DO	ST	10	12
	SPARE	DO	ST	10	13
	SPARE	DO	ST	10	14
	SPARE	DO	ST	10	15

Note: <sup>1</sup> A second redundant unit is required at the Diversion Structure and Storage Tank."

Todd Slatin, Director  
Division of Central Purchasing

All other terms and conditions of the Bid and specifications are unchanged.  
This letter should be signed, attached to and become a part of your Bid.

COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

SIGNATURE OF BIDDER: \_\_\_\_\_



## **Lexington-Fayette Urban County Government**

### **MWDBE PARTICIPATION GOALS**

#### **A. GENERAL**

- 1) The LFUCG request all potential contractors to make a concerted effort to include Minority-Owned (MBE), Woman-Owned (WBE), Disadvantaged (DBE) Business Enterprises and Veteran-Owned Small Businesses (VOSB) as subcontractors or suppliers in their bids.
- 2) Toward that end, the LFUCG has established 10% of total procurement costs as a Goal for participation of Minority-Owned, Woman-Owned and Disadvantaged Businesses on this contract.
- 3) **It is therefore a request of each Bidder to include in its bid, the same goal (10%) for MWDBE participation and other requirements as outlined in this section.**
- 4) The LFUCG has also established a 3% of total procurement costs as a Goal for participation for of Veteran-Owned Businesses.
- 5) **It is therefore a request of each Bidder to include in its bid, the same goal (3%) for Veteran-Owned participation and other requirements as outlined in this section.**

#### **B. PROCEDURES**

- 1) The successful bidder will be required to report to the LFUCG, the dollar amounts of all payments submitted to Minority-Owned, Woman-Owned or Veteran-Owned subcontractors and suppliers for work done or materials purchased for this contract. (See Subcontractor Monthly Payment Report)
- 2) Replacement of a Minority-Owned, Woman-Owned or Veteran-Owned subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another MWDBE Firm; this is subject to approval by the LFUCG. (See LFUCG MWDBE Substitution Form)
- 3) For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, bidders may contact:
  - a) The Lexington-Fayette Urban County Government, Division of Central Purchasing (859-258-3320)
- 4) The LFUCG will make every effort to notify interested MWDBE and Veteran-Owned subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

#### **C. DEFINITIONS**

- 1) A Minority-Owned Business Enterprise (MBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by persons of African American, Hispanic, Asian, Pacific Islander, American Indian or Alaskan Native Heritage.
- 2) A Woman-Owned Business Enterprise (WBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by one or more women.

- 3) A Disadvantaged Business (DBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by a person(s) that are economically and socially disadvantaged.
- 4) A Veteran-Owned Small Business (VOSB) is defined as a business which is certified as being at least 51% owned, managed and controlled by a veteran and/or a service disabled veteran.
- 5) Good Faith Efforts are efforts that, given all relevant circumstances, a bidder or proposer actively and aggressively seeking to meet the goals, can reasonably be expected to make. In evaluating good faith efforts made toward achieving the goals, whether the bidder or proposer has performed the efforts outlined in the Obligations of Bidder for Good Faith Efforts outlined in this document will be considered, along with any other relevant factors.

#### D. OBLIGATION OF BIDDER FOR GOOD FAITH EFFORTS

- 1) **The bidder shall make a Good Faith Effort to achieve the Participation Goal for MWDBE and Veteran-Owned subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the bidder; however, bidders not meeting the goal are required to furnish with their bids written documentation of their Good Faith Efforts to do so.**
- 2) Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.
- 3) The Form of Proposal includes a section entitled "MWDBE Participation Form". The applicable information must be completed and submitted as outlined below.
- 4) **Failure to submit this information as requested may be cause for rejection of bid or delay in contract award.**

#### E. DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS

- 1) Bidders reaching the Goal are required to submit only the MWDBE Participation Form." The form must be fully completed including names and telephone number of participating MWDBE firm(s); type of work to be performed; estimated value of the contract and value expressed as a percentage of the total Lump Sum Bid Price. The form must be signed and dated, and is to be submitted with the bid.
- 2) Bidders not reaching the Goal must submit the "MWDBE Participation Form", the "Quote Summary Form" and a written statement documenting their Good Faith Effort to do so. If bid includes no MWDBE and/or Veteran participation, bidder shall enter "None" on the subcontractor / supplier form). In addition, the bidder must submit written proof of their Good Faith Efforts to meet the Participation Goal:
  - a. Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.
  - b. Included documentation of advertising in the above publications with the bidders good faith efforts package
  - c. Attended LFUCG Central Purchasing Economic Inclusion Outreach event

- d. Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned businesses of subcontracting opportunities
- e. Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses.
- f. Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).
- g. Contacted organizations that work with MWDBE companies for assistance in finding certified MWDBE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.
- h. Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs and/or Veteran-Owned businesses soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.
- i. Followed up initial solicitations by contacting MWDBEs and Veteran-Owned Businesses to determine their level of interest.
- j. Provided the interested MWDBE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.
- k. Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce
- l. Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.
- m. Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.
- n. Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.
- o. Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or

bonding to satisfy the work requirements of the bid proposal

p. Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

q. Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

**Note: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.**



## MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA  
Minority Business Enterprise Liaison  
Division of Central Purchasing  
Lexington-Fayette Urban County Government  
200 East Main Street  
Lexington, KY 40507  
[smiller@lexingtonky.gov](mailto:smiller@lexingtonky.gov)  
859-258-3323

**OUR MISSION:** The mission of the Minority Business Enterprise Program is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long term economic viability of Lexington-Fayette Urban County Government.

To that end the city council adopted and implemented Resolution 484-2017 – A Certified Minority, Women and Disadvantaged Business Enterprise ten percent (10%) minimum goal and a three (3%) minimum goal for Certified Veteran-Owned Small Businesses and Certified Service Disabled Veteran – Owned Businesses for government contracts.

The resolution states the following definitions shall be used for the purposes of reaching these goals (a full copy is available in Central Purchasing):

***Certified Disadvantaged Business Enterprise (DBE)*** – a business in which at least fifty-one percent (51%) is owned, managed and controlled by a person(s) who is socially and economically disadvantaged as defined by 49 CFR subpart 26.

***Certified Minority Business Enterprise (MBE)*** – a business in which at least fifty-one percent (51%) is owned, managed and controlled by an ethnic minority (i.e. African American, Asian American/Pacific Islander, Hispanic Islander, Native American/Native Alaskan Indian) as defined in federal law or regulation as it may be amended from time-to-time.

***Certified Women Business Enterprise (WBE)*** – a business in which at least fifty-one percent (51%) is owned, managed and controlled by a woman.

***Certified Veteran-Owned Small Business (VOSB)*** – a business in which at least fifty-one percent (51%) is owned, managed and controlled by a veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.

***Certified Service Disabled Veteran Owned Small Business (SDVOSB)*** – a business in which at least fifty-one percent (51%) is owned, managed and controlled by a disabled veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.

The term “Certified” shall mean the business is appropriately certified, licensed, verified, or validated by an organization or entity recognized by the Division of Purchasing as having the appropriate credentials to make a determination as to the status of the business.

We have compiled the list below to help you locate certified MBE, WBE and DBE certified businesses. Below is a listing of contacts for LFUCG Certified MWDBEs and Veteran-Owned Small Businesses in (<https://lexingtonky.ionwave.net>)

<b>Business</b>	<b>Contact</b>	<b>Email Address</b>	<b>Phone</b>
<b>LFUCG</b>	Sherita Miller	<a href="mailto:smiller@lexingtonky.gov">smiller@lexingtonky.gov</a>	859-258-3323
<b>Commerce Lexington – Minority Business Development</b>	Tyrone Tyra	<a href="mailto:ityra@commercelexington.com">ityra@commercelexington.com</a>	859-226-1625
<b>Tri-State Minority Supplier Diversity Council</b>	Susan Marston	<a href="mailto:smarston@tsmsdc.com">smarston@tsmsdc.com</a>	502-365-9762
<b>Small Business Development Council</b>	Shawn Rogers UK SBDC	<a href="mailto:shawn.rogers@uky.edu">shawn.rogers@uky.edu</a>	859-257-7666
<b>Community Ventures Corporation</b>	Phyllis Alcorn	<a href="mailto:palcorn@cvky.org">palcorn@cvky.org</a>	859-231-0054
<b>KY Transportation Cabinet (KYTC)</b>	Melvin Byne	<a href="mailto:Melvin.bynes2@ky.gov">Melvin.bynes2@ky.gov</a>	502-564-3601
<b>KYTC Pre-Qualification</b>	Sheila Eagle	<a href="mailto:Sheila.Eagle@ky.gov">Sheila.Eagle@ky.gov</a>	502-782-4815
<b>Ohio River Valley Women's Business Council (WBENC)</b>	Sheila Mixon	<a href="mailto:smixon@orvwbc.org">smixon@orvwbc.org</a>	513-487-6537
<b>Kentucky MWBE Certification Program</b>	Yvette Smith, Kentucky Finance Cabinet	<a href="mailto:Yvette.Smith@ky.gov">Yvette.Smith@ky.gov</a>	502-564-8099
<b>National Women Business Owner's Council (NWBOC)</b>	Janet Harris-Lange	<a href="mailto:janet@nwbo.org">janet@nwbo.org</a>	800-675-5066
<b>Small Business Administration</b>	Robert Coffey	<a href="mailto:robertcoffey@sba.gov">robertcoffey@sba.gov</a>	502-582-5971
<b>LaVoz de Kentucky</b>	Andres Cruz	<a href="mailto:lavozdeky@yahoo.com">lavozdeky@yahoo.com</a>	859-621-2106
<b>The Key News Journal</b>	Patrice Muhammad	<a href="mailto:production@keynewsjournal.com">production@keynewsjournal.com</a>	859-685-8488



## LFUCG MWDBE PARTICIPATION FORM

Bid/RFP/Quote Reference # \_\_\_\_\_

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Central Purchasing for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWDBE Company, Name, Address, Phone, Email	MBE WBE or DBE	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1.				
2.				
3.				
4.				

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

\_\_\_\_\_  
Company

\_\_\_\_\_  
Company Representative

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title



## LFUCG MWDBE SUBSTITUTION FORM

Bid/RFP/Quote Reference # \_\_\_\_\_

The substituted MWDBE and/or veteran subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Central Purchasing for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project.

SUBSTITUTED MWDBE Company Name, Address, Phone, Email	MWDBE Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1.					
2.					
3.					
4.					

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

\_\_\_\_\_  
Company

\_\_\_\_\_  
Company Representative

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title





## MWDBE QUOTE SUMMARY FORM

Bid/RFP/Quote Reference # \_\_\_\_\_

The undersigned acknowledges that the minority and/or veteran subcontractors listed on this form did submit a quote to participate on this project. Failure to submit this form may cause rejection of the bid.

Company Name	Contact Person
Address/Phone/Email	Bid Package / Bid Date

MWDBE Company Address	Contact Person	Contact Information (work phone, Email, cell)	Date Contacted	Services to be performed	Method of Communication (email, phone meeting, ad, event etc)	Total dollars \$\$ Do Not Leave Blank (Attach Documentation)	MBE * AA HA AS NA Female	Veteran

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

\_\_\_\_\_  
Company

\_\_\_\_\_  
Company Representative

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title



## LFUCG SUBCONTRACTOR MONTHLY PAYMENT REPORT

The LFUCG has a 10% goal plan adopted by city council to increase the participation of minority and women owned businesses in the procurement process. The LFUCG also has a 3% goal plan adopted by cited council to increase the participation of veteran owned businesses in the procurement process. In order to measure that goal LFUCG will track spending with MWDBE and Veteran contractors on a monthly basis. By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentation may result in termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims. Please submit this form monthly to the Division of Central Purchasing/ 200 East Main Street / Room 338 / Lexington, KY 40507.

**Bid/RFP/Quote #** \_\_\_\_\_

**Total Contract Amount Awarded to Prime Contractor for this Project** \_\_\_\_\_

<b>Project Name/ Contract #</b>	<b>Work Period/ From:</b> _____ <b>To:</b> _____
<b>Company Name:</b>	<b>Address:</b>
<b>Federal Tax ID:</b>	<b>Contact Person:</b>

Subcontractor Vendor ID (name, address, phone, email)	Description of Work	Total Subcontract Amount	% of Total Contract Awarded to Prime for this Project	Total Amount Paid for this Period	Purchase Order number for subcontractor work (please attach PO)	Scheduled Project Start Date	Scheduled Project End Date

By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

\_\_\_\_\_  
**Company**

\_\_\_\_\_  
**Company Representative**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Title**

## LFUCG STATEMENT OF GOOD FAITH EFFORTS

Bid/RFP/Quote # \_\_\_\_\_

By the signature below of an authorized company representative, we certify that we have utilized the following Good Faith Efforts to obtain the maximum participation by MWDBE and Veteran-Owned business enterprises on the project and can supply the appropriate documentation.

\_\_\_\_\_ Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

\_\_\_\_\_ Included documentation of advertising in the above publications with the bidders good faith efforts package

\_\_\_\_\_ Attended LFUCG Central Purchasing Economic Inclusion Outreach event

\_\_\_\_\_ Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities

\_\_\_\_\_ Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses

\_\_\_\_\_ Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

\_\_\_\_\_ Contacted organizations that work with MWDBE companies for assistance in finding certified MWDBE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

\_\_\_\_\_ Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

\_\_\_\_\_ Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.

\_\_\_\_\_ Provided the interested MWDBE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

\_\_\_\_\_ Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

\_\_\_\_\_ Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

\_\_\_\_\_ Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

\_\_\_\_\_ Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

\_\_\_\_\_ Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

\_\_\_\_\_Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

\_\_\_\_\_ Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

**NOTE: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to approval by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.**

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

\_\_\_\_\_  
**Company**

\_\_\_\_\_  
**Company Representative**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Title**

West Hickman 7 WWS (Contract No. 2) Equipment Manufacturer (circle one) – Bid Basis	
Solids Handling Submersible & Dry Pit Pumps	ABS Flygt KSB Fairbanks Nijhuis
Mechanical Bar Screen	Headworks Huber Duperon
Screenings Compactor	Headworks Huber Duperon
Screening Conveyor	Headworks Huber Duperon
Sump Pumps	Myers Flygt Hydromatic Zoeller
Odor Control Absorber	ECS Environmental Solutions/Calgon Daniel Company Evoqua
Odor Control Chemical Feed System	Evoqua Others (List)
Check Valves	Apco Golden Anderson Val-matic
Modulating Plug Valve	Dezurik Golden Anderson Henry Pratt
Slide/Sluice Gates	Aquanox Waterman Golden Harvest
Electric Actuators	Limatorque Auma EIM
Generator	Generac Caterpillar Cummins/ONAN MTU/Detroit Diesel Kohler
Level Transmitters	Endress+Hauser Foxboro Siemens Yokogawa
VFDs	Square D Eaton Allen Bradley
SCADA PLC's	Allen Bradley Compactlogix
Motor Control Centers	Square D Cutler Hammer Allen Bradley
Blowers	Aerzen Kaeser
Jet Mixing System	Evoqua Jet Tech K <sub>L</sub> a Mass Transfer
Ground Storage Tank	Crom Precon Preload

## SECTION 02515 - VALVES

### PART 1 - GENERAL

#### 1.01 SCOPE OF WORK

- A. Provide all labor, materials, equipment and services required to furnish and install all valves shown on the Drawings and/or specified herein.

### PART 2 - PRODUCTS

#### 2.01 GATE VALVES

- A. Gate valves shall conform with AWWA C-509 standard, and shall be of the resilient seat type, iron body, fully bronze mounted, non-rising stem and have a design working pressure of 250 psi. All assembly bolts shall be stainless steel. Valves shall be of standard manufacturer and of the highest quality both as to materials and workmanship.
- B. All gate valves shall be furnished with mechanical joint connections, unless otherwise shown on the Drawings or specified hereinafter.
- C. An epoxy coating conforming to AWWA C-550 shall be applied to the interior and exterior ferrous surfaces of the valve except for finished or seating surfaces.
- D. All gate valves shall have the name or monogram of the manufacturer, the year the valve casting was made, the size of the valve, and the working water pressure cast on the body of the valve.
- E. Gate valves 12" and smaller shall be installed in a vertical position. Gate valves greater than 12" shall have the bonnet mounted in the horizontal position and have a bevel gear actuator. Gate valves shall be provided with a 2-inch square operating nut and shall be opened by turning to the left (counter-clockwise). All valve operating nuts shall be set within a cast iron valve box. There shall be a maximum 36" depth of valve operating nut. Contractor must use extension stems, if necessary, to raise operator nut within 36" of final grade.

#### 2.02 GATE VALVES - BURIED

- A. Gate valves shall conform to the Specifications of Section 02515, Paragraph 2.01, except be designed for buried service, have mechanical joint ends, have all exterior surfaces shop painted with two coats of Fed. Spec. TT-V-51F Asphalt Varnish, with 2-inch square nut operator in a vertical position for use in a valve box.

#### 2.03 MODULATING PLUG VALVE

- A. Plugs shall be solid one piece, cast of ASTM A536 ductile iron. The plug shall have a cylindrical seating surface eccentrically offset from the center of the shaft. Plug shall not contact the seat prior to 90% closed. Plug facing shall be Chloroprene (CR), or other resilient facing suitable for the application.
- B. Bodies shall be of ASTM A126 Class B cast iron. Port shall be rectangular. Port area shall be 100% of Standard class pipe area. Bearings shall be sleeve type and made of sintered, oil-impregnated permanently lubricated type 316 stainless steel per ASTM A743 Grade CF8M.
- C. Seats shall be 1/8" thick welded overlay of not less than 95% pure nickel. Seat shall be at least 1/2" wide and raised. The raised surface shall be completely covered

with nickel to insure that the resilient plug face contacts only the nickel seat.

- D. Adjustable Packing shall be of the multiple V-ring type, with a packing gland follower. Shaft seals shall permit inspection, adjustment or complete replacement of packing without disturbing any part of the valve or actuator assembly except the packing gland follower.
- E. Grit Excluders made of PTFE shall be provided to prevent the entry of grit and solids into the bearing areas.
- F. Pressure ratings shall be bi-directional and 175 psi (1,207 kPa) on sizes 3"-12" (80-300mm) and 150 psi (1,034 kPa) for 14"-36" (350-900mm). Every valve shall be given a certified hydrostatic and seat test, with test reports being available upon request.
- G. Worm gear actuators shall be provided on all valves six inches and larger. Actuators shall be enclosed in a cast iron housing, with outboard seals to protect the bearings and other internal components. The actuator shaft and gear quadrant shall be supported on permanently lubricated bronze bearings.
- H. Eccentric plug valves and actuators shall meet or exceed the latest revisions of AWWA C517 and other applicable standards. Flanged ends shall be per ANSI B16.1 and mechanical joint ends per AWWA C111.
- I. Eccentric plug valves and actuators shall be model PEF as manufactured by DeZURIK Water Controls, or approved equal.

## **2.04 ELECTRIC VALVE ACTUATOR**

- A. All electric actuators shall conform to the requirements of AWWA Standard C540-93.
- B. Actuators shall contain motor, gearing, manual over-ride, limit switches, torque switches, drive coupling, integral motor controls, position feedback transmitter (where required) and mechanical dial position indicator.
- C. The motor shall be specifically designed for actuator service. The motor will be of the indication type with class F insulation and protected by means of thermal switches imbedded in the motor windings. Motor enclosure will be totally enclosed, non-ventilated.
- D. Motors will be capable of operating as designated on the electrical drawings as 120-volt/1PH/60 hertz power or 480-volt/3 phase/60 hertz power
- E. Actuator enclosure shall be NEMA 4 (watertight). All external fasteners on the electric actuator will be stainless steel. Fasteners on limit switch and terminal compartments shall be captured to prevent loss while covers are removed.
- F. All gearing shall be grease lubricated and designed to withstand the full stall torque of the motor.
- G. Manual over-ride shall be by handwheel. Manual operation will be via power gearing to minimize required rimpull and facilitate easy changeover from motor to manual operation when actuator is under load. Return from manual to electric mode of operation will be automatic upon motor operation. A seized or inoperable motor shall not prevent manual operation.

- H. Limit switches shall be furnished at each end of travel. Limit switch adjustment shall not be altered by manual operation. Limit switch drive shall be by counter gear. Limit switches must be capable of quick adjustment requiring no more than five (5) turns of the limit switch adjustment spindle. A minimum of twelve (12) heavy-duty contacts shall be provided for each actuator. Contacts shall be of silver and capable of reliably switching low voltage DC source from the control system furnished by others.
- I. Mechanically operated torque switches shall be furnished at each end of travel. Torque switches will trip when the valve load exceeds the torque switch setting. The torque switch adjustment device must be calibrated directly in engineering units of torque.
- J. All wiring shall be terminated at a plug and socket connector.
- K. Actuators will be furnished with mechanical stops that restrict the valve/actuator travel.
- L. Actuator must be capable of the following valve closing times/operating speeds: quarterturn valves – 60 seconds closing time, gate valves and sluice gates – 12 inches per minute operating speed.
- M. Actuators will be capable of operating in an ambient temperature range of –20 to +175 degrees F (without motor controls) and –20 to +160 degrees F (with motor controls).
- N. All actuators in open/close service will be furnished with integral motor controls consisting of reversing starters, control transformer, phase discriminator, monitor relay (to signal fault conditions such as thermal switch trip, torque switch tripped in mid-travel, wrong phase sequence or phase failure), “open-stop-close” pushbuttons, “local-off-remote” selector switch in addition to red and green indicating lights. An interface with the control system must be furnished with optical isolators to separate incoming voltage signals from the internal motor controls.
- O. Actuators in modulating service will be selected such that the required dynamic valve torque is no more than 60% of the electric’s actuator’s maximum rated breakaway torque. Power gearing in modulating actuators shall have zero backlash between the motor and actuator output.
- P. All actuators in modulating service will be furnished with a 4-20mA feedback signal in addition to the following motor controls: reversing starters, control transformer, phase discriminator, monitor relay, positioner, “open-stop-close” pushbuttons, “local-off-remote” selector switch in addition to red and green indicating lights. The positioner shall be capable of accepting a 4-20 mADC command signal and positioning the valve by comparing the command signal with the present valve position as indicated by the feedback potentiometer mounted inside the actuator. The positioner shall be field adjustable to fail to the “open”, “closed”, or “last position” on loss of 4-20 mADC command signal.
- Q. All pushbuttons, selector switch and indicating lights are to be furnished in a separate NEMA 4 enclosure for remote mounting for each valve (if required).
- R. All terminal connections for the customer use shall be located in a sealed terminal compartment that is separated from controls components by means of a double watertight seal.



- S. All actuators shall be manufactured by AUMA Actuators, Inc. or approved equal.

## **2.05 VALVE BOXES - BURIED VALVES**

- A. Valve boxes shall be of 5-1/4 inch standard cast iron, two-piece, screw type valve box with drop cover marked "WATER", "SEWER", "DRAIN", as applicable. Valve boxes for gate valves larger than 8 inches shall be three-piece. Valve boxes shall be accurately centered over valve operating nut, and backfill thoroughly tamped about them. Valve boxes shall not rest on the valves but shall be supported on crushed stone fill. They shall be set vertically and properly cut and/or adjusted so that the tops of boxes will be at grade in any paving, walk or road surface, and in grass plots, fields, woods or other open terrain. Valve boxes and covers shall be as manufactured by Tyler Corporation, Opelika Foundry, Bingham & Taylor, or equal.
- B. Contractor shall furnish two (2) 6-foot T-handle operating wrenches for underground valves. Nut operator extensions for all valves buried deeper than 3 feet shall be provided with stem extensions sufficient to raise operator nut to within 3 feet of finished grade.
- C. Valve boxes shall have extension stems, where necessary when operating nut is raised to be within 3 feet of the existing grade.
- D. Wherever valve boxes fall outside of the pavement, the top of the box shall be set in a cast-in-place concrete slab 18" x 18" x 4" thick with the top of the slab and box flush with the top of the ground. This provision shall apply to all new and all existing valve boxes which fall within the limits of the contract, unless otherwise stated on the plans or ordered by the Engineer.

## **2.06 TAPPING SLEEVE AND VALVE**

- A. All tapping sleeves, saddles, and valves shall be designed for a working pressure of at least 250 psig for 12-inch and smaller. The valves shall be designed for a minimum differential pressure of 250 psi and a minimum internal test pressure of 500 psi unless otherwise noted on the Drawings.
- B. Contractor to verify the type of existing pipe and the outside diameter of the pipe on which the tapping sleeve is to be installed.
- C. Tapping sleeves shall be ductile iron dual compression type unless otherwise specified on the Drawings. The Drawings may require the use of corrosion resistant tapping sleeves in addition to polywrap in areas with corrosive soils. The sleeves shall be made in two halves which can be assembled and bolted around the main. Sleeves shall meet the requirements of NSF 61. Outlet flanges shall conform to the flange requirements of AWWA C110.
- D. The horizontal tapping valve shall conform to the applicable requirements of AWWA C509. All tapping valves, 3-inches through 12-inches NPS, shall be ductile iron body, resilient-seated, nut-operated, non-rising stem gate valves suitable for buried service. The valve interior and exterior shall be epoxy coated at the factory by the valve manufacturer in accordance with AWWA C550 (6-8 mill average, 4 mil minimum). The tapping valves shall have flanged inlets with mechanical joint outlets enclosed bevel gears, bypass valve, rollers, tracks, and scrapers.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. All valves shall be installed in accordance with details on the Contract Drawings and with the manufacturer's recommendations.
- B. All valves shall be anchored in accordance with the details on the Contract Drawings.

**END OF SECTION**

## **SECTION 11420 - MECHANICAL SCREENS AND SCREENINGS COMPACTORS**

### **PART 1 - GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Provide all labor, materials, equipment, delivering, installing, testing, and placing into service the mechanical screen and screenings compactor equipment with all appurtenances complete as shown on the Drawings and more fully described hereinafter.
- B. The Contractor shall install a screenings transfer system (chute) between the screen and the screenings compactor, provided by the same manufacturer as the screen and screening compactor. Contractor shall be responsible for properly supporting the screenings transfer system.
- C. The screening equipment and compactor shall be provided complete with all accessories, special tools, spare parts, mountings, anchor bolts and other appurtenances as specified and as may be required for a complete and operating installation. Any modifications or changes to the building, in addition to those shown on the Drawings, necessary to facilitate the screen and screenings compactor shall be the responsibility of the Contractor at no additional cost to the Owner. The screen shall be provided in sections to facilitate removal from the building through the doorways.
- D. It shall be the Contractor's responsibility to install the mechanical screen and screenings compactor and appurtenances with the necessary operating clearances with the structural elements and equipment shown on the Contract Drawings.
- E. Layout, dimensions, and elevations shown on the Drawings are representative of the mechanical screens and screenings compactors. Any costs for re-design, materials, or construction due to requirements of the mechanical screens and screenings compactors equipment ultimately furnished shall be the responsibility of the Contractor.

#### **1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Submittals: Section 01300
- B. Operating & Maintenance Manuals: Section 01780

#### **1.03 OPERATING CONDITIONS AND PERFORMANCE REQUIREMENTS**

- A. The mechanical screen shall be designed to remove screenings from raw wastewater and to discharge the screenings in chutes for conveyance to screenings compactor. The screen shall be designed for operation in a rectangular channel as shown on the Contract Drawings. Screen shall be a mechanically cleaned and chain driven design. Debris collected on the bars shall be lifted above deck level by multiple chain-mounted rakes, which pass upward through the screen on the upstream side with tines between the bars. The screenings shall be discharged to a chute connected to the head frame. The chute shall discharge via gravity to the screenings compactor located on the downstream side of the screen. The screen shall consist essentially of the frame, screen field, dead plate, rake assembly (chain assembly, bearings, rakes, drive sprockets, roller chains), screen drive, chute, local controls, motors, gearboxes, and appurtenances specified or otherwise required for a complete and properly operating installation.

**Mechanical Screen**

Parameter	Value
Number of units required	1
Channel width at screen, per screen	3 FT
Channel invert at screen, elevation	965.6
Operating floor elevation (top of channel)	979.6
Maximum upstream water surface elevation (WSEL)	973.0
Minimum screen field width, per screen	2'
Installed angle, degrees from vertical	75
Flow rate per screen - maximum (peak flow)	10.0 mgd
Flow rate per screen - minimum	10.0 mgd
Max headloss allowable at peak flow, clean screen <sup>(1)</sup>	8.98"
Max headloss allowable at peak flow, 30% blind <sup>(1)</sup>	10.21"
Discharge elevation above upper operating floor, minimum	5'
Bar spacing (clear space), maximum	0.25 inch
Minimum raking capacity (cf/hr), per screen	5.83 ft <sup>3</sup> /hr
Rake travel speed (feet per minute)	Low Speed: 23 ft/s, High Speed: 46 ft/s
<sup>(1)</sup> Headloss calculation(s) shall be based on the assumption that the water depth within the channel downstream of screen equals 3-ft.	
<sup>(2)</sup> All components, including the gear reducer, shall be designed to withstand, without damage or permanent distortion, the maximum headloss allowable (full screen blinding).	

- B. The heavy duty screw type screenings compactor shall be suitable for installation and operation with the screen and shall accept screenings, compress and dewater them and deliver them to the screenings conveyor as shown on the Drawings. The screenings compactor shall also be equipped with a washing zone. The screenings compactor shall be provided by the same manufacturer as the screens and shall be connected to the screens by a covered chute as specified herein.

**Screenings Compactor**

Parameter	Value
Number of units	1
Number of hopper inlets per unit	1
Screw length, minimum (ft)	30 ft.
Minimum capacity (cf/hr), total	Maximum 133 ft <sup>3</sup> /hr
Feed concentration, % dry solids content	0-5%
Compactor discharge concentration, % dry solids content	25-30%
Minimum screenings volume reduction, %	35-40%
Minimum screw diameter, inches	11-¼"
Maximum screw rotational speed, rpm	15 rpm

## 1.04 MANUFACTURER

- A. The mechanical screen and screenings compactor unit shall be provided by a single manufacturer with a minimum of five (5) years' experience in designing and manufacturing screening equipment of similar type, size and capacity. The mechanical screen and screenings compactor shall be manufactured by Headworks, Inc. or Huber Technology, Inc., or approved equal. The Headworks, Inc. Model shall be Bar Screen MS2.
- B. To assure unity of responsibility, the mechanical screens and screenings compactors, chute, controls, motors, VFDs, gearboxes, and appurtenances specified and other auxiliary equipment, and materials specified in this Section shall be furnished and coordinated by the screen manufacturer (Manufacturer) who shall assume responsibility for the satisfactory operation of the entire screening system.
- C. Replacement Parts Capability: The manufacturer shall have the ability to promptly furnish any and all interchangeable replacement parts as may be needed at any time within the expected life of the equipment. Upon request, the Contractor shall submit evidence of the proposed manufacturer's ability to promptly fill replacement orders.
- D. Quality Assurance: All screening equipment shall be of approved design and make products of manufacturers who have built equipment of similar type, size and capacity. Upon request, the Manufacturer shall provide evidence of at least five (5) installations in which similar sized equipment has provided satisfactory performance for a minimum of five (5) years in a similar application.
  - 1. The Contractor shall obtain the screening equipment, controls and appurtenances from the screen manufacturer, as a complete and integrated package to insure proper coordination and compatibility and operation of the system.
  - 2. All components made of stainless steel shall meet the acid passivation requirements of ASTM A380. Stainless steel components shall be fabricated in a manner to prevent contamination with carbon steel.
  - 3. Provide fabrication in compliance with all applicable ASTM standards or equivalent international standards.
  - 4. The equipment manufacturer's shop welds, welding procedures, welders and welding operators shall be qualified and certified in accordance with the requirements of the latest edition of ANSI/AWS D1.6 "Structural Welding Code - Steel" published by the American Welding Society or equivalent standard.
  - 5. Perform all welding in the factory using shielded arc, inert gas, MIG or TIG method. Add filler wire to all welds to provide for a cross section and weld metal equal to or greater than the parent metal. Fully penetrate butt welds to the interior surface and provide gas shielding to interior and exterior of the joint.
- E. Additional Submittals: The Contractor shall submit, upon request, any additional information that the Engineer may deem necessary to determine the ability of the proposed manufacturer to produce the specified equipment.
- F. Manufacturer Information: All manufacturer information required by the specifications shall be submitted by the Contractor within thirty (30) calendar days of the date of receipt of the Notice to Proceed.

Any additional information or data, specifically requested by the Engineer, concerning manufacturer's capabilities (especially relating to requirements described hereinbefore), shall be submitted by the Contractor within fourteen (14) calendar days of the receipt of the written request thereof, unless otherwise specified.

Approval of manufacturers or suppliers will not be given until all information required by the specifications or requested by the Engineer has been submitted and acceptable.

**G. Disqualification of Manufacturer:**

1. Poor performance of similar screening equipment now in operation under the specified conditions of service and screen rating constitute grounds for disqualification of the screen manufacturer, supplier, or both, unless such poor performance has been corrected.
2. Failure to successfully comply with the provisions of subparagraphs A through G, inclusive, will constitute grounds for disqualification of screen manufacturer.

**1.05 SUBMITTALS (SHOP DRAWINGS)**

- A. General: The Contractor shall comply with the provisions of the specifications regarding submittals, unless otherwise specified herein.
- B. At the time of submission, the Contractor shall, in writing, call the Engineer's attention to any deviations that the submittals may have from the requirements of the Engineer's Contract Drawings and Specifications.
- C. The Contractor shall provide a notarized certification indicating that all screening products meet the required Specifications.
- D. Descriptive literature shall be submitted on all items specified herein to the Engineer for review and approval before ordering.
- E. Content of Submittals: The following shall be included in submittals as a minimum. However, any additional information or data shall be added if and whenever requested by the Owner or the Engineer. Where applicable, submit separate data for each mechanical screen and screenings compactor.

**1. Descriptive Literature:**

- a. Equipment dimensions and weight.
- b. Materials of Construction (including required coating).
- c. Complete motor nameplate data as defined by NEMA.
- d. Gear reducer data including service factor, efficiency, torque rating and materials.
- e. Shop drawing data for accessory items.
- f. Certified setting plans, with tolerances, for anchor bolts.
- g. List of recommended spare parts other than those specified.
- h. Shop and field inspection reports.
- i. Qualifications of field service engineer.
- j. Recommendations for short and long-term storage.
- k. Shop and field testing procedures, set up and equipment to be used.

- I. Special tools.
        - m. Schematic control and power wiring diagrams including interconnecting and internal wiring diagrams.
        - n. Control panel drawings and heat load / dissipation calculations.
        - o. Manufacturer's literature as needed to supplement certified data.
  - 2. Installation Information: Submit installation drawings and information for pump connections, connecting piping and valves, electrical connections, and auxiliary equipment.

The Contractor shall submit all other drawings, material lists and other information specified, requested and/or necessary to show complete compliance with all details of the contract documents.

- 3. Operation and Maintenance Manual: Manual shall contain all information necessary for proper operation and maintenance of mechanical screens and screenings compactors units, as well as the location of the nearest permanent service headquarters.

**F. Calculations:**

- 1. Maximum headloss and velocity at peak flow for clean screens.
  - 2. Maximum headloss and velocity at peak flow for 30% blinded screen conditions to verify screens can handle peak flows.
  - 3. Structural calculations of screen design strength to handle the maximum head differential across the screens (maximum water level upstream and no water downstream) to verify screens can handle full blinded conditions.
  - 4. Calculations shall be signed and sealed by a Professional Engineer.

**1.06 TESTS**

**A. Shop Tests:**

- 1. All equipment shall be tested in the shop of the manufacturer in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents and that it will operate in the manner specified or implied.

**B. Field Tests:**

- 1. The field tests shall be made on each mechanical screen and screenings compactor unit by the Contractor in the presence of and as directed by the Engineer.
  - 2. The Contractor shall give at least two (2) week's notice to the Owner and Engineer when the field tests are to be accomplished so that the Owner and Engineer may have a representative present at the said tests.
  - 3. Before any screening equipment is rotated, the Contractor shall make certain that no debris is present in screening channels. Any damage done to equipment while starting up shall be assumed to be caused by debris and shall be replaced at the Contractor's expense.

4. During the test, the screening equipment shall be checked for proper alignment of the rake and bar screen, operated at maximum rated speed to confirm smooth operation and no undue noise, vibration, overheating or overloading of drive motors and components. Controls shall be checked to verify screening equipment operates as specified. Safety interlocks and devices shall be checked for proper operation.
5. Contractor shall be responsible for making all adjustments necessary to place equipment in specified working order at time of above tests.
6. Field tests shall also conform to Part 3, Paragraph 3.03 as specified hereinafter.

**C. Failure of Tests:**

1. Any defects in the equipment or failure to meet the guarantees or requirements of the specifications shall be promptly corrected by the Contractor by replacements or otherwise. The decision of the Engineer as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive. If the Contractor fails or refuses to make these corrections or if the improved equipment, when tested, shall fail again to meet the guarantees of specified requirements, the Owner notwithstanding its having made partial payment for work and materials which have entered into the manufacture of said equipment, may reject said equipment and order the Contractor to remove it from the premises at his own expense.
2. In case the Owner rejects said equipment, then the Contractor hereby agrees to repay to the Owner all sums of money paid to him for said rejected equipment on progress certificates or otherwise on account of the lump sum prices herein specified, and upon the receipt of said sum of money the Owner will execute and deliver to the Contractor a bill of sale of all its rights, title, and interest in and to said rejected equipment; provided, however, that said equipment shall not be removed from the premises of the Owner until the Owner obtains from other sources the equipment to take the place of the rejected. The Owner hereby agrees to obtain said other equipment within a reasonable time and the Contractor agrees that the Owner may use the equipment furnished by him without rental or other charge until said other new equipment is obtained.

**D. Responsibility During Test:** The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner formally takes over the operation thereof.

**E. Manufacturer's Representative:** For all screening equipment, the Contractor shall furnish the services of accredited representatives of the equipment manufacturer who shall supervise the installation, adjustment, and field tests of each screening unit and give instructions to the operating personnel. As one condition necessary to acceptance of any screening equipment, the Contractor shall submit a certificate from the manufacturer, stating that the installation of the equipment is satisfactory, that the unit is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication, and care of the unit.

## **1.07 GUARANTEE PERIOD**

- A.** After successful completion of tests and trials under operating conditions on all equipment, the Contractor shall guarantee all equipment, materials and workmanship from undue wear and tear, from mechanical and electrical defects, and from any failure whatever, for a minimum of one (1) year. This one (1) year minimum shall not replace a standard manufacturer's guarantee if it exceeds one (1) year.



## **1.08 WARRANTY**

- A. The Contractor guarantees and warrants that during the first one year of operation, the mechanical screens and screenings compactors will operate satisfactorily and continuously according to the operating conditions and performance requirements specified herein, and that after due notice has been given by the Owner, he or the equipment manufacturer will proceed, within a reasonable time, to adjust, regulate, repair and renew at his own expense or perform such work as is necessary to maintain the guaranteed capacities, efficiencies and performances.

## **PART 2 - PRODUCTS**

### **2.01 MECHANICAL SCREENS**

A. Frame:

1. Framework of screen shall be constructed of 304 stainless steel and cross section with a minimum thickness 0.158". Various parts fastened by welding, riveting, or bolting shall be braced as necessary to insure a rigid structure. The side frames shall be minimum 0.158" formed to a channel profile. The minimum bottom thickness shall be 0.158". The frame shall have support beams with minimum U-profile thickness of 0.158" on the front above the maximum water line. No braces, gussets or stiffeners shall be inside the Screen Frame that will allow for screenings to collect.
2. All parts shall be designed and manufactured to handle the forces that may be exerted on the screen during fabrication, shipping, erection, and proper operation according to the Operation and Maintenance Manual. All components shall be so designed that jamming at any point will not result in structural failure, but will cause the drive motor to stall. All components, including the gear reducer, shall be designed to withstand, without damage or permanent distortion, the full stalling torque of the drive motor.
3. Frame width and height shall be customized to fit the specified channel dimensions, discharge height, and hydraulic force requirements.
  - a. The Screen Frame shall be supplied in flanged subassemblies not more than 20' long and complete with drive chains and rake bars installed. The flanged subassemblies shall allow for installation in sections and be bolted together onsite and removal through doorways.
4. The unit shall be supported and anchored on the operating floor and rest on the bottom of the channel.
5. Bolts and nuts shall be of Type 316 stainless steel. Anchor bolts shall be a minimum 0.75" diameter Type 316 stainless steel furnished by the Contractor.
6. Neoprene rubber seals with a minimum thickness of 0.25" and stainless steel backing plates will be mounted along the upstream edges of the frame to seal the outer edge of the frame against the channel walls.
7. The lower entry shall consist of a curved plate (level at upstream end and curved to the level where rakes meet bars) to direct flow onto the bars.
8. Covers which are easily removable shall be provided with turn locks and handles for easy maintenance. Covers shall be constructed of one of the following:
  - a. Clear impact-resistant polycarbonate material of 0.25" thickness

- b. Type 304 stainless steel plates of 0.047" minimum thickness

**B. Screenfield and Deadplate:**

1. Screen bars shall be constructed of Type 304 stainless steel. The bar rack shall consist of bars with a "continuous taper" or "teardrop" shaped cross section with a shape factor value at or below 1.0. The maximum cross-sectional thickness of the bar shall be 0.315". Round or rectangular bars shall not be used.
2. Bars shall be supported from framework and be readily removable. The screen bars shall be replaceable without any welding or cutting. Replacement screen bars shall be available from the screen manufacturer.
3. Bars shall be fastened to a dead plate. Bars shall extend a minimum of 7.8" above the maximum water level.
4. The screen field shall be accurately constructed to give a clear opening of 0.25" between the bars. There shall be no space wider than the opening between the bars which would permit passage of larger solids through the screen.
5. Dead plate of Type 304 stainless steel plate (minimum thickness is 0.158") shall extend to the point of discharge. Dead plate shall be true and flat such that a close clearance between the raking tines and the plate can be maintained during the cleaning cycle. The back side of the dead plate shall be constructed to guarantee a maximum gap between rake bar and dead plate, leading to the discharge chute without interruption.

**C. Screen Cleaning:**

1. Chains shall be Heavy Duty roller type with a minimum weight of 6 lbs/ft and made of Type 304 stainless steel of high tensile strength and resistance to corrosion. Chain rollers shall be constructed of Stainless Steel. The average ultimate strength of the chain shall be minimum 31,000 pound-force (137,500 Newtons). Chain Pins shall be a hardened Stainless Steel.
2. A chain guide shall be securely fixed to the screen frame for the full height of travel and shall not protrude into the flow. The type of chain guide, minimum thickness of material and size shall be an L-Profile 0.156", Type 304 stainless steel. Replaceable wear strips on chain guides located below the water level shall not be allowed. Drive chains, chain guides, chain sprockets, bearings, and axles shall be fully replaceable without having to remove the screen from the channel.
3. The Upper Sprocket shall be made of Type 304 stainless steel. The Upper Sprocket shall have a 4.92" pitch, minimum diameter of 13" and a minimum tooth width of 1.06".
4. Upper Bearings shall be as follows:
5. UCFX 4 – Bolt Flange Bearings mounted in the Take-Up Frame assembly. The bearings shall be grease-lubricated. The take up screw shall be an Acme Lead Screw made of 18-8 stainless steel. No threaded rod shall be allowed.
- 6.

The Lower Turn-guides shall measure:

Pitch	125mm
Disk Width	25.4mm
Outer Diameter	271mm

7. The raking tines shall have the tooth profile precision cut from a single continuous bar of sufficient thickness and depth to insure adequate stiffness and strength to cope with the specified duty cycle. The rakes shall run in guides on both sides to ensure engagement. The rakes shall clean the bars from the upstream side of the screen. The rakes shall be fabricated from Type 304 stainless steel as follows:
  - a. Rake bar thickness                      0.375" minimum
  - b. Reinforcement profile                      0.1575" minimum
  - c. Side sheets thickness                      0.2362" minimum
8. Stainless steel rakes shall have a shovel shape to prevent screenings from falling back to the channel. Flat rakes without this feature are not permitted. Rake tines shall penetrate into the screen bar spacing to insure that screenings are completely cleared during each lifting operation. During each cleaning stroke, the raking tines shall engage into the bottom of the bar screen grids.

**D. Scraper:**

Screenings transported to the top of the screen shall be discharged positively by means of a scraper mechanism to the discharge chute. The scraper mechanism shall be attached to the side frames and be fitted with neoprene shock absorber elements or a compression spring that allows the scraper to return to its resting position smoothly without any shock. The scraper shall be connected with the frame through a pair of minimum 20" long scraper arms. A minimum 0.375" thick scraper blade made of a combination of synthetic and other material shall be provided on the scraper

**E. Discharge Chute:**

1. A discharge chute (minimum thickness of 0.156") shall be provided for each screen to divert screenings discharged from the screen to a screenings compactor. The discharge chute shall be made of Type 304 stainless steel. The discharge chute shall be mounted at an angle of 30 degrees from vertical. Panels are positioned on both sides to protect from splashing.
2. A discharge chute cover shall be provided on the back of the screen at the operating level, easily removable with turn locks and handles for maintenance. Covers shall be constructed of one of the following:
  - a. Clear impact-resistant polycarbonate material of 0.25" thickness
  - b. 304 stainless steel plates of 0.047" minimum thickness

**F. Drive Mechanism:**

1. The drive mechanism for the rakes shall incorporate a shaft constructed of Type 304 stainless steel. The drive shaft shall have a minimum diameter of 3.125" and a minimum wall thickness of 0.203".
2. The motor shall be inverter duty and, rated for continuous operation in a Class I Division 1 environment. The drive unit, including the reduction gearbox, shall be directly shaft-mounted and shall be positioned to facilitate maintenance work.
3. The rake mechanism shall be capable of 2 cleaning speeds. Normal (slow) speed shall have between a 10 to 15 second cleaning interval (between rakes) and high (fast) speed shall have between a 5 to 10 second cleaning interval.

**G. Speed Reducer:**

1. Speed reducers shall be of the helical or bevel gear type fully enclosed in a weatherproof casing of cast iron or welded steel. Reducers shall have ball or roller bearings throughout with all moving parts immersed in oil. Shafts shall be of high strength alloy steel ground to required tolerances. Bevel gearing shall be in compliance with ANSI/AGMA Standards 2003-A86 and shall be carbonized to a hardness of 58-62 HRC for durability. All ball or roller bearings shall be B-10 rated and manufactured by a member of the Antifriction Bearing Manufacturer's Association for 100,000 hour life (minimum). At least one bearing on each shaft shall be of the combined radial and thrust type.
2. Reducer units shall meet the standards of the American Gear Manufacturers Association for such equipment under moderate shock, 24-hour, Class II service with a service factor of 1.25 (minimum) and an AGMA rating plate showing compliance shall be affixed to each unit. The output capacity of the speed reducer shall be equal to the motor horsepower less reducer losses.
3. Speed reducers running on a positive circulation of lubricating oil shall have sight windows for inspection of oil flow. A drain shall be provided in each casing. A sight glass shall be provided such that oil level may be inspected from operator access level.
4. All seals shall be double lip, spring-loaded type and made of nitrile rubber.
5. Speed reducers and motors requiring coupling shall be coupled by means of approved all-metal flexible couplings, furnished and installed complete with coupling guards, if not otherwise guarded.

**2.02 SCREENINGS COMPACTOR**

- A. Shafted Screw Conveyor/Compactor shall consist of a Shafted Screw, Sieve Zone, Wash Zone, Press Zone, Transport Zone, Collection Pan, Discharge Tube, drive system and controls. Unless specified otherwise hereinafter, stainless steel shall be Type 304. All mechanical parts shall be designed to handle the forces that may be exerted on the screenings compactor during fabrication, shipping, erection, and operation.
- B. The screenings compactor shall be capable of continuous operation and of handling all wash water flow and screenings conveyed from the screen. The unit shall be capable of operating with and without wash water. Manufacturer shall provide calculations to show the screenings compactor is sufficiently sized to convey the maximum amount of screenings and wash water that the screening equipment can deliver. The system shall be designed to receive, positively convey and compact screenings discharged from the screens. The screenings shall be

introduced into the inlet hopper directly over the Sieve Zone, washed in the Wash Zone, compacted in the Press Zone, conveyed through the Transport Zone, and discharged from the Discharge Tube into a suitable receptacle. The excess liquid shall drain through holes in the inlet trough.

- C. The Shafted Screw Conveyor/Compactor shall be designed to handle capacity, reduce screenings volume and produce dry screenings content to meet the performance requirement identified in paragraph 1.03 above.

D. Shafted Screw Assembly:

1. The Shafted Screw Assembly shall have stainless steel flights with a minimum thickness of 0.2" in the sieve zone, a minimum thickness of 0.4" in the washing zone, and a minimum thickness of 0.8" in the press zone.
2. The Shafted Screw shall be manufactured from one concentric flight welded to form a single spiral.
3. The minimum diameter of the Shafted Screw assembly shall be 8-1/16" in diameter and shall be constant over the length of the assembly.
4. The Shafted Screw shall have one abrasive resistant Brush Assembly. The Brush shall be Nylon and shall be fixed to the screw with adjustable clamps.
5. The Pitch of the screw shall reduce to 66% of the screw outer diameter in the Press Zone area.
6. The final Quarter-Pitch of the Shafted Screw shall be Hard Faced.
7. The screw shall be supported at the drive end by an independent thrust and radial load bearing or by a spherical roller thrust bearing which is installed in grease packed housing fitted with lip seals to prevent the ingress of moisture.

E. Sieve Zone:

1. The Sieve Zone shall be tubular in design with an integral collection pan and a chute to accept screenings from the mechanical screen.
2. The Sieve Zone shall be manufactured from minimum 14 gauge 304 stainless steel plate. Plate perforations shall be a maximum diameter of 0.2" and minimum 11 gauge perforated 304 stainless steel. An acceptable alternative would be a Sieve Zone constructed of 304 stainless steel wedge wires with slot openings of 0.125".
3. The Sieve Zone shall include one Inlet Hopper to direct screenings from the mechanical screens into the Shafted Screw Conveyor/Compactor. The Inlet Hoppers shall be constructed of minimum 14 gauge 304 stainless steel and shall be bolted to the Transport Zone of the U-Trough

F. Transport Zone:

1. The Transport Zone shall be tubular in design and constructed of minimum 11 gauge 304 stainless steel.
2. The Transport Zone shall be fitted with Wear Bars constructed of minimum 0.375" thick Carbon Steel or Hardox 400 Abrasion resistant plate. The Wear Bars shall be bolted from the outside of the Transport Zone. Welded Wear Bars shall not be allowed.

G. Wash Zone:

1. Wash Zone shall be tubular in design with an integral collection pan located directly under the zone. The Wash Zone may wash screenings and reduce the organic content. Compactor shall continue operation and meet performance both with and without wash zone supply water.
2. Wash Zone shall be constructed of minimum 14 gauge 304 stainless steel plate. Plate perforations shall be maximum 0.2" in diameter and minimum 11 gauge perforated 304 stainless steel. Wash zone may also be constructed of 304 stainless steel wedge wires with slot openings of 0.125".
3. Wash Zone shall consist of a spray header fitted with at least one spray nozzle to provide cleaning of screenings before compacting. The Wash Zone supply water shall be approximately 10 GPM at minimum 40 psi. The Wash Zone shall include solenoid valves and isolation valves. The screenings compactor manufacturer shall provide solenoid valves and isolation valves, shipped loose to control the flow of water. All interconnecting piping, valves, etc. between the water source, the Wash Zone and the solenoid valve shall be supplied and installed by the Contractor.

H. Press Zone:

1. The Press Zone design shall tubular in design with an integral collection pan located directly under the zone.
2. The Press Zone shall be constructed of minimum 11 gauge Type 304 stainless steel.

I. Collection Pan:

1. Collection Pan shall be a U-Tough design located directly under the Sieve, Wash and Press Zones. Periodically, water may be introduced into the collection pan to flush organics and other fines to the drain. Compactor shall continue operation and meet performance both with and without collection pan supply water.
2. Collection Pan shall be constructed of minimum 14 gauges 304 stainless steel and attached to the compactor body with quick release clamps.
3. Collection Pan shall have a minimum 0.75" diameter threaded inlet water supply line connection. Supply water shall be approximately 10 GPM at minimum 40 psi. Water shall flow down to the base of the collection pan to a drain outlet of minimum 3" diameter.
4. Collection Pan water supply shall include solenoid valve(s) with bypass and isolation valves for manual operation. The screenings compactor manufacturer shall furnish solenoid valves and isolation valves, shipped loose to control the flow of water. All interconnecting piping, valves, etc. between the water source, the Collection Pan and the solenoid and isolation valves shall be provided by the Contractor.

J. Discharge Tube:

1. Discharge Tube shall be cylindrical and constructed of minimum 14 gauge Type 304 stainless steel. The discharge tube shall increase in diameter over its length in order to reduce the potential for plugging.
2. Discharge Tube shall direct and discharge screenings at a clear discharge height that allows for placement of a dumpster (by others) to collect the screenings.
3. Discharge Tube shall include an integral bagging system. The bagging system shall consist of a plastic bag holder that shall mount on the discharge tube. The holder shall be readily removable for inspection and service. The holder shall provide for a consumable

260 feet high-strength biodegradable polyethylene tube/bag to receive screenings directly from the compactor.

4. Rear leg, front leg and intermediate leg supports, as required, shall be furnished for rigid support to the concrete slab.

**K. Speed Reducer:**

1. Speed reducers shall be provided for the screenings compactors. The design shall utilize a shaft mounted parallel helical type gear reducer driven by a direct coupled motor. The reducer shall have a cast iron housing. The service factor shall be minimum 1.0. (A shaft mounted worm gear type reducer shall be used for vertical mount drives).
2. Speed reducers shall be of the helical or bevel gear type fully enclosed in a weatherproof casing of cast iron or welded steel. Reducers shall have ball or roller bearings throughout with all moving parts immersed in oil. Shafts shall be of high strength alloy steel ground to required tolerances. Bevel gearing shall be in compliance with ANSI/AGMA Standards 2003-A86 and shall be carbonized to a hardness of 58-62 HRC for durability. All ball or roller bearings shall be B-10 rated and manufactured by a member of the Antifriction Bearing Manufacturer's Association for 100,000 hour life (minimum). At least one bearing on each shaft shall be of the combined radial and thrust type.
3. Reducer units shall meet the standards of the American Gear Manufacturers Association for such equipment under moderate shock, 24-hour, Class II service with a service factor of 1.4 (minimum) and an AGMA rating plate showing compliance shall be affixed to each unit. The output capacity of the speed reducer shall be equal to the motor horsepower less reducer losses.
4. Speed reducers running on a positive circulation of lubricating oil shall have sight windows for inspection of oil flow. A drain shall be provided in each casing. A sight glass shall be provided such that oil level may be inspected from operator access level.
5. Speed reducers and motors requiring coupling shall be coupled by means of approved all-metal flexible couplings, furnished and installed complete with coupling guards, if not otherwise guarded.

**L. Safety Devices and Limit Switches:**

**1. Safety Trip Cords**

- a. The screw compactor shall be furnished with safety trip cords running on all sides of the hopper inlet with a safety stop switch in compliance with OSHA standards.
- b. Trip cabling shall be stranded galvanized aircraft cable and orange colored nylon outer sheathing. Cabling shall be supported by stainless steel eyebolts every 4 feet. Wire clamps shall be stainless steel.
- c. Safety switch shall be housed in a NEMA 7 enclosure and shall have 2 SP/DT micro-switch and stainless steel external hardware. Switch shall be maintained once activated and shall require a manual reset.
- d. If a trip cord signal is received from the safety trip cord switch, when the motor is running, the compactor shall alarm and stop.
- e. Emergency trip cord and safety switch shall be Conveyor Components Company Model RS-2X, or equal.

**2. Zero Speed Switch (for Headworks units)**

- a. Provide non-contacting, proximity-type speed switch on the screw press to detect zero speed condition. The zero speed switch shall consist of a sensor with internally mounted pre-amplifier and a transmitter output unit. The switch shall be located on the non-driven end.
  - b. The sensor shall utilize magnetic proximity effect to detect equipment rotational speed without physical connection to the rotating equipment. Sensors shall provide output pulses in proportion to rotational speed by detection of the rotating flights of a screw press assembly. The sensor shall operate satisfactorily with air gaps of up to 4". The sensor/pre-amplifier shall be provided complete with mounting flange, threaded body, locknut, and ferrous mass of mounting on screw flight.
  - c. The amplifier/output switch unit shall provide two SPDT contacts that operate on detection of an under speed operating condition. The SPDT contact outputs shall be rated for 5A at 120 volts AC. The unit shall include an adjustable start-up delay of 0 to 60 seconds to override zero speed alarm during initial acceleration. Units shall operate on 120 volt AC power. Provide set point adjustment range of 2 to 3,000 pulses per minute.
  - d. If a zero speed signal is received from the zero speed switch, when the motor is running, the compactor shall alarm and stop.
  - e. Zero speed detection switches shall be Milltronics MFA-4P with Milltronics XPP-5 sensor, or equal.
3. Photoelectric Sensor (for Huber units)
- a. Provide photoelectric proximity sensor (light distance sensor) with an adjustable scanning distance for use as a level limit survey providing one switching point. The enclosure rating shall be IP 69K. The electrical shall be coordinated with the Contractor and shall be 10-30VDC. Exact sensor location shall be designated by the manufacturer of the screen and compactor for identification of the material backup into the chute between the screen discharge and the compactor inlet.
  - b. If a proximity sensor signal is received from the sensor, when the motor is running, the compactor shall alarm and stop.
  - c. Photoelectric proximity sensor shall be Sick WT24-2B210 or equal.

## **2.03 ELECTRICAL AND CONTROL REQUIREMENTS**

- A. All electrical appurtenances, with the exception of the control panel, furnished by the equipment manufacturer shall be rated for installation in a Class I, Division 1 hazardous location within the screenings areas.
- B. All conduit, couplings, fittings, and fasteners furnished by the equipment manufacturer shall be braided flexible coupling conduit rated for the conditions noted.
- C. Electrical Requirements:



<b>Motors</b>	<b>Screen</b>	<b>Screenings Compactor</b>
VFD	Yes	No
Rating	460V, 3 ph, 60 Hz	460V, 3 ph, 60 Hz
Horsepower, Max	5	5
Speed, rpm	1800	1800
Enclosure	TEFC-XP	TEFC-XP
Insulation	Class H	Class H
Inverter Duty	Yes	No
Service Factor	1.0	1.15
Space Heater	No	No
Motor Winding Temperature Switch	No	No

## **2.04 VARIABLE FREQUENCY DRIVES**

- A. The speed control for variable speed pumps shall be Variable Frequency Drives, as specified in Division 16 suitable for installation as shown on the Drawings.
- B. The Variable Frequency Drives shall be supplied by the Manufacturer and shall be completely coordinated with the pumps and pump driving motors and shall include all internal auxiliaries required to meet the functional specifications.
- C. The Variable Frequency Drives shall be compatible with the motors provided by the Manufacturer.

## **2.05 CONTROL PANELS**

- A. The screen and compactor shall be provided with a separate Local Control Station (LCS) located at the equipment. Controls for each LCS shall include the following features:
  1. NEMA 7 rating suitable for a Class I, Division 1 hazardous location.
  2. Screen LCS shall have Hand/Off/Remote switch, Forward/Off/Reverse-Jog switch (maintained in the Forward position and spring return to center from the Reverse Jog position), and a maintained-type mushroom-head emergency E-stop button. The Forward/Off/Reverse Jog switch shall only be energized when the Hand/Off/Remote switch is in the Hand position.
  3. Compactor LCS shall have Hand/Off/Remote switch, Forward/Off/Reverse-Jog switch (maintained in the Forward position and spring return to center from the Reverse Jog position), and a maintained-type mushroom-head emergency E-stop button. The Forward/Off/Reverse Jog switch shall only be energized when the Hand/Off/Remote switch is in the Hand position.
  4. In addition each compactor shall have a remote Emergency Stop Station (LLCS).
- B. The screen shall be supplied with a combined Screen/Compactor Local Control Panel (CP) to be located away from the equipment in the electrical room. These CP shall be vendor furnished and shall include the following features:
  1. In addition the compactor shall have a remote Emergency Stop Station (LLCS).

2. The CP shall be painted steel and rated NEMA 12 suitable for unclassified locations. Panel shall be supplied with a flange mounted disconnect switch and main circuit breaker. Power supply to panel shall be 480VAC, three phase, 60Hz AC.
3. A variable frequency drive (VFD) shall be provided in the LCP for control of the screen drive system. VFDs shall be as specified in Section 16446, Variable Frequency Drives.
4. Design of the control panel shall be with 120VAC logic.
5. For the bar screen, dual input Ultrasonic level indicating transmitters (LITs) as manufactured by Siemens shall be provided, these transmitters shall be mounted inside the CPs. Two ultrasonic level transducers shall be provided for each bar screens, refer to contract drawings for mounting location. Refer to Division 17 for additional requirements.
6. Programmable Logic Controllers (PLC) shall be furnished for an integrated PLC-based control system. The PLC shall be Allen-Bradley CompactLogix series furnished in accordance with Section 17311.
7. The supplier shall furnish an integrated PLC-based control system to monitor and control the operation of each screen and screenings compactor.
8. Front panel devices, as a minimum, shall include an Allen-Bradley PanelView Plus 6 1000 Operator Interface Terminal (OIT), Control Power On (blue indicating lamp), Emergency Pushbutton (mushroom type), and a non-resettable mechanical elapsed time meter.
9. The OIT shall display the process and equipment using a graphic representation of the actual screen/compactor system. It shall display all parameters being monitored including alarms. Also, allow for adjustment of timers and set points by the operator. The graphic screens shall be tailored specific to this project.
10. All the PLC adjustable set points and control parameters shall be through the OIT.
11. The PLC shall have an Ethernet port and connect to the PS-RTU panel to allow control and set point adjustment from remote.
12. The Supplier shall coordinate with Instrumentation and control system subcontractor for addressing and tagging.
13. Discrete Inputs (from remote dry contact):
  - a. Screen Level High (override from level float switch)
  - b. Screen LCS Auto
  - c. Screen LCS Forward
  - d. Screen LCS E-Stop
  - e. Compactor LCS Auto
  - f. Compactor LCS Forward
  - g. Compactor LCS E-Stop
  - h. Compactor Zero Speed Switch
  - i. Compactor Pull Cord activated

- j. Compactor Fail
  - k. System Enable (from plant PLC)
  - l. Level High Differential (from level transmitter)
  - m. Level High-High Differential (from level transmitter)
- C. Discrete Outputs (rated 5A @ 120VAC):
- 1. Screen Switch In Auto (to pump station PLC)
  - 2. Screen Running at Low Speed (to pump station PLC)
  - 3. Screen Running at High Speed (to pump station PLC)
  - 4. Screen Common Fault (to pump station PLC)
  - 5. Compactor Switch In Auto (to pump station PLC)
  - 6. Compactor Running (to pump station PLC)
  - 7. Compactor Common Fault (to pump station PLC)
- D. Analog Inputs (4-20mA):
- 1. Screen channel upstream Level
  - 2. Screen channel downstream Level
- E. All other equipment manufacturer recommended safety alarms shall be included.
- F. All accessories and appurtenances required for a complete and operational system shall be provided. Refer to division 17 for additional requirements.
- G. SCREEN CONTROL OPERATIONS:
- 1. The Bar Screen shall operate in the manual and automatic mode. In the manual mode initiated by the operator and in the automatic mode based on channel differential level and repeat cycle timers.
  - 2. Each LCS includes the following selector switches a Hand/Off/Remote (HOR) switch a Forward/Off/Reverse-Jog (FOR) switch, and an Emergency Stop Pushbutton Switch.
  - 3. When the Hand/Off/Remote (HOR) switch on the LCS is in the hand position, the screen shall be controlled from the LCS as follows:
    - a. When the FOR selector switch on the LCS is in the Forward position, the screen shall run in the forward direction at slow speed.
    - b. When the FOR selector switch on the LCS is in the Off position, the screen shall not run.
    - c. When the FOR selector switch on the LCS is held in the Reverse position, the screen shall run in the reverse direction.
  - 4. When the HOR switch on the LCS is in the Off position, the screen shall not run.

5. When the HOR switch on the LCS is in the Remote position, the screen shall be controlled from the OIT at the CP as follows:
  - a. When the On/Off/Auto (OOA) System Enable selector on the CP OIT is in the On position, the screen shall run.
  - b. When the OOA System Enable selector on the CP OIT is in the Off position, the screen shall not run.
  - c. When the OOA System Enable selector on the CP OIT is in the Automatic position, the screen shall cycle on and off based on the repeat cycle timer or level mode based on the differential level. The repeat cycle timer shall be adjustable from the OIT (initially set at 60 minutes) during the repeat cycle the screen shall run for a predetermined time span (initially set at 15 minutes) one screen run continuously at slow speed, as configured on the VFD drive or PLC. In the automatic mode the high differential level set point (adjustable from the OIT) will override the automatic timer control, and start the screen and shall run in fast speed, as configured on the VFD or PLC drive.

Upon detection of a jam, by high motor current, the screen shall attempt to dislodge the item by alternating and reversing the motor a preset period of time before stopping and alarming. Upon overload the screen shall alarm and shutdown.

#### H. COMPACTOR CONTROL OPERATIONS:

1. When the HOR switch on the LCS is in the Hand position, the compactor shall be controlled from the LCS as follows:
  - a. When the Forward/Off/Reverse (FOR) selector switch on the LCS is in the Forward position, the compactor shall run in the forward direction.
  - b. When the FOR selector switch on the LCS is in the Off position, the compactor shall not run.
  - c. When the FOR selector switch on the LCS is held in the Reverse position, the compactor shall run in the reverse direction
2. When the HOR switch on the LCS is in the Off position, the compactor shall not run.
3. When the HOR switch on the LCS is in the Remote position, the compactor shall be controlled from the OIT at the CP as follows:
  - a. Sequence of operation for compactor is initiated based on the run time of the associated screen. The compactor shall run whenever the associated screen is in operation. The compactor start, initiates a wash cycle.
  - b. Wash cycle:
    - 1) Wash water supply is activated: ON/OFF mode with adjustable timers for each operational condition
    - 2) Drive runs forward also controlled by timers with adjustable ON/OFF sequence
    - 3) Wash cycle is followed by discharge cycle: screw is running forward for an adjustable time
    - 4) Pan wash is activated
    - 5) Wash cycle finished

- c. The screen, compactor, spray, and all spray washes shall alarm and stop immediately if any of the e-stop pushbuttons are pressed.
- d. Compactor shall have the ability to clear blocking automatically: if current monitoring relay senses high load condition the screw stops and a clearing cycle is initiated: the screw stops immediately and reverses (time is adjustable at operator interface) and starts running forward. The number of attempts to clear the blocking is also adjustable – if screw is not cleared after allowed number of attempts or the overload is sensed during reversing, the system stops immediately and an alarm signal is rendered. Compactors shall also be furnished with over-torque and overload safety devices.

## **2.06 SPARE PARTS**

- A. The Contractor shall furnish all special tools (one per like piece of equipment) necessary to disassemble, service, repair and adjust the equipment.
- B. The Contractor shall furnish spare parts as recommended by the equipment manufacturer in addition to those listed below.
- C. Equipment General Provisions and shall include the following at a minimum:
  - 1. Mechanical screens (per screen)
    - a. One (1) set of rake bars and rake plates
    - b. Five (5) feet of chain
    - c. Two (2) wipers for scraper (or one pair of wear pads)
    - d. One year supply of all recommended lubricants
  - 2. Screenings Compactors (per compactor)
    - a. One (1) set of wear bars
    - b. One (1) cleaning brush
    - c. One year supply of all recommended lubricants
  - 3. Control Devices
    - a. Two of all relay, timer or control device used in the system
    - b. Two sets of spare fuses for each type used in the system
    - c. One indicating lamp for each type used in the system

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Coordinate with other trades, equipment and systems to the fullest extent possible.

- B. Take all necessary measurements in the field to determine the exact dimensions for all work and the required sizes of all equipment under this contract. All pertinent data and dimensions shall be verified by the Contractor.

### **3.02 INSTALLATION**

- A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the Drawings. Anchor bolts shall be set in accordance with the manufacturer's recommendations and setting plans.
- B. The Contractor shall also provide from the manufacturer the service of a qualified start-up engineer (factory representative) who has had prior on-site start-up experience to assist in performing start-up, checkout and initial operation services of screening equipment. The start-up engineer shall also instruct the Owner's personnel on the operation and maintenance procedures for the station. Qualified supervisory services, including manufacturers' engineering representatives, shall be provided for a minimum of 4 man-days to insure that the work is done in a manner fully approved by the respective equipment manufacturer. The manufacturer's representatives shall specifically supervise the installation of the screen and compactor. If there are difficulties in the start-up or operation of the equipment due to the manufacturer's design or fabrication, additional service shall be provided at no cost to the Owner. Services of the manufacturer's representatives and training shall be provided when the first screen is started, with follow-up visits upon start-up of each subsequent screen.
- C. A certificate from each equipment manufacturer shall be submitted stating that the installation of his/her equipment is satisfactory, that the equipment is ready for operation and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.

### **3.03 FIELD TESTS**

- A. All defects or defective equipment revealed by or noted during the tests shall be corrected or replaced promptly at the expense of the Contractor, and if necessary, the tests shall be repeated until results acceptable to the Engineer are obtained. The Contractor shall furnish all labor, equipment, and materials necessary for conducting the tests. A report of the field tests shall be submitted to the Engineer.
- B. After installation of the screening equipment, and after inspection, operation, testing and adjustment have been completed by the manufacturer's representative, each mechanical screen and screenings compactor shall be given a running test in the presence of the Engineer, such tests as necessary to indicate that the screening equipment, motors, and drives generally conform to the operating conditions specified and its ability to operate without vibration or overheating. The screening equipment and motors shall operate at the specified speed and capacities without undue noise or vibration. Any undue noise or vibration in the equipment, which is deemed objectionable by the Engineer, will be sufficient cause for rejection of the units.
- C. A thirty-day operating period of the mechanical screens and screenings equipment will be required before acceptance. If equipment performance does not meet the Specifications, corrective measures shall be taken or the equipment shall be removed and replaced with equipment which satisfies the conditions specified.
- D. Written test procedures shall be submitted to the Engineer for approval 30 days prior to testing.

### **3.04 TRAINING**

- A. A factory representative shall provide training to the Owner's operations staff concerning the recommended operation and maintenance of the equipment. Training shall be performed after substantial completion of the project with the use of operating equipment. See Section 01450 for Startup and Training requirements.

END OF SECTION

**SECTION 11421 - MECHANICAL SCREENS AND SCREENINGS COMPACTORS DUPERON****PART 1 - GENERAL****1.01 SCOPE OF WORK**

- A. Provide all labor, materials, equipment, delivering, installing, testing, and placing into service all mechanical screen and screenings compactor equipment with all appurtenances complete as shown on the Drawings and more fully described hereinafter.
- B. The Contractor shall install a screenings transfer system (chute) between the screens and the screenings compactors, provided by the same manufacturer as the screens and screening compactors. Contractor shall be responsible for properly supporting the screenings transfer system.
- C. The screening equipment and compactors shall be provided complete with all accessories, special tools, spare parts, mountings, anchor bolts and other appurtenances as specified and as may be required for a complete and operating installation. Any modifications or changes to the building, in addition to those shown on the Drawings, necessary to facilitate the screens and screenings compactors shall be the responsibility of the Contractor at no additional cost to the Owner.
- D. It shall be the Contractor's responsibility to install the mechanical screen and screenings compactors and appurtenances with the necessary operating clearances with the structural elements and equipment shown on the Contract Drawings.
- E. Layout, dimensions, and elevations shown on the Drawings are representative of the mechanical screens and screenings compactors. Any costs for re-design, materials, or construction due to requirements of the mechanical screens and screenings compactors equipment ultimately furnished shall be the responsibility of the Contractor.

**1.02 RELATED WORK SPECIFIED ELSEWHERE**

- A. Submittals: Section 01300
- B. Operating & Maintenance Manuals: Section 01780

**1.03 OPERATING CONDITIONS AND PERFORMANCE REQUIREMENTS**

- A. The mechanical screen shall be designed to remove screenings from raw wastewater and to discharge the screenings into washer compactors. The screens shall be designed for operation in a rectangular channel as shown on the Contract Drawings. Screen shall be a mechanically cleaned bar screen with link system design. The mechanically cleaned bar screen shall have a head sprocket only, with no sprockets, bearings, idlers, or similar drive components under water to trap the chain. Equipment featuring reciprocating rake arms or lower bearings/sprockets/tracks below the water is not acceptable. The design shall be such to ensure that all maintenance can be accomplished at the operating floor level or above. No part of the drive system including sprockets shall be located below the water surface at maximum design flow.
- B. Screening equipment shall be designed to run continuously (24/7), without operator supervision. Screen cleaning system shall be front cleaning and front return design, to prevent the potential of "carry-over" of screenings material.



- C. Debris collected on the bars shall be lifted above deck level by multiple link-mounted scrapers and debris blades. The screenings shall be discharged to a chute connected to the head frame. The chute shall discharge via gravity to the screenings compactors located on the downstream side of the screen. The screen shall consist essentially of the frame, screen field, dead plate, seals, rake assembly (link system, scrapers, debris blades, drive unit, bearing), gearbox, screen drive, local controls and appurtenances specified or otherwise required for a complete and properly operating installation.

#### Mechanical Screen

Parameter	Value
Number of units required	1
Channel width at screen, per screen	3 FT
Channel invert at screen, elevation	965.6
Operating floor elevation (top of channel)	979.6
Maximum upstream water surface elevation (WSEL)	973.0
Minimum screen field width, per screen	2.2
Installed angle, degrees from vertical	75
Flow rate per screen - maximum (peak flow)	10.0 mgd
Flow rate per screen - minimum	10.0 mgd
Max headloss allowable at peak flow, clean screen <sup>(1)</sup>	8.98"
Max headloss allowable at peak flow, 30% blind <sup>(1)</sup>	10.21"
Max head differential across the screen <sup>(2)</sup>	2 ft
Discharge elevation above upper operating floor, minimum	5'
Bar spacing (clear space), maximum	0.25 inches
Minimum raking capacity (cf/hr), per screen	5.83 ft 3/hr
Rake travel speed (feet per minute)	Min Speed: 2.33 ft/min. Max Speed: 9.33 ft/min.
<sup>(1)</sup> Headloss calculation(s) shall be based on the assumption that the water depth within the channel downstream of screen equals <u>3-ft</u> .	
<sup>(2)</sup> All components, including the gear reducer, shall be designed to withstand, without damage or permanent distortion, the maximum headloss allowable (full screen blinding).	

- D. The heavy duty screw type screenings washer compactor shall be suitable for installation and operation with the screen and shall accept screenings, compress and dewater them and deliver them to the screenings dumpster as shown on the Drawings. The screenings compactor shall also be equipped with a washing zone. The screenings washer compactors shall be provided by the same manufacturer as the screens and shall be connected to the screens by a covered chute as specified herein.

#### Screenings Compactor

Parameter	Value
Number of units	1
Number of hopper inlets per unit	1
Screw length, minimum (ft)	30 ft
Minimum capacity (cf/hr), total	133 ft 3/hr
Feed concentration, % dry solids content	0 - 5 %
Compactor discharge concentration, % dry solids content	30 - 60 %
Screenings volume reduction, %	80 %
Minimum screw diameter, inches	11 - ¼ "
Maximum screw rotational speed, rpm	2.2 rpm

#### 1.04 MANUFACTURER

- A. The mechanical screen and screenings compactor units shall be provided by a single manufacturer with a minimum of five (5) years' experience in designing and manufacturing screening equipment of similar type, size and capacity. The mechanical screens and screenings compactors shall be manufactured by Duperon Corporation or approved equal.
- B. To assure unity of responsibility, the mechanical screens and screenings compactors, chute, controls, motors, VFDs, gearboxes, and appurtenances specified and other auxiliary equipment, and materials specified in this Section shall be furnished and coordinated by the screen manufacturer (Manufacturer) who shall assume responsibility for the satisfactory operation of the entire screening system.
- C. Replacement Parts Capability: The manufacturer shall have the ability to promptly furnish any and all interchangeable replacement parts as may be needed at any time within the expected life of the equipment. Upon request, the Contractor shall submit evidence of the proposed manufacturer's ability to promptly fill replacement orders.
- D. Quality Assurance: All screening equipment shall be of approved design and make products of manufacturers who have built equipment of similar type, size and capacity. Upon request, the Manufacturer shall provide evidence of at least five (5) installations in which similar sized equipment has provided satisfactory performance for a minimum of five (5) years in a similar application.
  - 1. The Contractor shall obtain the screening equipment, controls and appurtenances from the screen manufacturer, as a complete and integrated package to insure proper coordination and compatibility and operation of the system.
  - 2. All components made of stainless steel shall meet the acid passivation requirements of ASTM A380. Stainless steel components shall be fabricated in a manner to prevent contamination with carbon steel.
  - 3. Provide fabrication in compliance with all applicable ASTM standards or equivalent international standards.
  - 4. The equipment manufacturer's shop welds, welding procedures, welders and welding operators shall be qualified and certified in accordance with the requirements of the latest edition of ANSI/AWS D1.6 "Structural Welding Code - Steel" published by the American Welding Society or equivalent standard.
  - 5. Perform all welding in the factory using shielded arc, inert gas, MIG or TIG method. Add filler wire to all welds to provide for a cross section and weld metal equal to or greater than the parent metal. Fully penetrate butt welds to the interior surface and provide gas shielding to interior and exterior of the joint.
- E. Additional Submittals: The Contractor shall submit, upon request, any additional information that the Engineer may deem necessary to determine the ability of the proposed manufacturer to produce the specified equipment.
- F. Manufacturer Information: All manufacturer information required by the specifications shall be submitted by the Contractor within thirty (30) calendar days of the date of receipt of the Notice to Proceed.

Any additional information or data, specifically requested by the Engineer, concerning manufacturer's capabilities (especially relating to requirements described hereinbefore), shall be submitted by the Contractor within fourteen (14) calendar days of the receipt of the written request thereof, unless otherwise specified.

Approval of manufacturers or suppliers will not be given until all information required by the specifications or requested by the Engineer has been submitted and acceptable.

**G. Disqualification of Manufacturer:**

1. Poor performance of similar screening equipment now in operation under the specified conditions of service and screen rating constitute grounds for disqualification of the screen manufacturer, supplier, or both, unless such poor performance has been corrected.
2. Failure to successfully comply with the provisions of subparagraphs A through G, inclusive, will constitute grounds for disqualification of screen manufacturer.

**1.05 SUBMITTALS (SHOP DRAWINGS)**

- A. General: The Contractor shall comply with the provisions of the specifications regarding submittals, unless otherwise specified herein.
- B. At the time of submission, the Contractor shall, in writing, call the Engineer's attention to any deviations that the submittals may have from the requirements of the Engineer's Contract Drawings and Specifications.
- C. The Contractor shall provide a notarized certification indicating that all screening products meet the required Specifications.
- D. Descriptive literature shall be submitted on all items specified herein to the Engineer for review and approval before ordering.
- E. Content of Submittals: The following shall be included in submittals as a minimum. However, any additional information or data shall be added if and whenever requested by the Owner or the Engineer. Where applicable, submit separate data for each mechanical screen and screenings compactor.
  1. Descriptive Literature:
    - a. Equipment dimensions and weight.
    - b. Materials of Construction (including required coating).
    - c. Complete motor nameplate data as defined by NEMA.
    - d. Gear reducer data including service factor, efficiency, torque rating and materials.
    - e. Shop drawing data for accessory items.
    - f. Certified setting plans, with tolerances, for anchor bolts.
    - g. List of recommended spare parts other than those specified.
    - h. Shop and field inspection reports.
    - i. Qualifications of field service engineer.
    - j. Recommendations for short and long-term storage.
    - k. Shop and field testing procedures, set up and equipment to be used.

- I. Special tools.
  - m. Schematic control and power wiring diagrams including interconnecting and internal wiring diagrams.
  - n. Control panel drawings and heat load / dissipation calculations.
  - o. Manufacturer's literature as needed to supplement certified data.
- 2. Installation Information: Submit installation drawings and information for pump connections, connecting piping and valves, electrical connections, and auxiliary equipment.

The Contractor shall submit all other drawings, material lists and other information specified, requested and/or necessary to show complete compliance with all details of the contract documents.

- 3. Operation and Maintenance Manual: Manual shall contain all information necessary for proper operation and maintenance of mechanical screens and screenings compactors units, as well as the location of the nearest permanent service headquarters.

**F. Calculations:**

- 1. Maximum headloss and velocity at peak flow for clean screens.
- 2. Maximum headloss and velocity at peak flow for 30% blinded screen conditions to verify screens can handle peak flows.
- 3. Structural calculations of screen design strength to handle the maximum head differential across the screens (maximum water level upstream and no water downstream) to verify screens can handle full blinded conditions.
- 4. Calculations shall be signed and sealed by a Professional Engineer.

**1.06 TESTS**

**A. Shop Tests:**

- 1. All equipment shall be tested in the shop of the manufacturer in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents and that it will operate in the manner specified or implied.

**B. Field Tests:**

- 1. The field tests shall be made on each mechanical screen and screenings compactor unit by the Contractor in the presence of and as directed by the Engineer.
- 2. The Contractor shall give at least two (2) week's notice to the Owner and Engineer when the field tests are to be accomplished so that the Owner and Engineer may have a representative present at the said tests.
- 3. Before any screening equipment is rotated, the Contractor shall make certain that no debris is present in screening channels. Any damage done to equipment while starting up shall be assumed to be caused by debris and shall be replaced at the Contractor's expense.

4. During the test, the screening equipment shall be checked for proper alignment of the rake and bar screen, operated at maximum rated speed to confirm smooth operation and no undue noise, vibration, overheating or overloading of drive motors and components. Controls shall be checked to verify screening equipment operates as specified. Safety interlocks and devices shall be checked for proper operation.
5. Contractor shall be responsible for making all adjustments necessary to place equipment in specified working order at time of above tests.
6. Field tests shall also conform to Part 3, Paragraph 3.03 as specified hereinafter.

**C. Failure of Tests:**

1. Any defects in the equipment or failure to meet the guarantees or requirements of the specifications shall be promptly corrected by the Contractor by replacements or otherwise. The decision of the Engineer as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive. If the Contractor fails or refuses to make these corrections or if the improved equipment, when tested, shall fail again to meet the guarantees of specified requirements, the Owner notwithstanding its having made partial payment for work and materials which have entered into the manufacture of said equipment, may reject said equipment and order the Contractor to remove it from the premises at his own expense.
2. In case the Owner rejects said equipment, then the Contractor hereby agrees to repay to the Owner all sums of money paid to him for said rejected equipment on progress certificates or otherwise on account of the lump sum prices herein specified, and upon the receipt of said sum of money the Owner will execute and deliver to the Contractor a bill of sale of all its rights, title, and interest in and to said rejected equipment; provided, however, that said equipment shall not be removed from the premises of the Owner until the Owner obtains from other sources the equipment to take the place of the rejected. The Owner hereby agrees to obtain said other equipment within a reasonable time and the Contractor agrees that the Owner may use the equipment furnished by him without rental or other charge until said other new equipment is obtained.

D. Responsibility During Test: The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner formally takes over the operation thereof.

E. Manufacturer's Representative: For all screening equipment, the Contractor shall furnish the services of accredited representatives of the equipment manufacturer who shall supervise the installation, adjustment, and field tests of each screening unit and give instructions to the operating personnel. As one condition necessary to acceptance of any screening equipment, the Contractor shall submit a certificate from the manufacturer, stating that the installation of the equipment is satisfactory, that the unit is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication, and care of the unit.

**1.07 GUARANTEE PERIOD**

- A. After successful completion of tests and trials under operating conditions on all equipment, the Contractor shall guarantee all equipment, materials and workmanship from undue wear and tear, from mechanical and electrical defects, and from any failure whatever, for a minimum of one (1) year. This one (1) year minimum shall not replace a standard manufacturer's guarantee if it exceeds one (1) year.

**1.08 WARRANTY**

- A. The Contractor guarantees and warrants that during the first one year of operation, the mechanical screens and screenings compactors will operate satisfactorily and continuously according to the operating conditions and performance requirements specified herein, and that after due notice has been given by the Owner, he or the equipment manufacturer will proceed, within a reasonable time, to adjust, regulate, repair and renew at his own expense or perform such work as is necessary to maintain the guaranteed capacities, efficiencies and performances.

## **PART 2 - PRODUCTS**

### **2.01 MECHANICAL SCREEN**

A. Frame:

1. Framework of screen shall be constructed of 304 stainless steel bent plate with minimum of 3/16" cross section. Horizontal members shall be of 304 stainless steel bent plate with a minimum thickness of 3/16". The side frames shall be connected to the support frames. The support frames shall be securely anchored to the operating floor. A 304 stainless steel channel bottom plate shall be an integral part of the bar screen assembly to fully engage scrapers in the bar screen at the base of the unit and assure that the raking mechanism reaches the bottom of the screen to prevent debris accumulation. The minimum bottom plate thickness shall be 3/16". No braces, gussets or stiffeners shall be inside the Screen Frame that will allow for screenings to collect
2. All parts shall be designed and manufactured to handle the forces that may be exerted on the screen during fabrication, shipping, erection, and proper operation according to the Operation and Maintenance Manual. All components shall be so designed that jamming at any point will not result in structural failure, but will cause the drive motor to stall. All components, including the gear reducer, shall be designed to withstand, without damage or permanent distortion, the full stalling torque of the drive motor.
3. Frame width and height shall be customized to fit the specified channel dimensions, discharge height, and hydraulic force requirements. The mechanical screen assembly shall be shipped in one piece. Screen construction shall allow for disassembly in the event modular construction is required.
4. The unit shall be supported and anchored on the operating floor and at the bottom of the channel.
5. Anchor bolts shall be a minimum 3/8" diameter furnished by the Contractor. Bolts and nuts shall be of Type 304 stainless steel. Anti-galling compound shall be used to assemble all stainless steel nuts, bolts and fasteners.
6. Stainless steel backing plates will be mounted along the upstream edges of the frame to seal the outer edge of the frame against the channel walls.
7. The unit is anchored to the channel floor at the toe of the unit to prevent the flow from passing under the screen. The channel bottom plate directs flow into the screen.
8. Link slide assembly shall be provided per manufacturer standard design and shall be constructed of UV Stable UHMW PE rollers and 304 stainless steel supports and components.
9. Screen enclosure / covers which are easily removable shall be provided with handles and turn locks for "no tool required" access. A 14 gauge. (minimum thickness) #4 brushed satin finish 304 stainless steel enclosure shall be installed to cover the screen above the

operating deck level. Front Enclosure shall be provided with knurled knobs for "no tool required" access and stainless steel doors with polycarbonate viewing pane for access to equipment. Removable panels shall be constructed of 304 stainless steel with a minimum thickness of 16 gauge. Alignment notches shall be included to support repositioning of removable panels. Rear Enclosure shall have hinged removable doors and shall be secured with a lift-slide-latch handle. Rear removable door shall include an integral viewing door that shall be secured with a lift-slide-latch handle to provide access for a quick look inside.

**B. Screenfield and Deadplate:**

1. Screen bars shall be constructed of 316 stainless steel and be "tear-shaped" with a hydraulic coefficient shape factor of 0.76 and the minimum dimensions of 0.25 inch x 0.75 inch x 0.13 inch.
2. Bars shall be supported from framework and shall be individually replaceable without welding or cutting. Replacement screen bars shall be available from the screen manufacturer.
3. There shall be no space wider than the opening between the bars which would permit passage of larger solids through the screen.
4. Dead plate of 304 stainless steel plate (minimum thickness is 1/4") shall be flat and true; span the entire width of the unit; transition from bar screen and extend to the discharge point.

**C. Screen Cleaning:**

1. The equipment shall have multiple scrapers on the bar screen at one time cleaning continuously from bottom to top, the entire width of the bar screen. Units which have single raking arms or that require cycle times shall not be allowed.
2. Manufacturer's equipment shall have a head sprocket only, with no sprockets, bearings, idlers, or similar drive components under water to trap the chain. Equipment featuring reciprocating rake arms or lower bearings/sprockets/tracks below the water is not acceptable.
3. The link system shall have jam evasion capability by flexing around and collecting large objects such as a 2 X 4 board, bowling ball, grease balls and surges of solids at peak loading times without overloading and shutting down the unit. The link system shall be such that it bends in one direction only which allows it to become its own lower sprocket and frame and shall have a 1,000 pound lifting capacity.
4. The link system shall be stainless steel castings and have a minimum ultimate strength of 60,000 lbs with a minimum cross section of 1.5 inches and weighing a minimum of 4.5 lbs each. Links and pins shall be constructed of 304 stainless steel material. Retaining rings shall be constructed of 302 stainless steel.
5. Scrapers shall be spaced 21 inches apart. To provide long product life the scraper shall move at no greater than 28 inches per minute at standard operating speed of 1/2 rpm allowing for approximately 1 debris discharge per minute. Staging Scrapers and Thru Bar Scrapers shall be a maximum ratio of 3:1 per manufacturer recommendations. At least one scraper every 84 inches shall fully penetrate the bar screen, cleaning all three sides of the bars as well as through to the cross members in openings of 0.25, 0.375 and 0.50 inches.
6. Staging Scrapers shall be 1 inch thick x 4 inches x screen width UV Stable UHMW-PE with a serrated edge.

7. Thru Bar Scrapers shall be minimum 0.375 inch thick 304 stainless steel.
8. A 304 stainless steel and UV Stable UHMW-PE debris blade assembly, which does not require a separate drive, shall be installed to assist in removing debris from the scraper on the mechanically cleaned bar screen unit as recommended by the manufacturer.
9. Return guide/Closeouts shall be 304 stainless steel and shall assure proper alignment of scrapers as they enter the bar screen and assure that there is no space wider than the clear opening between bars to prevent passage of larger solids than allowed through the screen.
10. Screenings transported to the top of the screen shall be discharged positively by means of a scraper mechanism to the discharge chute. Cleaning mechanisms that utilize shock absorbers, springs, or other dampening or hydraulic actuators are unacceptable.
11. A discharge chute shall be provided for each screen to divert screenings discharged from the screen to a screenings compactor. The discharge chute shall be constructed of 304 stainless steel with a minimum thickness of 11 gauge. The discharge chute shall be bolted to the dead plate.

**D. Drive Mechanism:**

1. The Drive Head shall be located at the top of the mechanically cleaned bar screen. The drive mechanism for the rakes shall incorporate a solid shaft constructed of AISI 1018 steel or Type 304 stainless steel. The drive shaft shall have a minimum diameter of 3-1/8 inch. The drive output shaft rotation shall be constant and in one direction in order to reduce maintenance and increase product life.
2. Drive Sprockets shall be coated ASTM A48, CL40 cast iron with ASTM A536 80-55-06 ductile cast iron end castings.
3. Bearing shall be greased ball bearing type, non self-aligning, sealed and lubricated and shall have a 24/7/365 L10 life of 20 years. Non-sealed bearings are not acceptable.
4. Screen operates continuously, speed is controlled by set points established by water level differential. Discharge intervals vary from once every minute to once every 15 seconds (or 4 times a minute).

**E. Speed Reducer:**

1. Speed reducer shall be a double-reduction, cycloidal style and shall comply with all applicable AGMA standards. The speed reducer shall be capable of a 4/1 speed range with variable output speeds between 0.50 to 2.2 output RPMs (in high flow conditions). The speed reducer shall produce an output torque of 11,417 in.lb. and have a gear ratio of 809:1.

## **2.02 SCREENINGS COMPACTOR**

- A. The screenings compactor shall be of the dual auger design. The system shall be designed to receive, wash, positively convey and compact screenings discharged from the mechanical screen(s). The compactor shall be capable of continuous operation and of handling all wastewater screenings received from the mechanical screen, in addition to the washer compactor's wash water flows. Compactor shall have the ability to process multiple pieces of clothing, variable volumes of debris, and unprocessed septage or grease. Compactor shall be equipped with a self-regulating, active pressure zone designed to accept non-standard wastewater debris in its original form, such as rocks, broken concrete, and metal (bolts, short



pipe, etc.) up to 4 inches long. Manufacturer shall provide calculations to show the screenings compactor is sufficiently sized to convey the maximum amount of screenings that the screening equipment can deliver.

- B. The screenings shall be introduced into the inlet hopper directly over the Sieve Zone, washed in the Wash Zone, compacted in the Press Zone, conveyed through the Transport Zone, and discharged from the Discharge Tube into a suitable receptacle. The excess liquid shall drain through holes in the inlet trough.
- C. Each compactor shall be designed to handle capacity per paragraph 1.03. The compactor shall reduce screenings volume by a minimum of 50% and produce dry screenings content per paragraph 1.03.
- D. Unless specified otherwise hereinafter, stainless steel shall be grade 304. All mechanical parts shall be designed to handle the forces that may be exerted on the Washer Compactor during fabrication, shipping, erection, and operation.
- E. Auger (shafted screw assemblies):
  - 1. Dual augers shall provide positive displacement action, be orientated on top of each other and rotate in opposing directions. The augers shall be intermeshed and shall be of 1 left hand and 1 right hand lead.
  - 2. Augers shall be constructed of 304 stainless steel with flights welded to a solid shaft. Minimum thickness of Auger flights shall be 3/8 inch with 4 inch flight pitch.
  - 3. Augers shall be float mounted in a Delrin or equivalent, thrust and plane bearing arrangement that allows movement for accommodation of irregular debris. Stainless steel fasteners shall be provided to hold the auger support in place.
- F. Frame / Housing:
  - 1. The compactor housing shall be constructed of 304 stainless steel with a minimum thickness of 11 gauge and connect to 3/8 inch thick flanges.
  - 2. Housing shall be furnished with minimum ½ inch diameter water supply line connection fitting. Wash port manifold shall be integrated prior to the compaction housing and delivers 3 to 5 GPM. The Washer Compactor manufacturer shall provide all solenoid valves and isolation valves, required to control the flow of wash water. All interconnecting piping, valves, etc. between the water source, and Washer Compactor housing and the solenoid and isolation valves shall be supplied and installed by the Contractor.
  - 3. Drain connection shall be 3 inch NPT (minimum).
  - 4. Rear leg, front leg and intermediate leg supports, as required, shall be furnished for rigid support to the concrete slab. Anchor bolts shall be a minimum ½ inch diameter 304 stainless steel furnished by the Contractor. Anti-galling compound shall be used to assemble all stainless steel nuts, bolts and fasteners.
- G. Discharge Tube:
  - 1. Discharge Tube shall be constructed of minimum 14 gauge 304 stainless steel. The discharge tube shall increase in diameter/size over its length in order to reduce the potential for plugging.
  - 2. Discharge Tube shall direct and discharge screenings at a clear discharge height that allows for placement of a dumpster (provided by Owner) to collect the screenings.

3. Supports shall be furnished, as required for rigid support of the tubing to the concrete slab.

H. Bagging System:

1. Cassette Holder shall be constructed of 304 stainless steel and ABS Plastic with a continuous bagger cassette, 230 ft (80 meters) in length, minimum.

I. Speed Reducer:

1. Speed reducer shall have a maximum output of 2.2 RPM, 809:1 reduction ratio with 18,900 in-lb. of output torque.

J. Thrust Bearings:

1. Thrust bearings shall be Delrin or equivalent, self-lubricating and be capable of withstanding minimum 2000 Lb. of thrust load (each auger) at 2.2 RPM for life of machine.

K. Screw Supports:

1. Screw supports shall be UHMW plane type, self-lubricating and fastened into place using stainless steel fasteners.

L. Spur Gears:

1. Spur gears shall be 17-4 PH stainless steel.

M. Safety Devices and Limit Switches:

1. Safety Trip Cords

- a. Each screw compactor shall be furnished with safety trip cords running on all sides of the hopper inlet with a safety stop switch in compliance with OSHA standards.
- b. Trip cabling shall be stranded galvanized aircraft cable and orange colored nylon outer sheathing. Cabling shall be supported by stainless steel eyebolts every 4 feet. Wire clamps shall be stainless steel.
- c. Safety switch shall be housed in a NEMA 7 enclosure and shall have 2 SP/DT micro-switch and stainless steel external hardware. Switch shall be maintained once activated and shall require a manual reset.
- d. If a trip cord signal is received from the safety trip cord switch, when the motor is running, the compactor shall alarm and stop.
- e. Emergency trip cord and safety switch shall be Conveyor Components Company Model RS-2X, or equal.

2. Chute Level Sensor

- a. Install a level sensor in the chute between the screen and compactor to detect compactor not turning.

## 2.03 ELECTRICAL AND CONTROL REQUIREMENTS

- A. All electrical appurtenances, with the exception of the control panel, furnished by the equipment manufacturer shall be rated for installation in a Class I, Division 1 hazardous location within the screenings areas.
- B. All conduit, couplings, fittings, and fasteners furnished by the equipment manufacturer shall be rigid aluminum and liquid tight, PVC coated, flexible metal conduit rated for the conditions noted.
- C. Electrical Requirements:

Motors	Screen	Screenings Compactor
VFD	Yes	Yes
Rating	460V, 3 ph, 60 Hz	460V, 3 ph, 60 Hz
Horsepower, Max	5	5
Speed, rpm	1800	1800
Enclosure	TEFC-XP	TEFC-XP
Insulation	Class H	Class H
Inverter Duty	Yes	Yes
Service Factor	1.0	1.15
Space Heater	No	No
Motor Winding Temperature Switch	Yes	Yes

## 2.04 VARIABLE FREQUENCY DRIVES

- A. The speed control for variable speed pumps shall be Variable Frequency Drives, as specified in Division 16 suitable for installation as shown on the Drawings.
- B. The Variable Frequency Drives shall be supplied by the Manufacturer and shall be completely coordinated with the pumps and pump driving motors and shall include all internal auxiliaries required to meet the functional specifications.
- C. The Variable Frequency Drives shall be compatible with the motors provided by the Manufacturer.

## 2.05 CONTROL PANELS

- A. Each screen and each compactor shall be provided with a separate Local Control Station (LCS) located at the equipment. Controls for each LCS shall include the following features:
1. NEMA 7 rating suitable for a Class I, Division 1 hazardous location.
  2. Screen LCS shall have FOR and HOR switches and a maintained-type mushroom-head emergency stop button (Estop).
  3. Compactor LCS shall have FOR and HOR switches and a maintained-type mushroom-head emergency stop button (Estop).

- B. Each screen shall be supplied with a combined Screen/Compactor Local Control Panel (CP) to be located away from the equipment in the electrical room. These CP shall be vendor furnished and shall include the following features:
1. In addition each compactor shall have a remote Emergency Stop Station (LLCS).
  2. The CP shall be painted steel and rated NEMA 12 suitable for unclassified locations. Panel shall be supplied with a flange mounted disconnect switch and main circuit breaker. Power supply to panel shall be 480VAC, three phase, 60Hz AC.
  3. A variable frequency drive (VFD) shall be provided in the LCP for control of the screen drive system. VFDs shall be as specified in Section 16446, Variable Frequency Drives.
  4. Design of the control panel shall be with 120VAC logic.
  5. For the bar screen, dual input Ultrasonic level indicating transmitters (LITs) as manufactured by Siemens shall be provided, these transmitters shall be mounted inside the CPs. Two ultrasonic level transducers shall be provided for each bar screens, refer to contract drawings for mounting location. Refer to Division 17 for additional requirements.
  6. Programmable Logic Controllers (PLC) shall be furnished for an integrated PLC-based control system. The PLC shall be Allen-Bradley CompactLogix series furnished in accordance with Section 17311.
  7. The supplier shall furnish an integrated PLC-based control system to monitor and control the operation of each screen and screenings compactor.
  8. Front panel devices, at a minimum, shall include as a minimum an Allen-Bradley PanelView Plus 6 1000 Operator Interface Terminal (OIT), Control Power On (blue indicating lamp), Emergency Pushbutton (mushroom type), and a non-resettable mechanical elapsed time meter.
  9. The OIT shall display the process and equipment using a graphic representation of the actual screen/compactor system. It shall display all parameters being monitored including alarms. Also, allow for adjustment of timers and set points by the operator. The graphic screens shall be tailored specific to this project.
  10. All the PLC adjustable set points and control parameters shall be through the OIT.
  11. The PLC shall have an Ethernet port and connect to the PS-RTU panel to allow control and set point adjustment from remote.
  12. The Supplier shall coordinate with Instrumentation and control system subcontractor for addressing and tagging.
  13. Discrete Inputs (from remote dry contact):
    - a. Screen Level High (override from level float switch)
    - b. Screen LCS Auto
    - c. Screen LCS Forward
    - d. Screen LCS E-Stop
    - e. Compactor LCS Auto
    - f. Compactor LCS Forward
    - g. Compactor LCS E-Stop

- h. Compactor Pull Cord activated
  - i. Compactor Fail
  - j. System Enable (from plant PLC)
  - k. Level High Differential (from level transmitter)
  - l. Level High-High Differential (from level transmitter)
- C. Discrete Outputs (rated 5A @ 120VAC):
- 1. Screen Switch In Auto (to pump station PLC)
  - 2. Screen Running at Low Speed (to pump station PLC)
  - 3. Screen Running at High Speed (to pump station PLC)
  - 4. Screen Common Fault (to pump station PLC)
  - 5. Compactor Switch In Auto (to pump station PLC)
  - 6. Compactor Running (to pump station PLC)
  - 7. Compactor Common Fault (to pump station PLC)
- D. Analog Inputs (4-20mA):
- 1. Screen channel upstream Level
  - 2. Screen channel downstream Level
- E. All other equipment manufacturer recommended safety alarms shall be included.
- F. All accessories and appurtenances required for a complete and operational system shall be provided. Refer to division 17 for additional requirements.
- G. SCREEN CONTROL OPERATIONS:
- 1. The Bar Screens shall operate in the manual and automatic mode. In the manual mode initiated by the operator and in the automatic mode based on channel differential level and repeat cycle timers.
  - 2. Each LCS includes the following selector switches a Hand/Off/Remote (HOR) switch a Forward/Off/Reverse-Jog (FOR) switch, and an Emergency Stop Pushbutton Switch.
  - 3. When the Hand/Off/Remote (HOR) switch on the LCS is in the hand position, the screen shall be controlled from the LCS as follows:
    - a. When the FOR selector switch on the LCS is in the Forward position, the screen shall run in the forward direction at slow speed.
    - b. When the FOR selector switch on the LCS is in the Off position, the screen shall not run.
    - c. When the FOR selector switch on the LCS is held in the Reverse position, the screen shall run in the reverse direction.

4. When the HOR switch on the LCS is in the Off position, the screen shall not run.
5. When the HOR switch on the LCS is in the Remote position, the screen shall be controlled from the OIT at the CP as follows:
  - a. When the On/Off/Auto (OOA) System Enable selector on the CP OIT is in the On position, the screen shall run.
  - b. When the OOA System Enable selector on the CP OIT is in the Off position, the screen shall not run.
  - c. When the OOA System Enable selector on the CP OIT is in the Automatic position, the screen shall cycle on and off based on the repeat cycle timer or level mode based on the differential level. The repeat cycle timer shall be adjustable from the OIT (initially set at 60 minutes) during the repeat cycle the screen shall run for a predetermined time span (initially set at 15 minutes) one screen run continuously at slow speed, as configured on the VFD drive or PLC. In the automatic mode the high differential level set point (adjustable from the OIT) will override the automatic timer control, and start the screen and shall run in fast speed, as configured on the VFD or PLC drive.

The screen does not auto reverse, but rather flexes around large debris.

#### H. COMPACTOR CONTROL OPERATIONS:

1. When the HOR switch on the LCS is in the Hand position, the compactor shall be controlled from the LCS as follows:
  - a. When the Forward/Off/Reverse (FOR) selector switch on the LCS is in the Forward position, the compactor shall run in the forward direction.
  - b. When the FOR selector switch on the LCS is in the Off position, the compactor shall not run.
  - c. When the FOR selector switch on the LCS is held in the Reverse position, the compactor shall run in the reverse direction
2. When the HOR switch on the LCS is in the Off position, the compactor shall not run.
3. When the HOR switch on the LCS is in the Remote position, the compactor shall be controlled from the OIT at the CP as follows:
  - a. Sequence of operation for compactor is initiated based on the run time of the associated screen. The compactor shall run whenever the associated screen is in operation. The compactor start, initiates a wash cycle.
  - b. Wash cycle: Wash water supply runs when compactor starts.
  - c. The screen, compactor, spray, and all spray washes shall alarm and stop immediately if any of the e-stop pushbuttons are pressed.
  - d. Compactor shall have the ability to clear blocking automatically: if current monitoring relay senses high load condition the screw stops and a clearing cycle is initiated: the screw stops immediately and reverses (time is adjustable at operator interface) and starts running forward. The number of attempts to clear the blocking is also adjustable – if screw is not cleared after allowed number of attempts or the overload

is sensed during reversing, the system stops immediately and an alarm signal is rendered. Compactors shall also be furnished with over-torque and overload safety devices.

## **2.06 SPARE PARTS**

- A. The Contractor shall furnish all special tools (one per like piece of equipment) necessary to disassemble, service, repair and adjust the equipment.
- B. The Contractor shall furnish spare parts as recommended by the equipment manufacturer in addition to those listed below.
- C. Equipment General Provisions and shall include the following at a minimum:
  - 1. Mechanical screens (per screen)
    - a. One (1) Drive Clevis Pin
    - b. Four (4) Link Clevis Pins
    - c. Ten (10) Snap/Retaining Rings and Tool
    - d. Four (4) Scraper Nuts
    - e. Four (4) Scraper Bolts
    - f. One (1) Snap Ring Tool
    - g. One (1) "Never Seez" Lubricant (3 oz. Tube)
    - h. One year supply of all recommended lubricants
  - 2. Screenings Compactors (per compactor)
    - a. One (1) Plane Bearing Kit
    - b. One year supply of all recommended lubricants
    - c. Three (3) Continuous bagger cassettes
  - 3. Control Devices
    - a. Two of all relay, timer or control device used in the system
    - b. Two sets of spare fuses for each type used in the system
    - c. One indicating lamp for each type used in the system

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Coordinate with other trades, equipment and systems to the fullest extent possible.

- B. Take all necessary measurements in the field to determine the exact dimensions for all work and the required sizes of all equipment under this contract. All pertinent data and dimensions shall be verified by the Contractor.

### **3.02 INSTALLATION**

- A. Installation shall be in strict accordance with the manufacturer's instructions and recommendations in the locations shown on the Drawings. Anchor bolts shall be set in accordance with the manufacturer's recommendations and setting plans.
- B. The Contractor shall also provide from the manufacturer the service of a qualified start-up engineer (factory representative) who has had prior on-site start-up experience to assist in performing start-up, checkout and initial operation services of screening equipment. The start-up engineer shall also instruct the Owner's personnel on the operation and maintenance procedures for the station. Qualified supervisory services, including manufacturers' engineering representatives, shall be provided for a minimum of 4 man-days to insure that the work is done in a manner fully approved by the respective equipment manufacturer. The manufacturer's representatives shall specifically supervise the installation of the screen and compactor. If there are difficulties in the start-up or operation of the equipment due to the manufacturer's design or fabrication, additional service shall be provided at no cost to the Owner. Services of the manufacturer's representatives and training shall be provided when the first screen is started, with follow-up visits upon start-up of each subsequent screen.
- C. A certificate from each equipment manufacturer shall be submitted stating that the installation of his/her equipment is satisfactory, that the equipment is ready for operation and that the operating personnel have been suitably instructed in the operation, lubrication and care of each unit.

### **3.03 FIELD TESTS**

- A. All defects or defective equipment revealed by or noted during the tests shall be corrected or replaced promptly at the expense of the Contractor, and if necessary, the tests shall be repeated until results acceptable to the Engineer are obtained. The Contractor shall furnish all labor, equipment, and materials necessary for conducting the tests. A report of the field tests shall be submitted to the Engineer.
- B. After installation of the screening equipment, and after inspection, operation, testing and adjustment have been completed by the manufacturer's representative, each mechanical screen and screenings compactor shall be given a running test in the presence of the Engineer, such tests as necessary to indicate that the screening equipment, motors, and drives generally conform to the operating conditions specified and its ability to operate without vibration or overheating. The screening equipment and motors shall operate at the specified speed and capacities without undue noise or vibration. Any undue noise or vibration in the equipment, which is deemed objectionable by the Engineer, will be sufficient cause for rejection of the units.
- C. A thirty-day operating period of the mechanical screens and screenings equipment will be required before acceptance. If equipment performance does not meet the Specifications, corrective measures shall be taken or the equipment shall be removed and replaced with equipment which satisfies the conditions specified.
- D. Written test procedures shall be submitted to the Engineer for approval 30 days prior to testing.



### **3.04 TRAINING**

- A. A factory representative shall provide a minimum of eight (8) person-hours of training to the Owner's operations staff concerning the recommended operation and maintenance of the equipment. Training shall be performed after substantial completion of the project with the use of operating equipment.

END OF SECTION

General Construction:

- Blasting will be allowed. Contractor is required to complete a pre-blast survey of all structures per Section 02225. Paragraph 3.03B of the Contract Documents. If blasting is employed for the removal of rock, the Contractor shall provide the Resident Project Representative (RPR) 24-hour notice of the detonation of any shot. The RPR will notify the Owner and adjoining property owners as identified by the Owner. Detonation of any shot shall be restricted to the hours of 2:00 PM to 4:00 PM each day.
- LFUGG RMP specifications and standard details shall prevail over LFUGG specifications and standard details.
- Contractor shall provide temporary restroom facilities for employees, (both sites).
- Contractor shall coordinate blasting on the pump station and wet weather tank site with utility companies so as not to impact the public. See Spec Section 02225 for blasting requirements.
- Staging Area: Contractor shall submit a plan for its staging area. The submittal must be approved by the Engineer prior to any work being initiated.

Contractor Access:

- Contractor shall install a temporary construction entrance off the exit ramp of New Circle Road (southbound) if needed for access to Manhole A-2 on the pump station site. Restore site upon completion of this work. Pump station site shall be accessed from the existing paved private road. At all times access shall be provided to Home Depot truck traffic.
- Contractor shall install a temporary access road from Quinton Court to the wet weather storage tank site. Contractor shall coordinate with Contract No. 1 - New Circle Road and provide as necessary a temporary access road and security gate to work for Contract No. 1.
- Access plan shall be submitted to and approved by the Engineer and is incidental to the Contract.

Maintenance of Access Way:

- Contractor shall maintain all access ways so as to be passable by vehicles and such that construction traffic does not track mud or debris onto public rights-of-way. This includes taking over and providing access ways to Contract No. 1 - New Circle Road work at the wet weather storage tank site until this work is completed. Coordinate with Contract No. 1 Contractor.
- Contractor shall own or have access to power equipment to daily (sweep) all paved areas. Contractor shall keep all paved areas free of debris and rocks as directed by the Engineer. Rutting or potholing in any streets shall be addressed immediately as directed by the Engineer.
- Maintenance of access ways is incidental to the installation of the wet weather pump station and tank and shall not be a pay item.

Site Restoration Non-Paved:

- All non-paved site restoration shall be per Method "C" as described in General Notes unless otherwise shown on the drawings.

Paved Site Restoration:

- New paving is required as shown on Sheet 00C-04. Damaged pavement shall be restored. Follow LFUGG standards per Sheet 00C-04 for city streets and KYTC standards for New Circle Road and ramps. See Sheets 01C-02 and 02C-02 for additional pavement requirements.

Spots Management:

- The Spots Management Plan is a submittal. Spots Management and the Spots Management plan are incidental to the contract and are not pay items.
- The Contractor must secure any spots disposal sites.

Tree Removal / Protection:

- Tree removal shall be approved by the Engineer. Trees removed shall be removed at or below the ground line. Felled trees shall be removed from the site and disposed per the General Notes.
- Maintain clearance from the tree indicated on the wet weather pump station site by providing a temporary construction fence.

Pipe and Manhole Summary:

MANHOLE TABLE						
MANHOLE NO	STATION	DIAMETER	NORTHING	EASTING	RIM ELEVATION	TYPE
A-1	10+00.00 (LINE A)	10"	187291.52	1580117.37	969.29	SANITARY
A-2	11+24.15 (LINE A)	5"	187173.55	1580156.07	988.28	SANITARY
C-1	11+22.40 (LINE C)	5"	187356.35	1580013.80	978.80	SANITARY
C-1A	10+33.70 (TEMP LINE)	5"	187289.44	1580151.01	978.80	SANITARY
C-2	12+91.88 (LINE C)	5"	187223.08	1580153.08	978.80	SANITARY
COMBINATION AIR VALVE & VAULT	5	5"	187304.52	1580080.09	978.80	FORCE MAIN
					973.27	FORCE MAIN
PLUG VALVE VAULT	6 SO		187354.33	1580045.28	973.27	FORCE MAIN
BYPASS VAULT	5		187324.82	1580072.01	978.80	FORCE MAIN

Project Specific Notes

- All surface water streams (West Hickman Creek and Tributary) shall be protected during construction in accordance with LFUGG Regulations.
- The Contractor is responsible for site security and signs shall be installed warning of construction activities. Temporary fencing shall be installed for both construction sites.
- The Contractor will restore all disturbed non-paved areas in conformance with LFUGG Method "C" as defined on Sheet 00C-04 unless otherwise shown on the drawings.
- During construction the Contractor shall construct and maintain the site access road from Quinton Court to the Wet Weather Storage Tank site as follows:
  - graded to insure proper drainage
  - gravel with 3/4" crushed temporary drainage aggregate (DGA)
  - construction road maintenance shall be included in the lump sum bid.
- Construction activities shall not extend beyond the LFUGG property or road right-of-way.
- The Traffic Control Plan (TCP) shall be submitted for review and must be approved prior to construction.
- The contractor shall submit a material storage and construction staging area plan for approval.
- Contractor shall comply with KYTC permit requirements when working from the Exit Ramp from New Circle Road. This will include off loading restrictions. Off loading of equipment or materials shall be between 9:00 a.m. and 3:00 p.m. weekdays. See KYTC permit.
- Contractor is responsible for payment and obtaining the emergency generator fuel storage permits.
- Contractor shall coordinate work with Contract No. 1 - New Circle Road Crossing Contractor, including, but not limited to, access, staging and material storage.
- Fill materials shall be approved by Engineer.
- Existing 10" gravity sewer beneath New Circle Road shall be abandoned and left isolated as shown on Sheet 00C-02.
- Line "B" peak flow is 0.7 MGD based on full pipe capacity. See Spec Section 01520.
- Bypass pumping is required when installing the temporary bypass line connection and Manhole A-1 installation. Estimated flow range is from 1.0 to 2.1 MGD (average) to 3.0 MGD (peak) based on information provided by the owner. At no time shall flows bypass the sewer system. See Spec Section 01520.
- Road removal, ground water / trench dewatering, and bypass pumping are incidental to the Contract and are not a pay item.
- Recommendations in the Geotechnical Report are requirements of the Contract as provided in Specification Section 02030.

Notice

- Contractor shall notify the Engineer within 24 hours if any changes in subsurface conditions are discovered in the construction work area.

Project Access Map

- The Contractor shall access the Wet Weather Pump Station Site from off Richmond Road, the back entrance road to Home Depot or the exit ramp of New Circle Road (southbound). See Project Access Map below.
- The Contractor shall access the Wet Weather Storage Tank Site from Richmond Road, then Todds Road, then Codel Drive onto Quinton Court.

MANHOLE TABLE						
MANHOLE NO	STATION	DIAMETER	NORTHING	EASTING	RIM ELEVATION	TYPE
A-3	17+99.71 (LINE A)	5"	186839.09	1580743.02	998.02	SANITARY
B-1	11+55.27 (LINE B)	5"	186870.64	1580343.06	994.72	SANITARY
B-2	12+64.08 (LINE B)	5"	186818.73	1580927.14	994.24	SANITARY
B-3	13+59.74 (LINE B)	4"	186831.14	1580985.80	997.93	SANITARY
B-4	15+31.83 (LINE B)	4"	186788.75	1581332.48	997.81	SANITARY

STRUCTURE TABLE					
NAME (STRUCTURE)	TYPE	STATION	RIM	CONNECTED PIPES	TYPE
#1 OUTLET HEADWALL		10+18.20	974.88	18" N (NW) - 973.10	STORM
#2 DROP BOX INLET		11+32.85	976.50	18" IN (N) = 973.40 18" OUT (SE) = 973.40	STORM
#3 CURB BOX INLET		12+31.17	977.18	15" N (NW) = 973.65 18" OUT (S) = 973.65	STORM
#4 CURB BOX INLET		13+63.78	977.43	18" OUT (SE) = 974.00	STORM

Utility Information

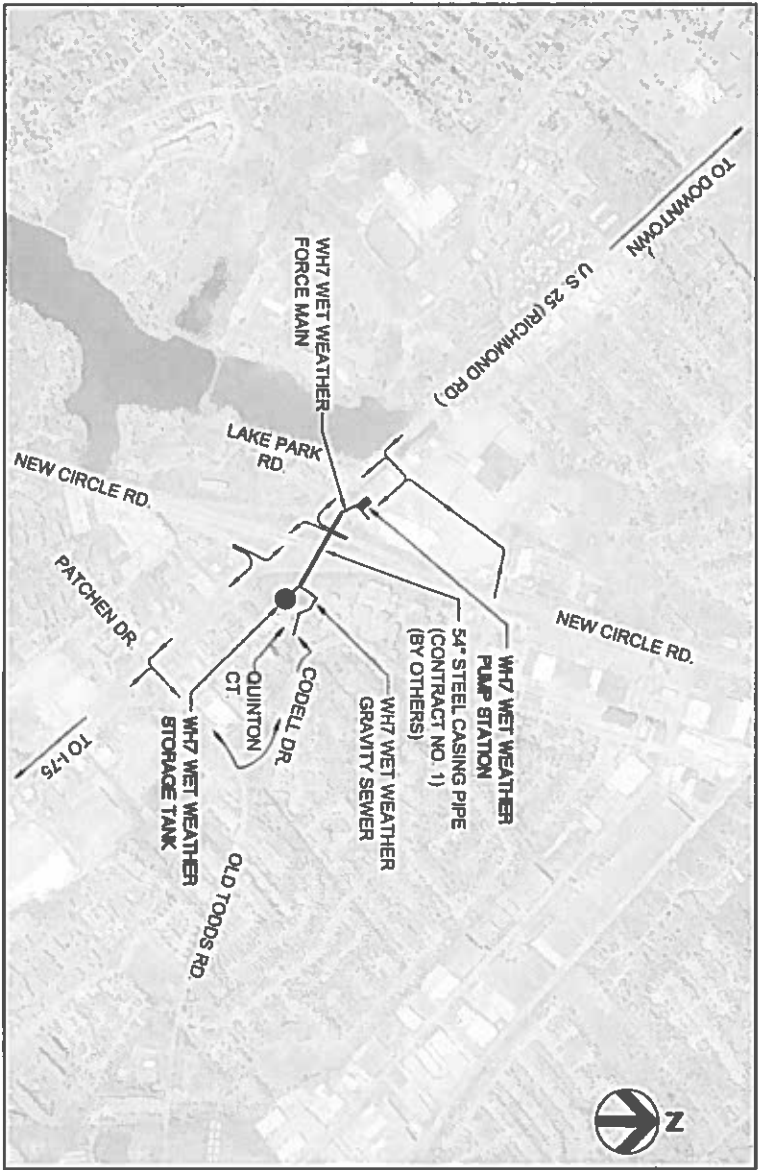
- Contractor to notify Utility Companies prior to any work being performed near their facilities. Contact information is listed on Sheet 00C-03.

Required Submittal List

- Construction Sequencing Plan
- Construction Access Plan
- Traffic Control Plan for pedestrian and bicycle ways or trails and vehicular ways and streets.
- Staging Area Plan
- Spots Management Plan
- Trench Dewatering Plan
- Bypass Pumping Plan
- Pipe Scheduling Plan
- Concrete Wall/soil Structures
- Creek Crossing Plan
- Pipe envelope per pipe manufacturer (Submittals are incidental to the Contract and are not a pay item)

Interpretation Sediment Control Revisions:

- Contractor shall submit the Notice Of Intent (NOI) after selected.
- Contractors must provide land cover and percent impervious information.
- Contractors must provide Total Disturbed Area in acres for each site.
- Contractors shall provide Post Construction Topography.
- Owner contact information shall be revised from Mark Fether to Kurt Zender, P.E., Senior Principal Engineer, Hazen and Sawyer, (859) 286-1255.
- Silt fences shall be cleaned when sediment reaches 1/3 full not 1/2 as stated.
- Contractor shall provide Curb Inlet Protection as shown in Section 02372 Erosion And Sediment Control where needed.
- Contractor shall include the physical address for each site.



PROJECT ACCESS MAP  
NTS

WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS

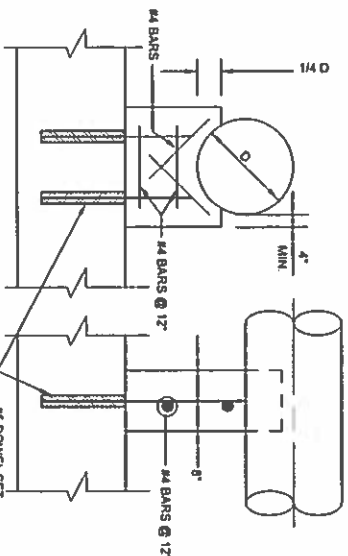
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK

PROJECT SPECIFIC NOTES

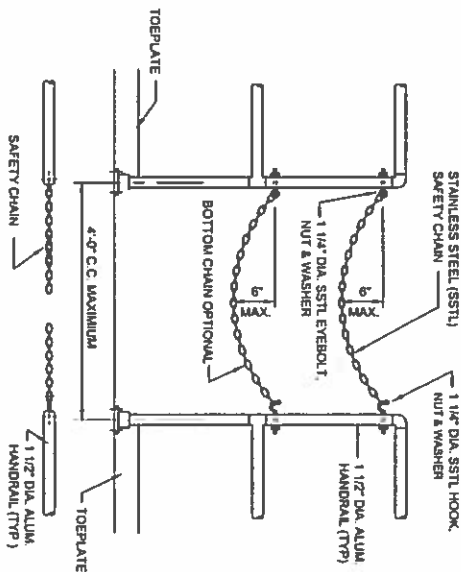
DESIGNED: J.T.M.	
DRAWN: C.P.L.	CHECKED: P.B.H.
QA/QC: R.K.S.	
PROJECT NUMBER: 1005608	
1 10-25-2017 ADDENDUM NO. 4	
A 10-08-2017 BID DOCUMENTS	
ISSUE DATE DESCRIPTION	



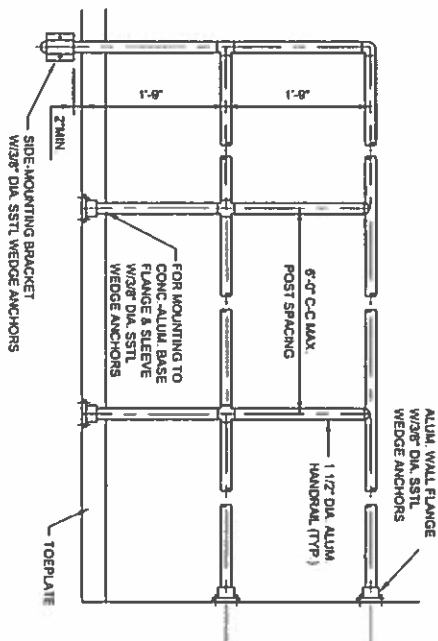
PIPING NOTE  
ALL PIPING SHALL BE ADEQUATELY SUPPORTED  
(WHETHER SHOWN OR NOT) TO PREVENT ANY  
STRESSES TO PIPE OR JOINTS.



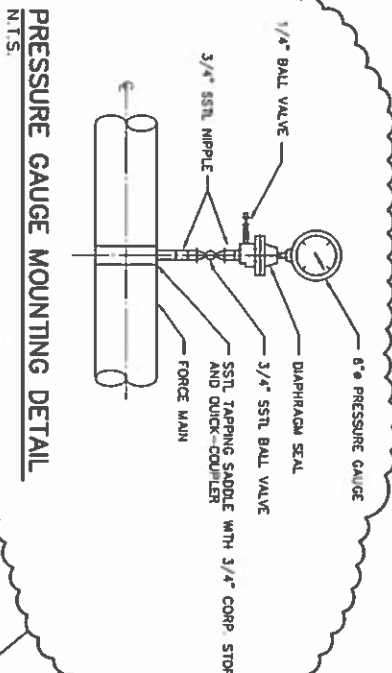
PIPE SUPPORT  
N.T.S.



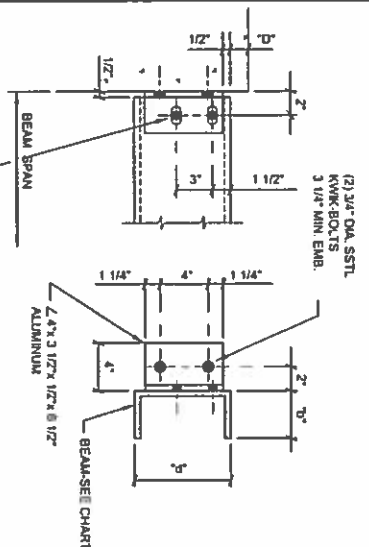
SAFETY CHAIN DETAIL  
N.T.S.



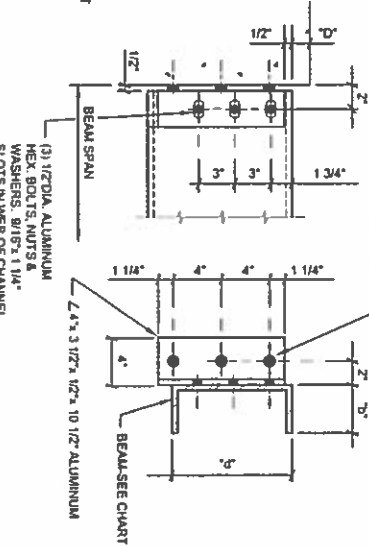
ALUMINUM HANDRAIL DETAILS  
N.T.S.



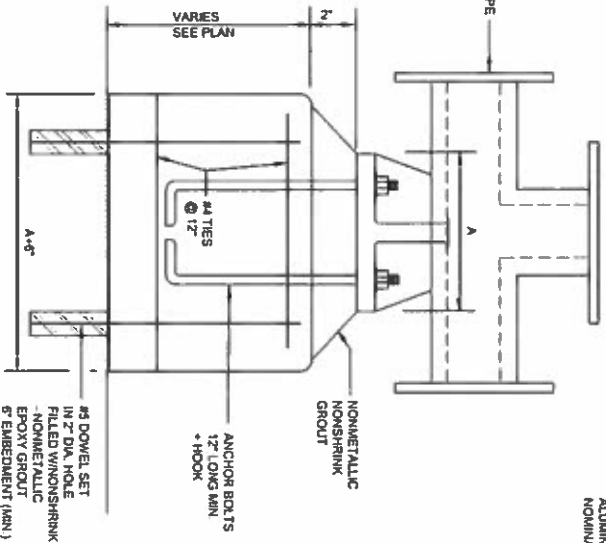
PRESSURE GAUGE MOUNTING DETAIL  
N.T.S.



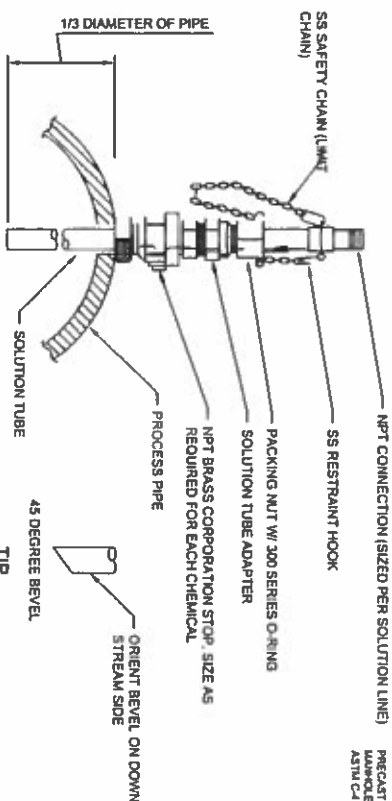
GRATING SUPPORT BEAM CONNECTION TYPE 1  
N.T.S.



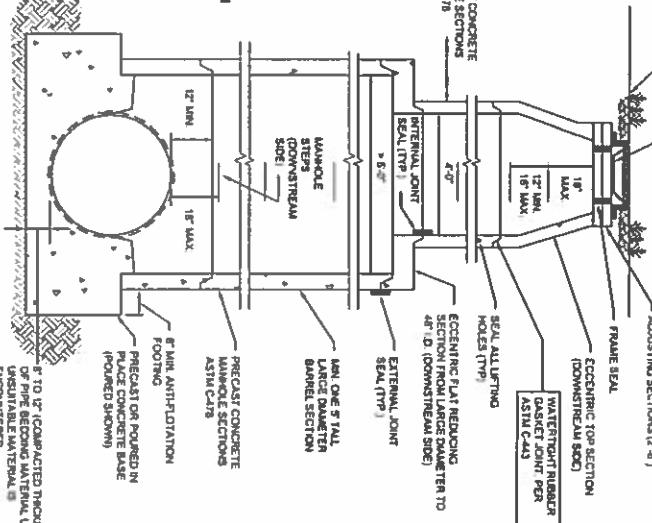
GRATING SUPPORT BEAM CONNECTION TYPE 2  
N.T.S.



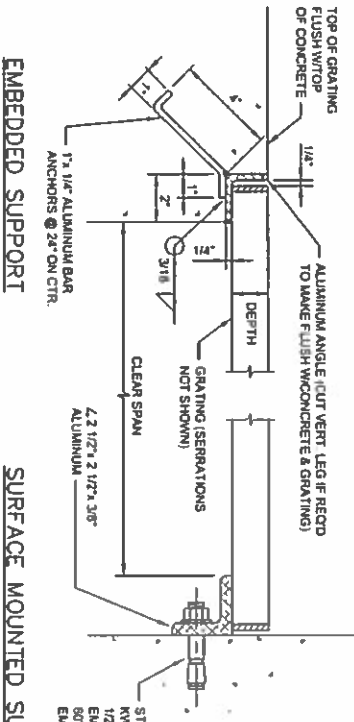
CONCRETE SUPPORT DETAIL  
N.T.S.



TYPICAL CHEMICAL INJECTION ASSEMBLY  
N.T.S.



LARGE DIAMETER MANHOLE  
N.T.S.



EMBEDDED SUPPORT

GRATING DETAILS  
N.T.S.

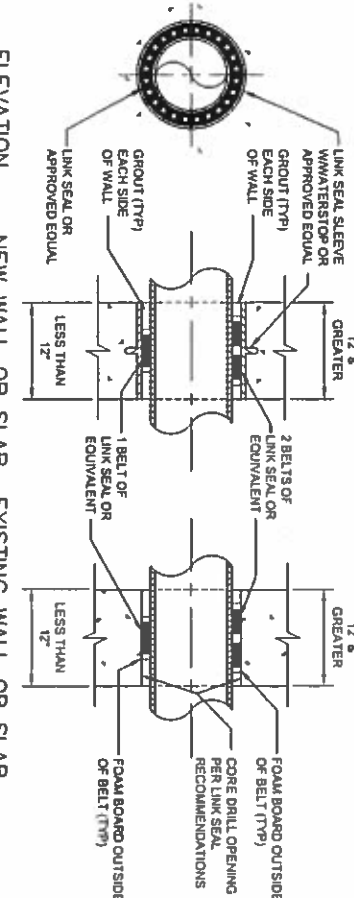
GRATING SUPPORT BEAM CHART					
BEAM SPAN (FEET)	6	8	10	12	14
BEAM SIZE	CB x 1.25	CB x 1.75	C10 x 4.25	C12 x 5.0	C12 x 5.0
WEIGHT (LB/FT.)	4.00	5.78	8.36	11.82	11.82
END CONNECTION TYPE	1	1	2	2	2

\* BEAMS ARE ALUMINUM ASSOCIATION STANDARD CHANNELS.  
SIZES SHOWN ARE DEPTH d x FLANGE WIDTH b.

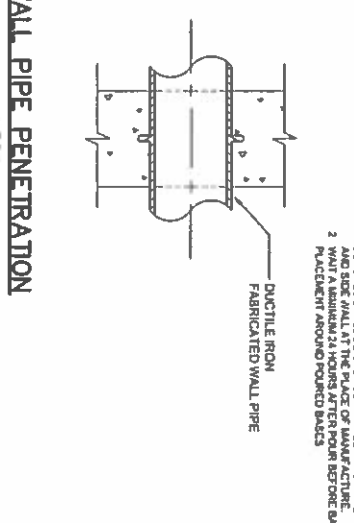
GRATING SCHEDULE	
SPAN	DEPTH
0'-0" TO 4'-0"	1 1/2"
4'-1" TO 5'-0"	1 3/4"
5'-1" TO 6'-0"	2"

\*\* GRATING SCHEDULE APPLIES UNLESS NOTED DIFFERENTLY ON DRAWINGS.

NOTE: 1) COORDINATE SCHEDULE WITH "A" SHEETS. PROVIDE SAME DEPTH WHERE REQUIRED TO MATCH ADJACENT SPANS IN SAME OR ADJOINING STRUCTURES.



LINK SEAL TYPE WALL/SLAB PENETRATION  
N.T.S.



WALL PIPE PENETRATION  
N.T.S.

H2R

1	10-25-2017	ADDENDUM NO. 4
A	10-06-2017	BID DOCUMENTS
ISSUE	DATE	DESCRIPTION
PROJECT MANAGER	P. BENTON HAWSON	
DESIGNED	J.T.M.	
DRAWN	C.P.L.	
CHECKED	P.B.H.	
QA/QC	R.K.S.	



WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK

STANDARD DETAILS

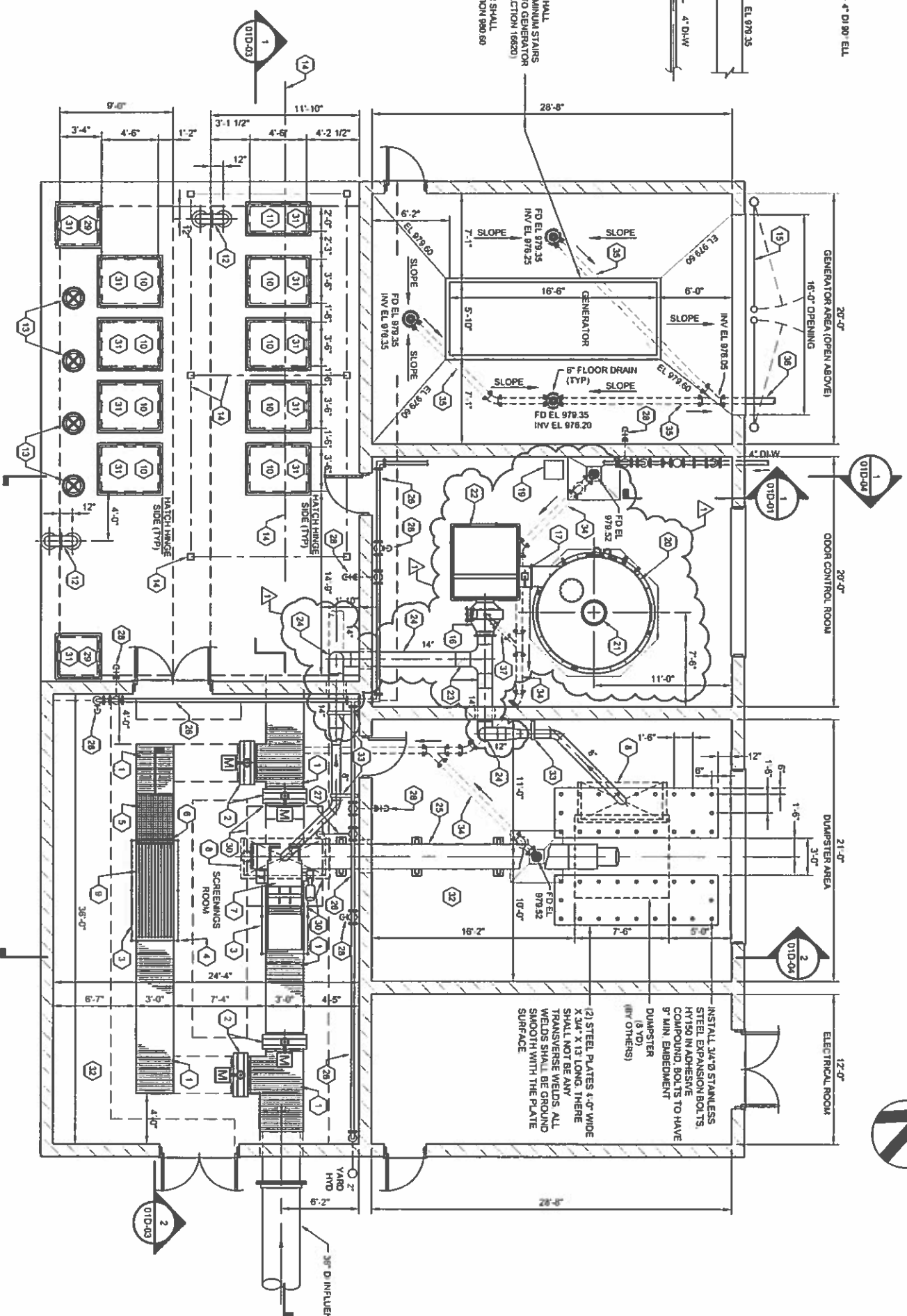


FILENAME: DSC-05  
SCALE: AS SHOWN

SHEET  
03C-05

GENERATOR SUPPLIER SHALL PROVIDE PORTABLE ALUMINUM STAIR TO FACILITATE ACCESS TO GENERATOR (SEE SPECIFICATIONS SECTION 16620)

BOTTOM OF GENERATOR SHALL BE AT OR ABOVE ELEVATION 990.60



- KEY NOTES**

  - 1 ALUM PLANK GRATING
  - 2 3" WIDE X 4" HIGH SST SLIDE GATE (ELECTRIC OPERATED)
  - 3 1" WIDE REMOVABLE ALUM HANDRAIL
  - 4 1" WIDE ALUM HANDRAIL POST (3'-6" HIGH)
  - 5 4" WIDE X 3" ALUM DRAIN PLATE (SQ GRATING PATTERN W/ HOLE FRAME)
  - 6 SST SAFETY CHAIN (2 ROWS)
  - 7 MECHANICAL BAR SCREEN
  - 8 SST EXHAUST HOOD FOR DOROT CONTROL (3' X 7')
  - 9 MANUAL CLEANED BAR RACK
  - 10 3'-6" X 4'-6" ALUM ACCESS HATCH (CHANNEL FRAME)
  - 11 2'-0" X 4'-6" ALUM ACCESS HATCH (CHANNEL FRAME)
  - 12 1" DIA VENT PIPING W/ SST INSECT SCREEN
  - 13 HANDRAIL, OPERATOR PLATFORM FOR PLUG VALVE
  - 14 COMPLETE EXTERIOR PAD 2 TON STAND ALONE INDEPENDENT INDUSTRIAL FRAME SYSTEM, INCLUDING HOIST, MONORAIL, BEAM, ALL SUPPORTING FRAMING COLUMNS, CRANE STOPS, ETC
  - 15 1" WIDE (2'-0") X 1" TALL CHAIN LINK GATES
  - 16 PRE FILTER
  - 17 FRP DAMPER

### GENERAL NOTES

- 1 High Performance Paints and Coatings (HPPC) refer to Specifications Section 09911 for Painting and Protective Coating system descriptions
- 2 All wall and floor penetrations shall be provided with Link Seal unless otherwise shown. See Detail Sheet D3C-05.
- 3 All hatchings shall be include.

## 3716"e1'-0"

PROJECT MANAGER P. BENTON HANSON		
		DESIGNED J.T.M.
		DRAWN C.P.L.
		CHECKED P.B.H.
		QACOC R.K.S.
2	10-25-2017	ADDENDUM NO. 4
1	10-18-2017	ADDENDUM NO. 3
A	10-06-2017	BID DOCUMENTS
ISSUE	DATE	DESCRIPTION
PROJECT NUMBER 10055008		



**WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK**



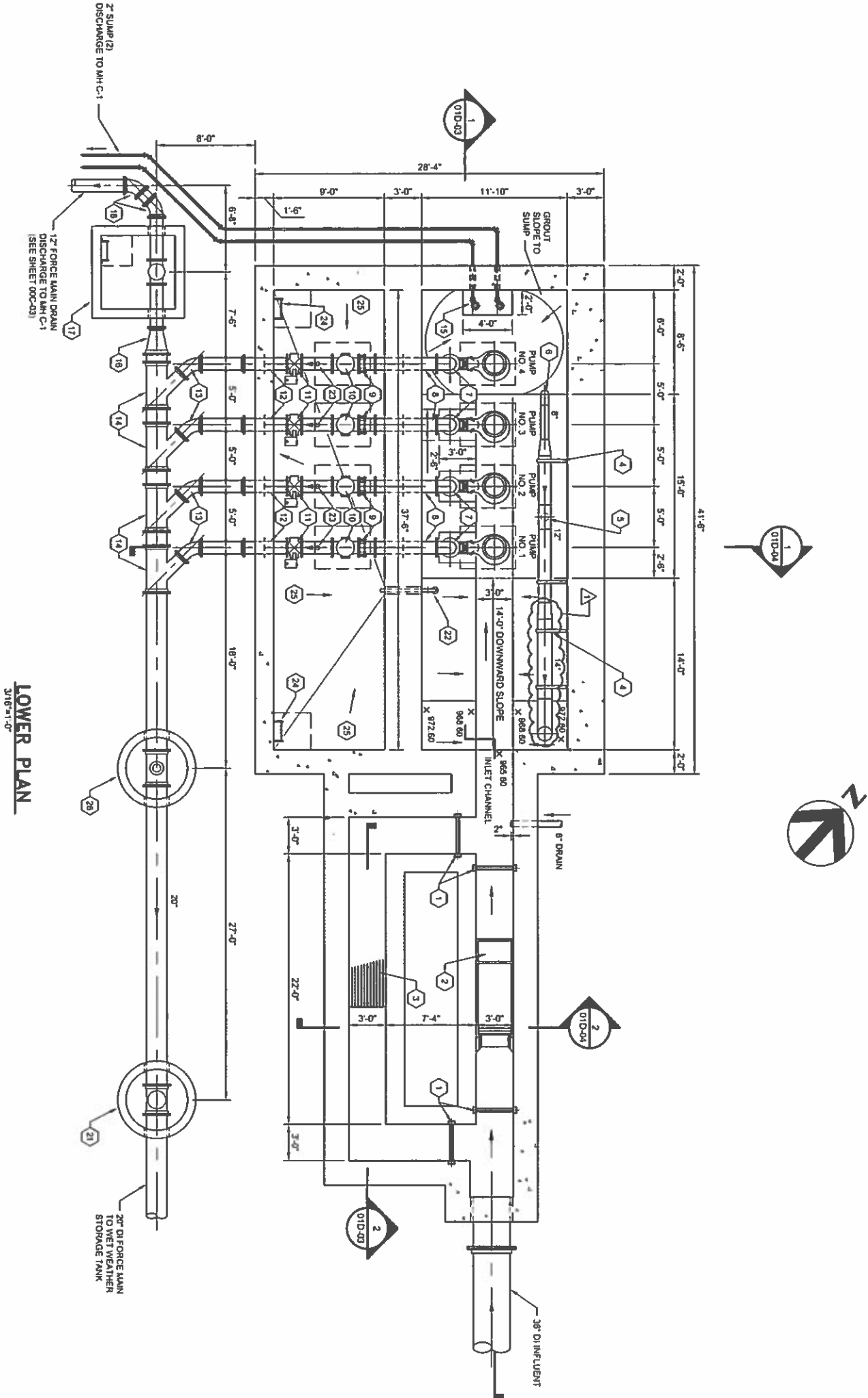
FILENAME	SHEET
01D-01	01D-01

KEY NOTES:

- 1 3'-0" WIDE X 5'-6" HIGH SSST SLIDE GATE (ELECTRIC OPERATED)
- 2 MECHANICAL BAR SCREEN
- 3 MANUAL CLEANED BAR RACK
- 4 FRP/D008 CONTROL PIPING (PROVIDE SSST SUPPORTS BASED ON MANUFACTURER RECOMMENDATION)
- 5 12" X 8' (FRP)TEE (OPEN END)
- 6 6" (FRP)90° BEND (OPEN END)
- 7 12" DI 90° ELL
- 8 12" DI 90-FLG WALL PIPE
- 9 12" FLG COUPLING ADAPTER
- 10 12" CHECK VALVE
- 11 12" PLUG VALVE W/SSST WORK GEAR OPERATOR & SSST EXT STEM
- 12 12" DI FLG-PE WALL PIPE
- 13 12" DI 45-PE 45° ELL
- 14 20" X 12" DI 45 WYE
- 15 2" X 4" X 2" DEEP SLUMP W/SLUMP PUMPS (2)
- 16 20" x 12" DI 45 ECCENTRIC REDUCER
- 17 12" ELECTRIC OPERATED PLUG VALVE IN 6" X 6" VAULT
- 18 12" DI 45 45° BEND
- 19 NOT USED
- 20 NOT USED
- 21 COMBINATION AIR VALVE AND VAULT (1" Ø) (SEE SHEET D0C-04)
- 22 3" VALVE VAULT T DRAIN WRIBBER FLAP GATE TURNED DOWN (6" BACK PRESSURE)
- 23 3/4" CORPORATION STOP W/QUICK COUPLER DIAPHRAGM SEAL AND PRESSURE GAUGE AS SHOWN IN DETAIL SHEET D0C-05
- 24 ALUM ACCESS LADDER W/LADDER-UP DEVICE
- 25 GROUT VALVE VAULT T FLOOR SLAB TO DRAIN PIPE BYPASS VAULT (1" Ø) (SEE SHEET D0C-04)
- 26

GENERAL NOTES:

- 1 All nuts, bolts and miscellaneous hardware shall be Type 304 Stainless Steel in the Screening Room, Wet Well and Valve Vault.
- 2 All hatches shall be lockable.
- 3 Wall Sleeves shall be used for cast in place concrete wall penetrations, (except for vertical installation and for mounting Sales Gates - Wall Pipe req'd in these locations), grout both sides of Wall Sleeve where exposed prior to putting units in service.
- 4 High Performance Paints and Coatings (HPPC) refer to Specifications Section 09061 for Painting and Protective Coating system descriptions.



LOWER PLAN  
3/16"=1'-0"

PROJECT MANAGER P. BENTON HANSON

DESIGNED J.T.M.

DRAWN C.P.L.

CHECKED P.B.H.

QA/QC R.K.S.

2	10-25-2017	ADDENDUM NO. 4
1	10-18-2017	ADDENDUM NO. 3
A	10-09-2017	BID DOCUMENTS
ISSUE	DATE	DESCRIPTION

PROJECT NUMBER 10055008



WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK

PUMP STATION  
LOWER PLAN



FILENAME 01D-02  
SCALE 3/16" = 1'-0"

SHEET  
01D-02

H2R

KEY NOTES	
1	ALUM PLANK GRATING
2	3'-0" WIDE X 5'-6" HIGH SSTL BLU DE GATE (EXPLOSION PROOF / ELECTRIC OPERATED)
3	1 1/2" Ø REMOVABLE ALUM HANDRAIL
4	NOT USED
5	MECHANICAL BAR SCREEN
6	SSTL EXHAUST HOOD FOR ODOR CONTROL
7	4" x 8" AIR DOOR CONTROL, PIPING
8	SCREEN COMPACTOR/CONVECTOR
9	ODOR CONTROL PIPING SUPPORTS (SSTL)
10	3' x 6' x 4'-8" ALUM ACCESS HATCH (CHANNEL FRAME)
11	2'-0" x 4'-8" ALUM ACCESS HATCH (CHANNEL FRAME)
12	3" SSTL GUIDE RAILS
13	12" DI 90° ELL
14	12" DI DISCHARGE PIPE
15	12" PUMP INLET PIPE
16	2" X 4' X 2' DEEP SLUMP W/SLUMP PUMPS (2)
17	2" SLUMP PUMP DISCHARGE LINES W/CHECK VALVES (WALL PENETRATION W/ANK SEAL)
18	COMPLETE EXTERIOR RATED 2 TON 17' STAND ALONE
19	INDEPENDENT MONORAIL CRANE SYSTEM INCLUDING HOIST, MONORAIL, BEAM, ALL SUPPORTING FRAMING COLUMNS, CRANE STOPS, ETC.
20	SSTL GUIDE RAILS (TYP OF 2)
21	2" x 17' TRU UNION BALL CHECK VALVE

<sup>1</sup> High Performance Paints and Coatings (HPPC) refer to Specifications Section 09961 for Painting and Protective Coating system descriptions.

ISSUE	DATE	DESCRIPTION	DESIGNED	J.T.M.
2	10-25-2017	ADDENDUM NO. 4	DRAWN	C.P.L.
1	10-18-2017	ADDENDUM NO. 3	CHECKED	P.B.H.
A	10-06-2017	BID DOCUMENTS	QA/QC	R.K.S.
PROJECT NUMBER			10055008	

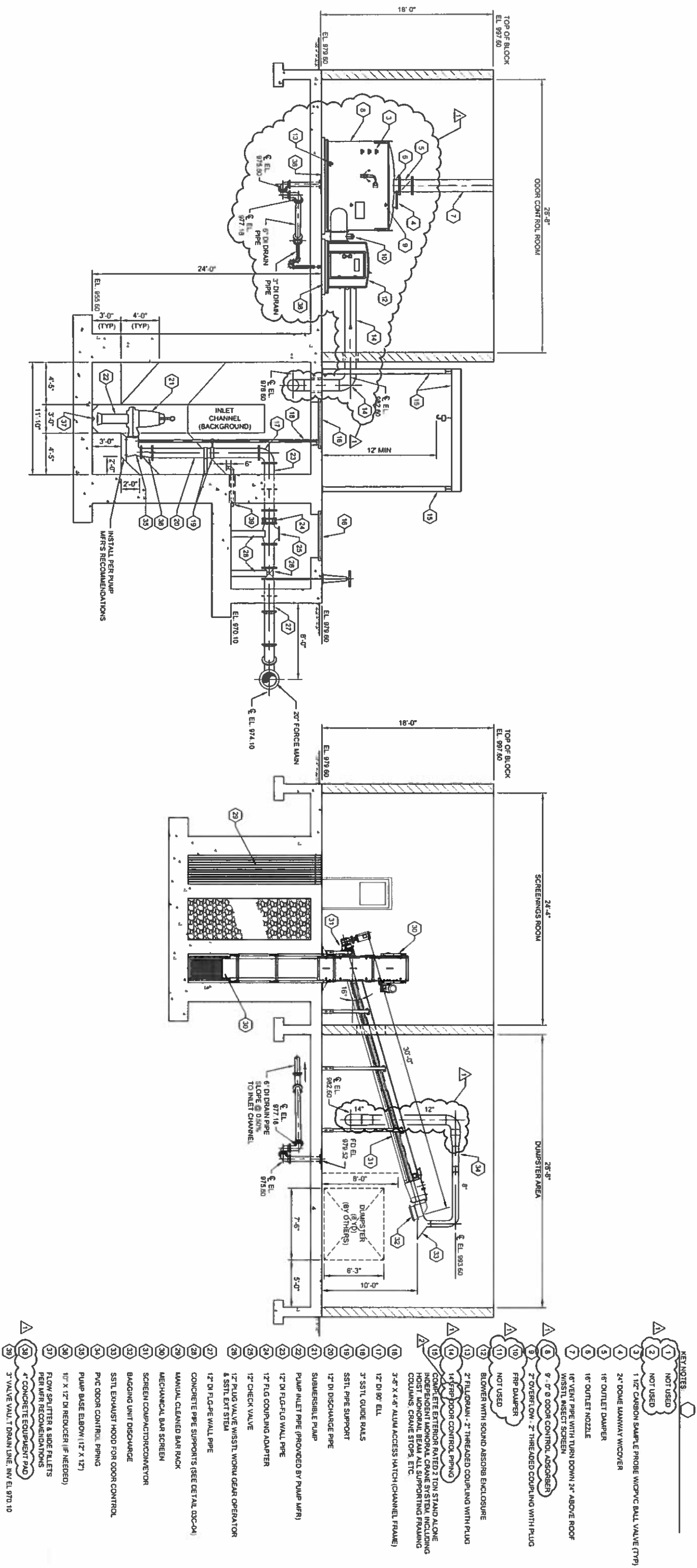


**WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK**



## PUMP STATION SECTION

LENAME	01D-03
SCALE	3/16" = 1'-0"



PROJECT MANAGER P. BENTON HANSON		
DESIGNED J.T.M.		
DRAWN C.P.L.		
CHECKED P.B.H.		
QA/QC R.K.S.		
PROJECT NUMBER 10050008		
2	10-25-2017	ADDENDUM NO. 4
1	10-18-2017	ADDENDUM NO. 3
A	10-06-2017	BID DOCUMENTS
ISSUE	DATE	DESCRIPTION

WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK

0 20' 40'

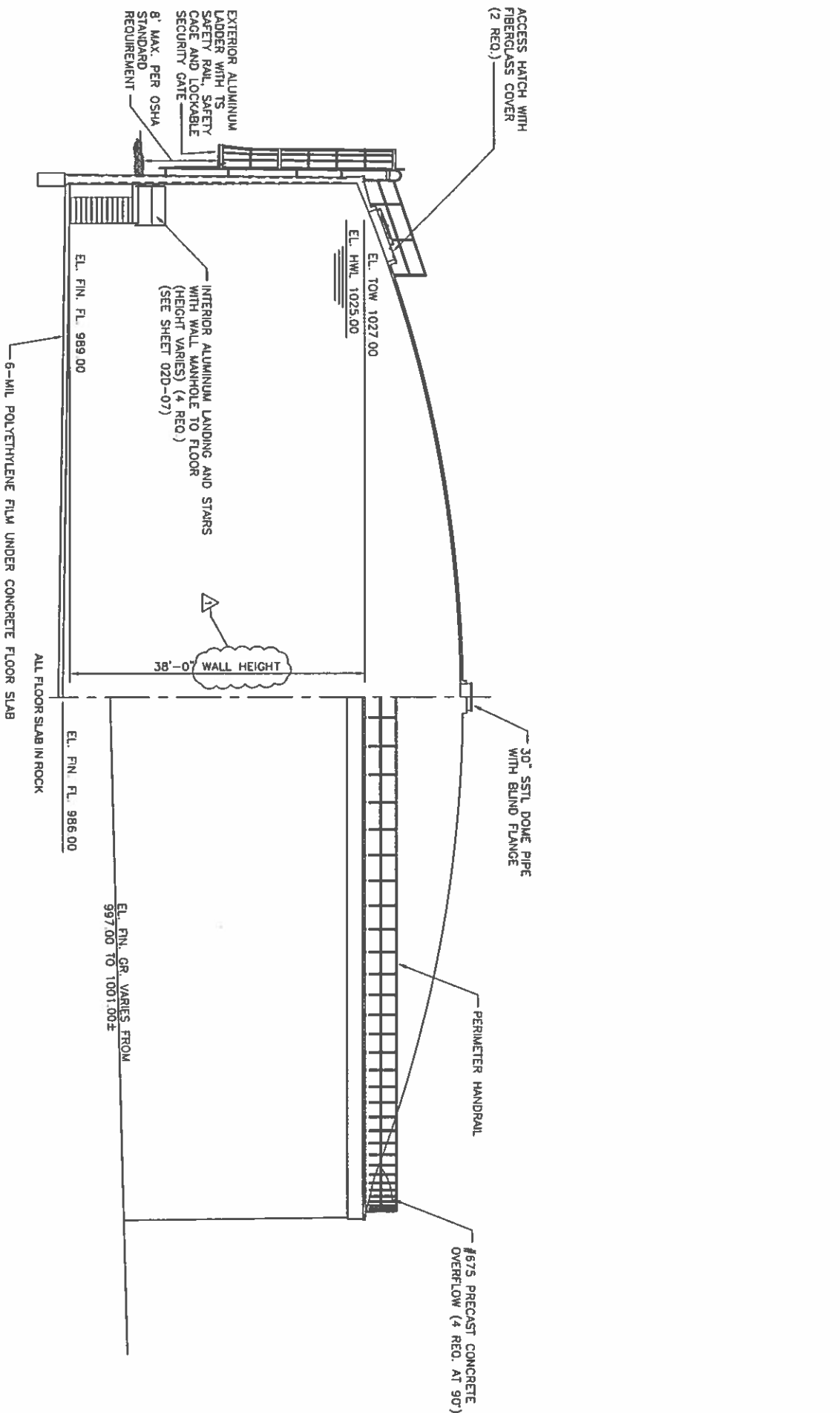
FILENAME 01D-04

SCALE 3/16" = 1'-0"

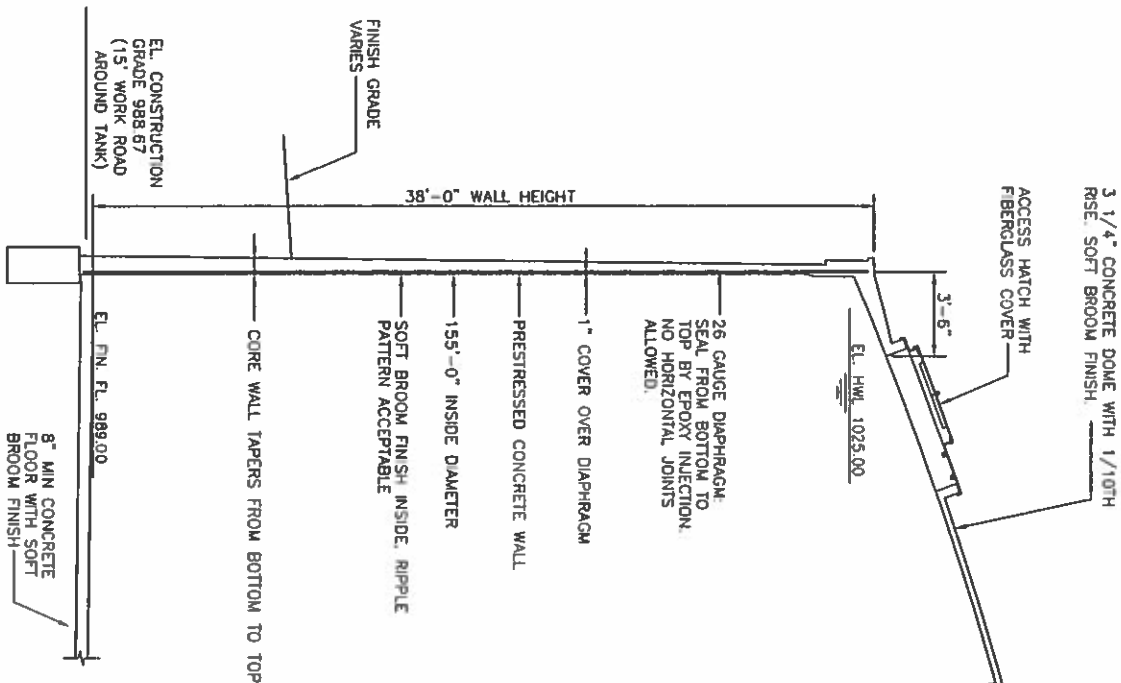
SHEET 01D-04

GENERAL NOTE:  
IN THE PREPARATION OF THE DRAWINGS, THE ENGINEER RELIED UPON PROPRIETARY STRUCTURAL DETAILS AND DESIGN INFORMATION PROVIDED FROM THE APPROVED TANK VENDORS TO ESTABLISH THE BASIS OF DESIGN, BIDDING, AND AWARD. ALL SHOP DRAWING SUBMITTALS, INCLUDING CALCULATIONS, FOR THE PRE-STRESSED CONCRETE TANK AND APPURTENANCES INCLUDING (FLOOR SLAB) SHALL BE STAMPED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF KENTUCKY

- NOTES:
- Nozzlemen shall be applied by or under direct supervision of Nozzlemen certified by the American Concrete Institute as outlined in ACI Certification Publication CP-60.
  - Tension in prestressing wire shall be measured by an electronic direct-reading stressometer accurate to within 2%.
  - Foundation bearing capacity shall be based on Table 7.3 of the Geotechnical Design Report. See Section 00320 of the Specifications.
  - Foundation shall all bear on rock with a minimum of 12' of No. 2 Stone and 4" of No. 57 Stone all compacted per the Geotechnical Design Report. Stone shall meet Section B05 of the Kentucky Standard Specifications for Road and Bridge Construction.
  - A minimum of 16 (16) PRV's to be included in the design of floor slab ~~subsequent to design~~.
  - Where PRV's are located, the stone foundation shall extend below the PRV to 2'x2'x2' depth.
  - PRV's shall be installed plumb in both directions. No part of the valve shall extend above the floor.



SECTION-ELEVATION



TYPICAL WALL SECTION

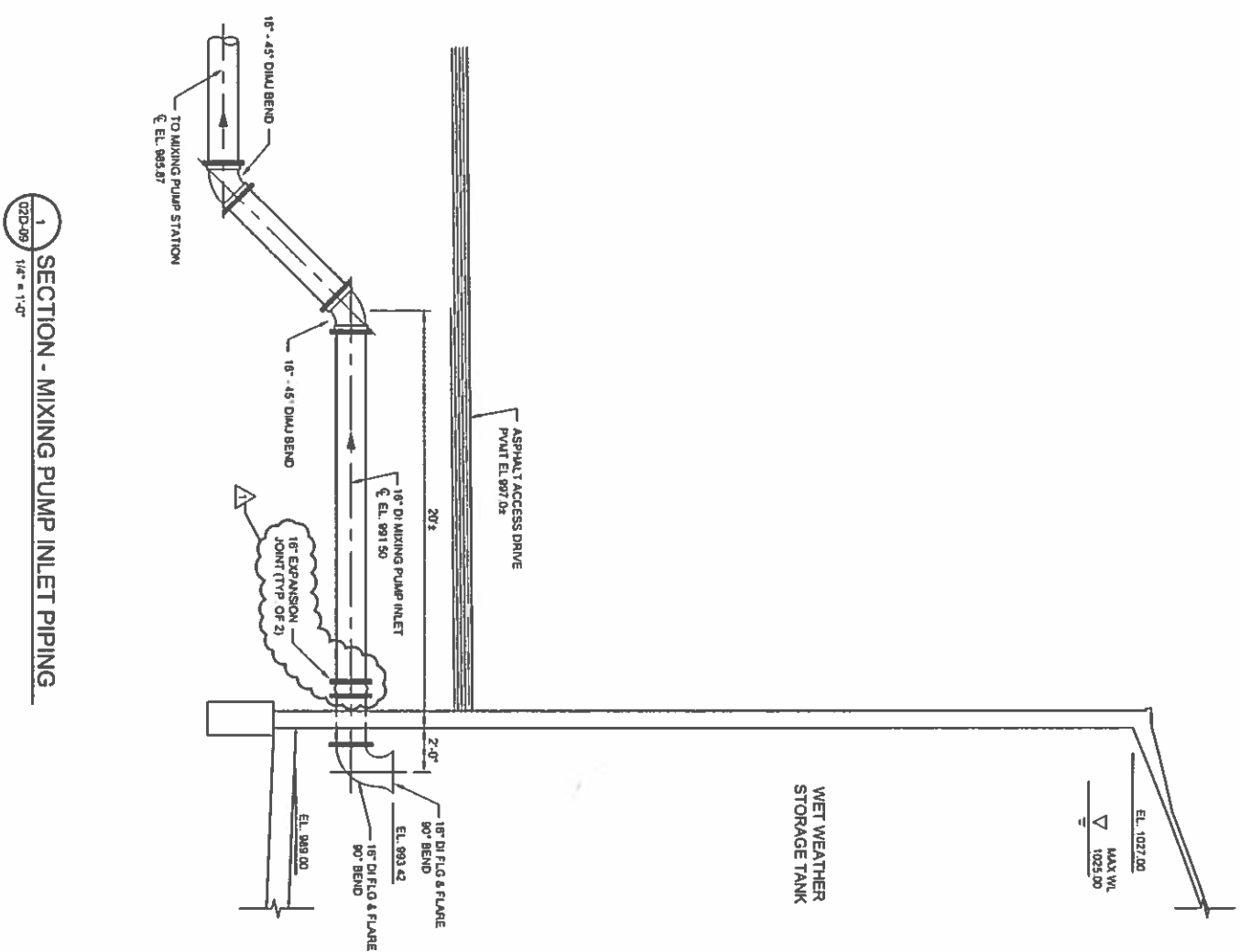
			DESIGNED	J.T.M.
			DRAWN	C.P.L.
			CHECKED	P.B.H.
			QA/QC	R.K.S.
1	10-25-2017	ADDENDUM NO. 4		
A	10-08-2017	BID DOCUMENTS		
ISSUE	DATE	DESCRIPTION		
PROJECT NUMBER			10055008	



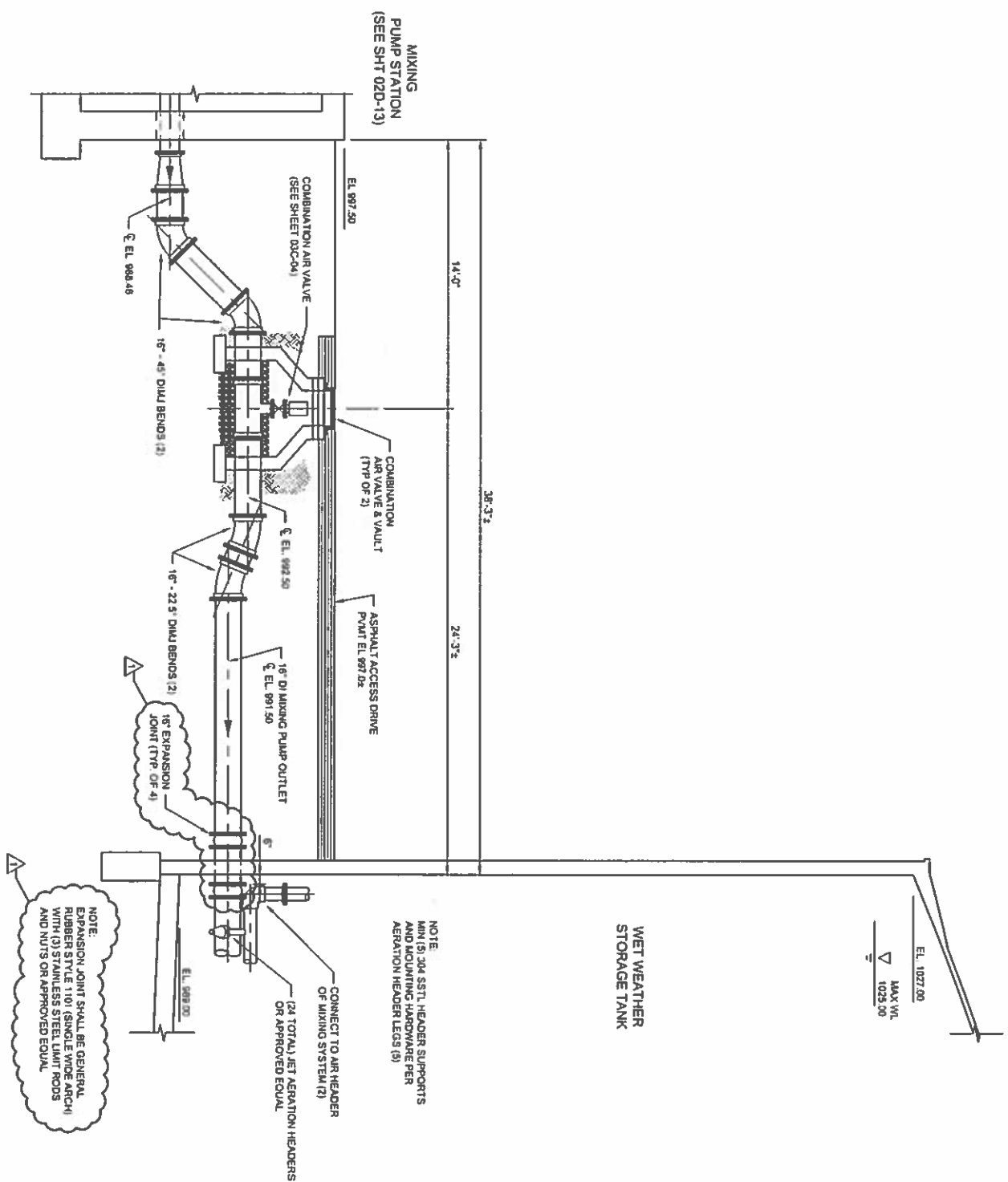
WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK







SECTION - MIXING PUMP INLET PIPING

[illegible]

SECTION - MIXING PUMP OUTLET PIPING

NOTE:  
EXPANSION JOINT SHALL BE GENERAL  
RUBBER STYLE 1101 (SINGLE WIDE ARCH)  
WITH (3) STAINLESS STEEL LIMIT RODS  
AND NUTS OR APPROVED EQUAL

**NOTE:**  
MIN (5) 304 SS TL HEADER SUPPORTS  
AND MOUNTING HARDWARE PER  
AERATION HEADER LEGS (5)

-CONNECT TO AIR HEADER  
OF MIXING SYSTEM (2)

## WEST HICKMAN 7 WET WEATHER

## STORAGE FACILITIES

## IMPROVEMENTS

**CONTRACT NO. 2**

## PUMP STATION AND

## WET WEATHER STORAGE TANK

## STORAGE TANK

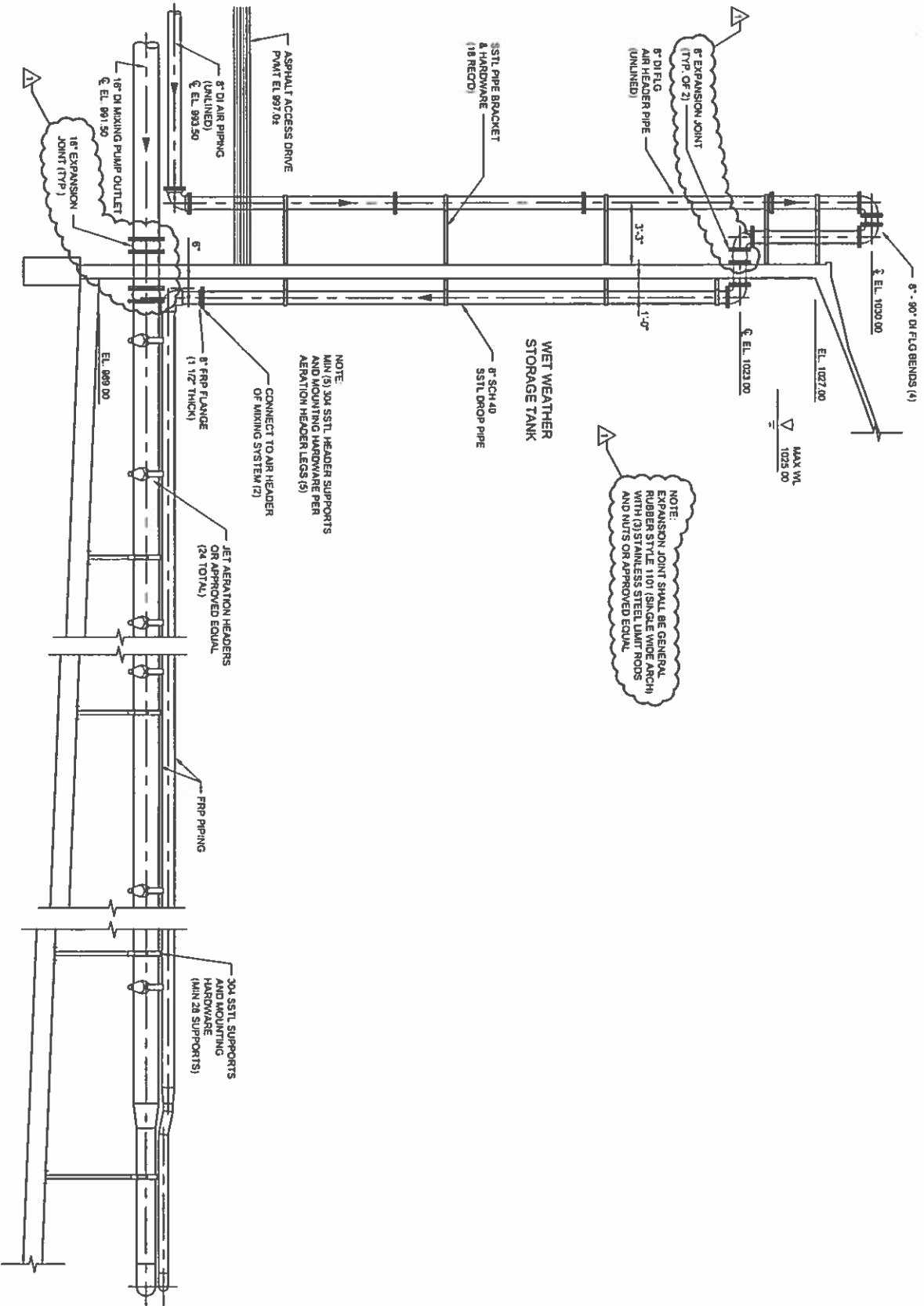
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FILENAME 02D-05

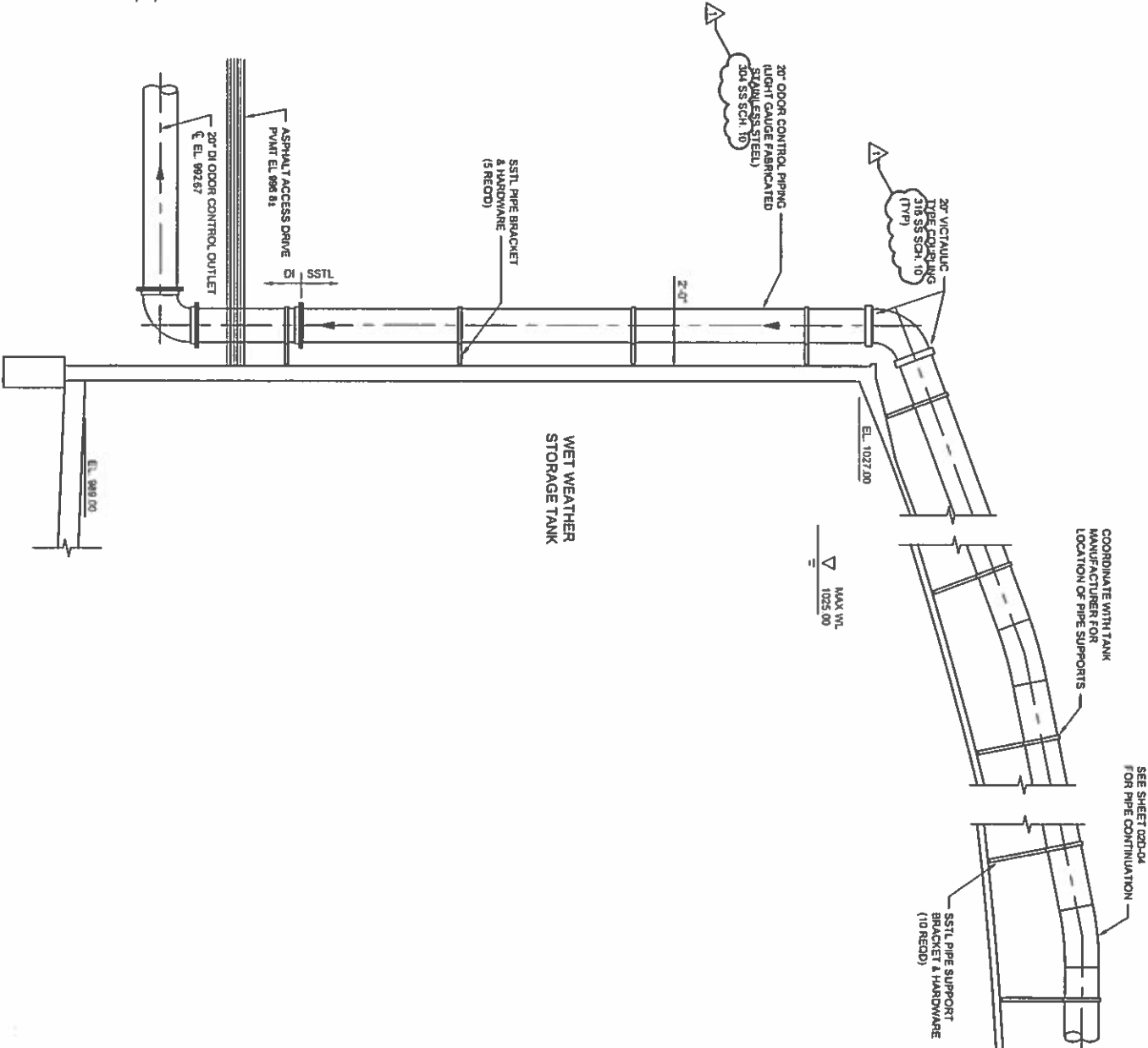
SCALE AS SHOWN

## SHEET

02D-09




1 SECTION - AIR PIPING  
02D-10/ 1/4" = 1'-0"



2 SECTION - ODOR CONTROL PIPING  
02D-10/ 1/4" = 1'-0"

PROJECT MANAGER P BENTON HANSON		
DESIGNED	J.T.M.	
DRAWN	C.P.L.	
CHECKED	P.B.H.	
QA/QC	R.K.S.	
1	10-25-2017	ADDENDUM NO. 4
A	10-06-2017	BID DOCUMENTS
ISSUE	DATE	DESCRIPTION
PROJECT NUMBER 10050008		

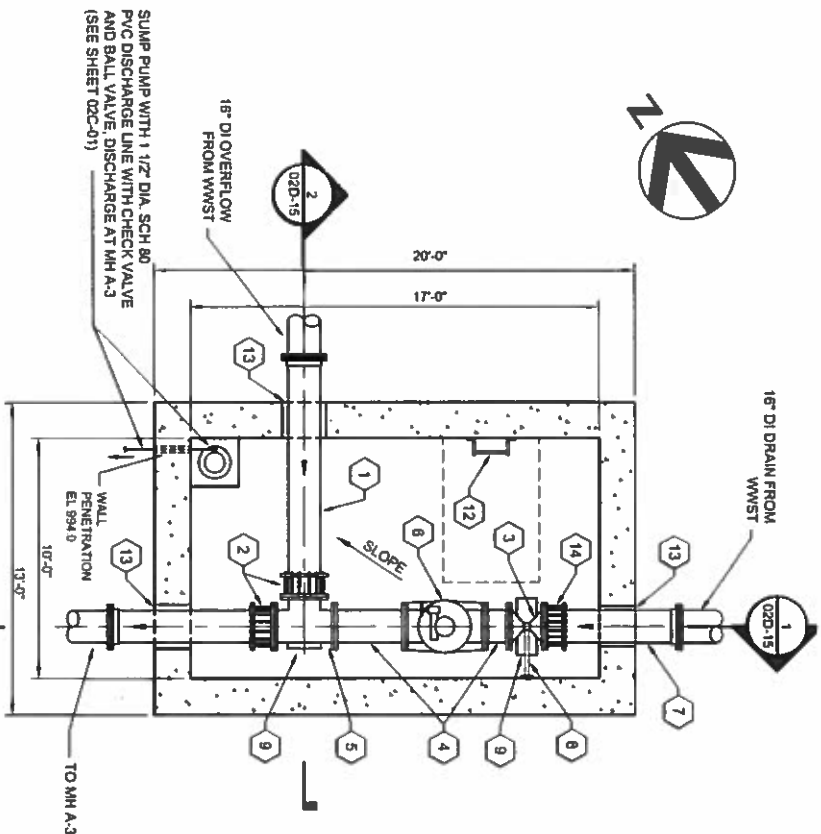
WEST HICKMAN 7 WET WEATHER STORAGE FACILITIES IMPROVEMENTS CONTRACT NO. 2 PUMP STATION AND WET WEATHER STORAGE TANK



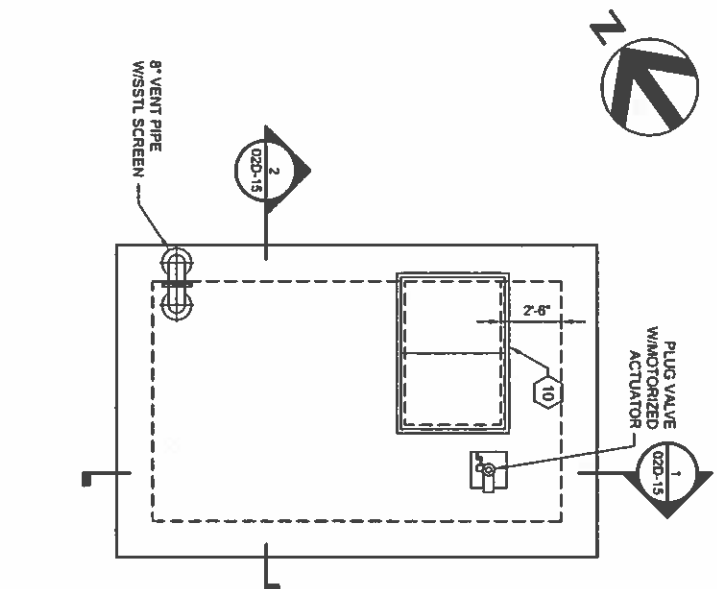
STORAGE TANK DETAILS



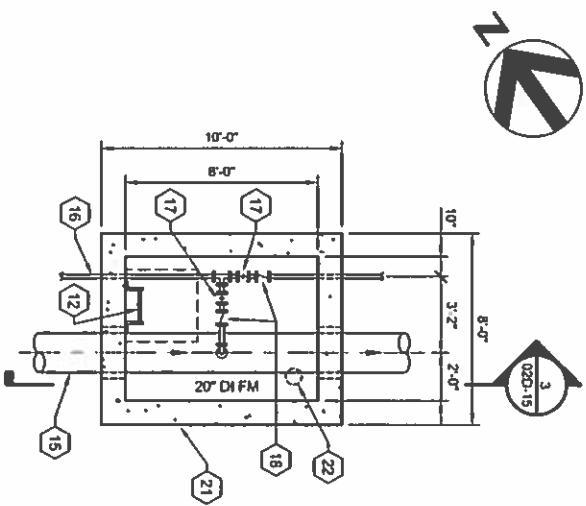
FILENAME 02D-10 SCALE AS SHOWN SHEET 02D-10



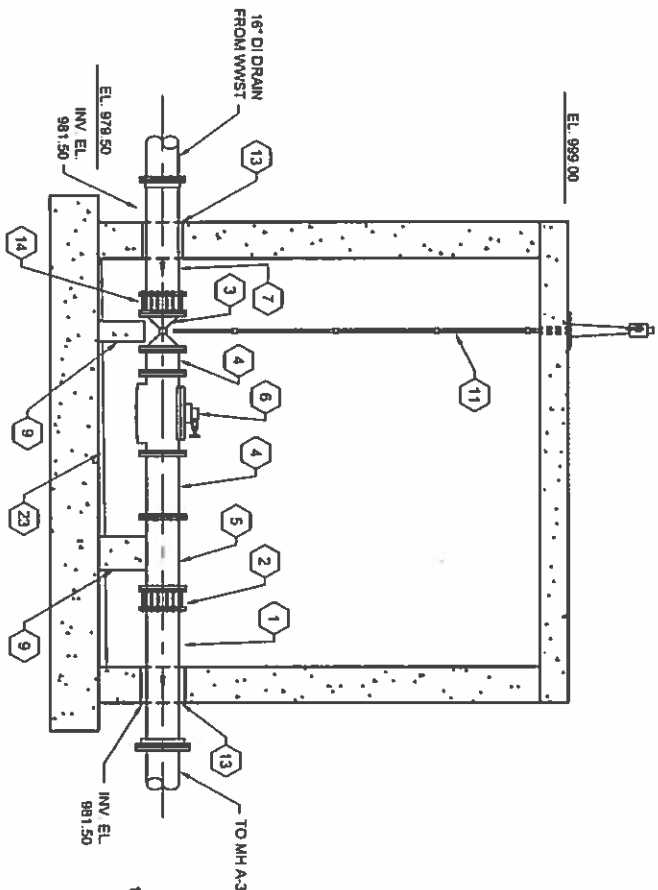
UPPER PLAN  
1/4"=1'-0"



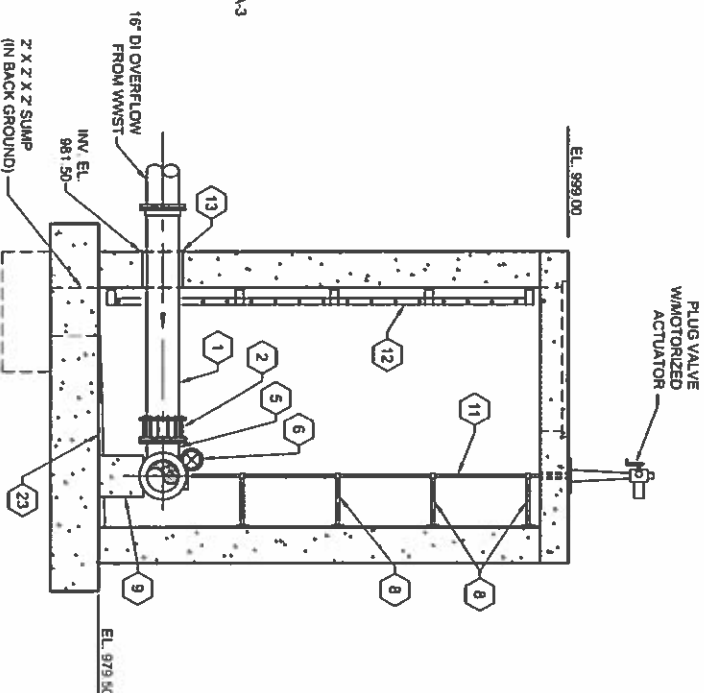
LOWER PLAN  
1/4"=1'-0"



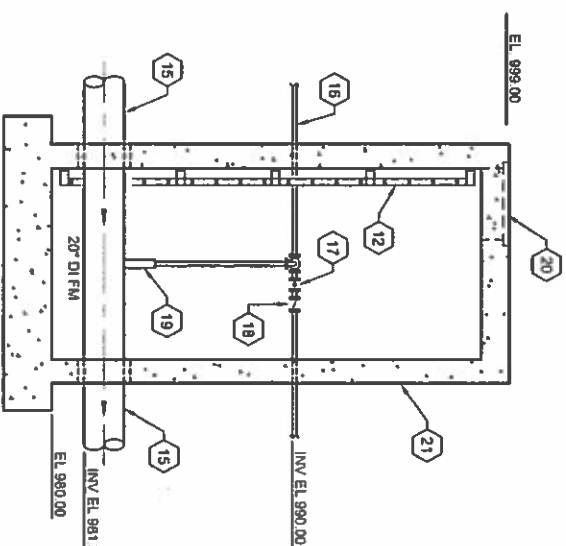
- KEY NOTES:
- 16" DI MJ X PE PIPE
  - 16" DI FLEX COUPLING ADAPTOR
  - 16" DI FLG PLUG VALVE WITH MOTORIZED ACTUATOR
  - 16" DI FLG SPOOL PIECE
  - 16" X 16" DI FLG TEE
  - 16" DI ELECTRIC OPERATED MODULATING PLUG VALVE
  - 16" DI MJ X PE PIPE
  - STAINLESS STEEL VALVE STEM GUIDE SUPPORT
  - CONCRETE PIPE SUPPORT
  - 72" X 48" ALUM ACCESS HATCH WITH SAFETY GRATE
  - STAINLESS STEEL VALVE STEM
  - ALUM LADDER W/LADDER UP DEVICE
  - 20" DIA. OPENING WITH LINK SEAL GASKET
  - 16" DI FLEX COUPLING ADAPTER
  - 20" DI FORCE MAIN
  - 2" PVC SCH 80 PIPE, FITTINGS AND VALVES
  - 2" PVC TRU-UNION PVC BALL VALVE
  - 2" PVC TRU-UNION CHECK VALVE
  - TYPICAL CHEMICAL INJECTION ASSEMBLY. SEE SHEET 02C-05
  - 36" X 36" ALUM ACCESS HATCH WITH SAFETY GRATE
  - CHEMICAL FEED VAULT SHALL BE PRECAST CONCRETE
  - PROVIDE VENT PER DETAIL
  - GROUT FLOOR TO SLOPE TO SUMP



SECTION 2  
1/4"=1'-0"

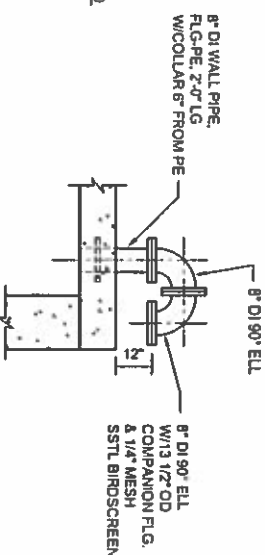


SECTION 1  
1/4"=1'-0"



SECTION 3  
1/4"=1'-0"

VENT DETAIL  
3/8"=1'-0"



- GENERAL NOTES:
- All nuts, bolts and miscellaneous hardware shall be Type 304 Stainless Steel in this Screenings Room, Wet Well and Valve Vault.
  - All hatches shall be lockable.
  - High Performance Fibers and Coatings (H-FPC) refer to Specifications Section 09501 for Painting and Protective Coating system description.

## FLOW CONTROL VAULT

## CHEMICAL FEED VAULT

PROJECT MANAGER P BENTON HANSON		
DESIGNED J.T.M.		
DRAWN C.P.L.		
CHECKED P.B.H.		
QA/QC R.K.S.		
1	10-25-2017	ADDENDUM NO. 4
A	10-06-2017	BID ISSUES
ISSUE	DATE	DESCRIPTION
PROJECT NUMBER 10056008		



WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK

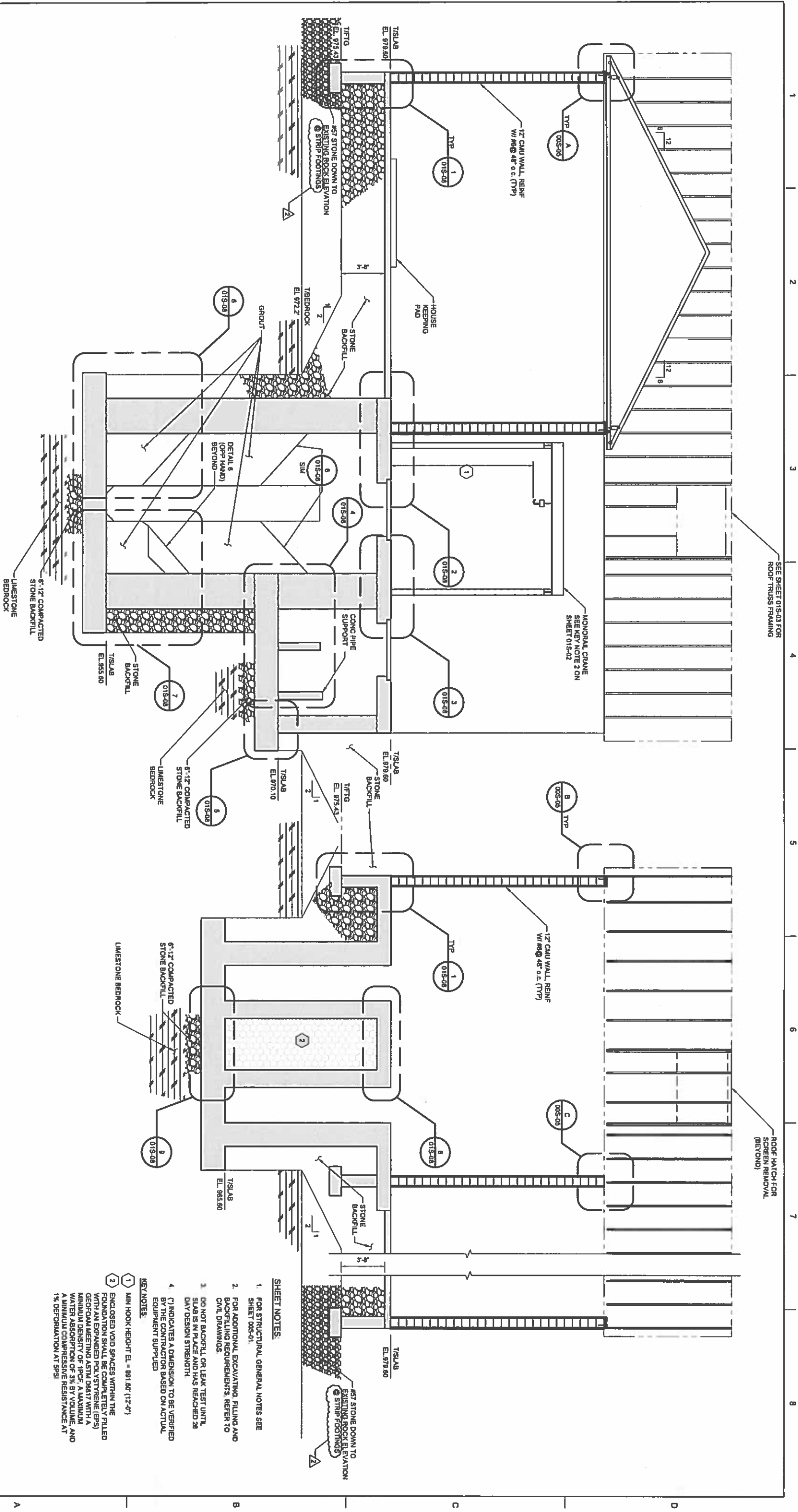


SHEET  
02D-15

## FLOW CONTROL AND CHEMICAL FEED VAULTS PLAN AND SECTIONS

H2R





SECTION  
1  
01S-01 1/4" = 1'-0"

SECTION  
2  
01S-01 1/4" = 1'-0"

SHEET NOTES:

1. FOR STRUCTURAL GENERAL NOTES SEE SHEET 00S-01.
2. FOR ADDITIONAL EXCAVATING FILLING AND BACKFILLING REQUIREMENTS, REFER TO CIVIL DRAWINGS.
3. DO NOT BACKFILL OR LEAK TEST UNTIL SLAB IS IN PLACE AND HAS REACHED 28 DAY DESIGN STRENGTH.
4. (\*) INDICATES A DIMENSION TO BE VERIFIED BY THE CONTRACTOR BASED ON ACTUAL EQUIPMENT SUPPLIED.

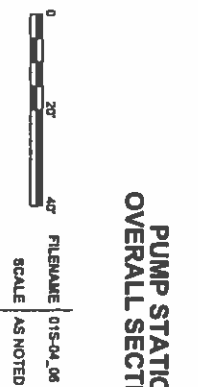
KEY NOTES:

1. MIN HOOK HEIGHT EL. = 891.67 (12'-0")
2. ENCLOSED VOID SPACES WITHIN THE FOUNDATION SHALL BE COMPLETELY FILLED WITH AN EXPANDED POLYSTYRENE (EPS) GEOFOAM MEETING ASTM D6817 WITH A MINIMUM DENSITY OF 15PCF. A MAXIMUM WATER ABSORPTION OF 3% BY VOLUME, AND A MINIMUM COMPRESSIVE RESISTANCE AT 1% DEFORMATION AT 89SI.

PROJECT MANAGER P. BENTON HANSON	
DESIGNED M.T.T.	DRAWN D.R.G.
CHECKED M.E.M.	QA/QC
PROJECT NUMBER 10056006	
APPENDIX NO. 4	
10-25-2017	ISSUED FOR BID
10/6/17	DATE
1	ISSUE



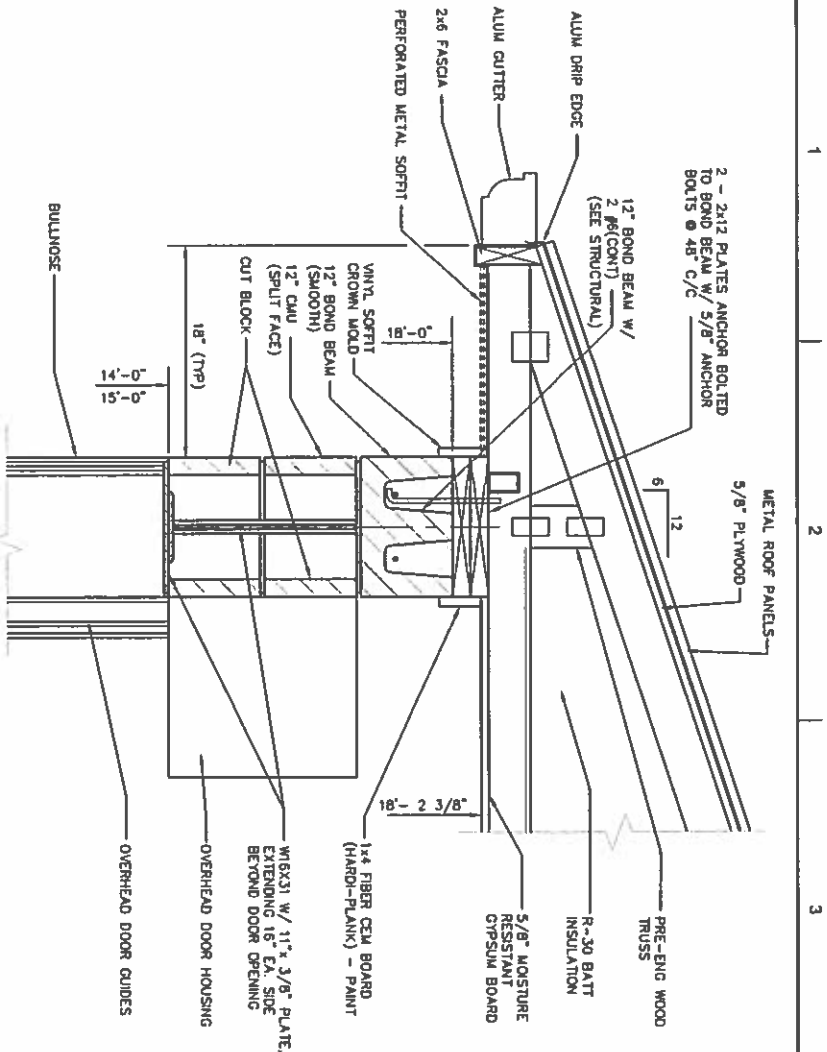
WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK



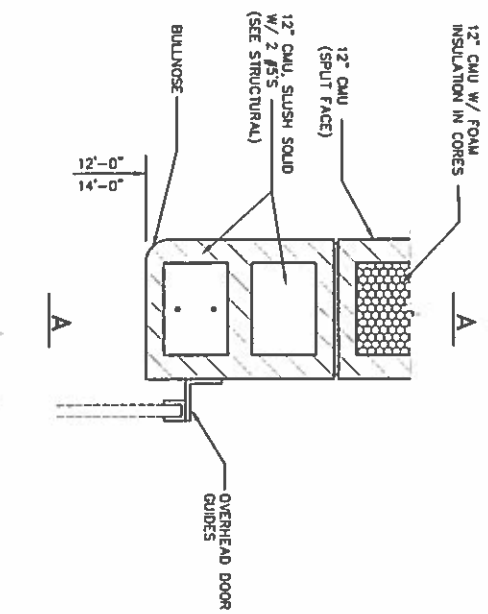
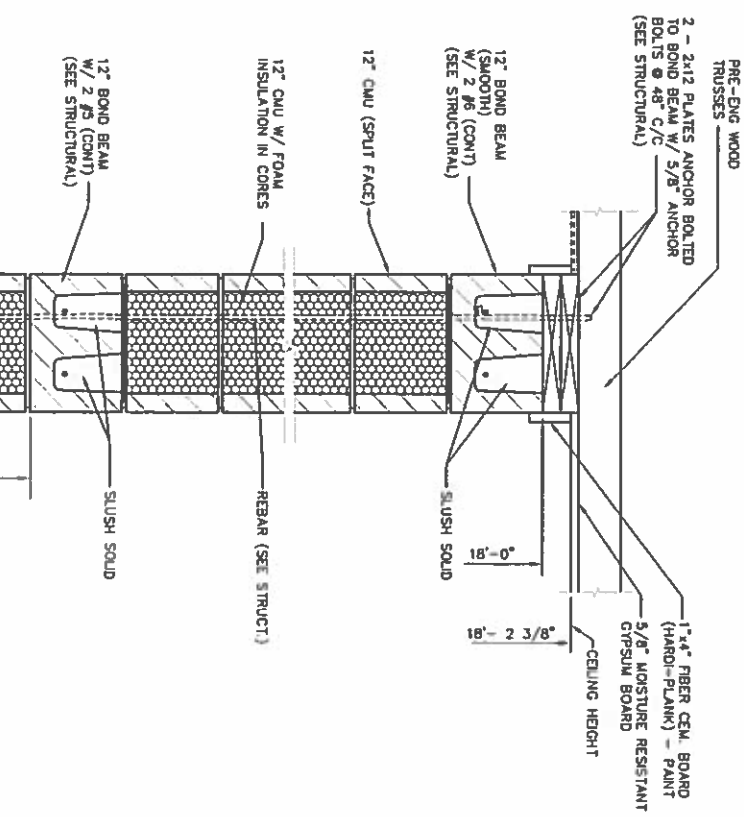
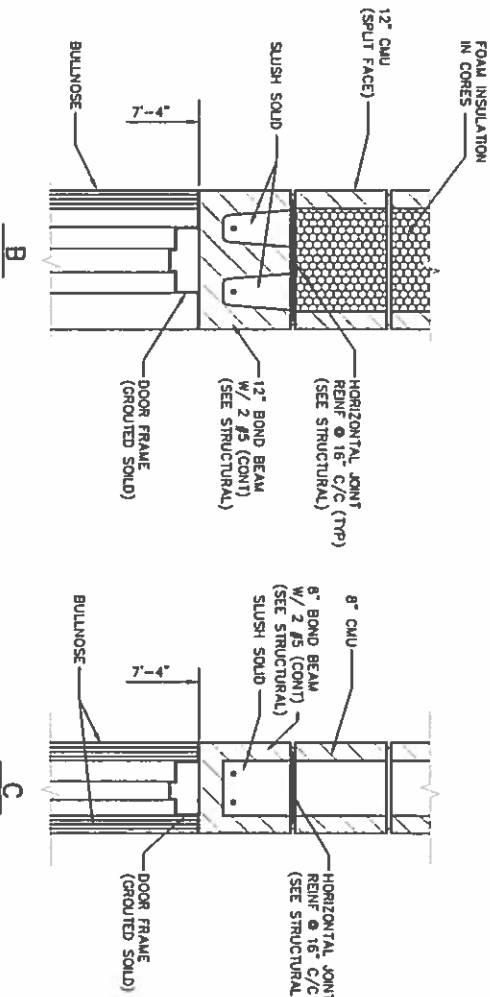
SHEET  
01S-05

H2R

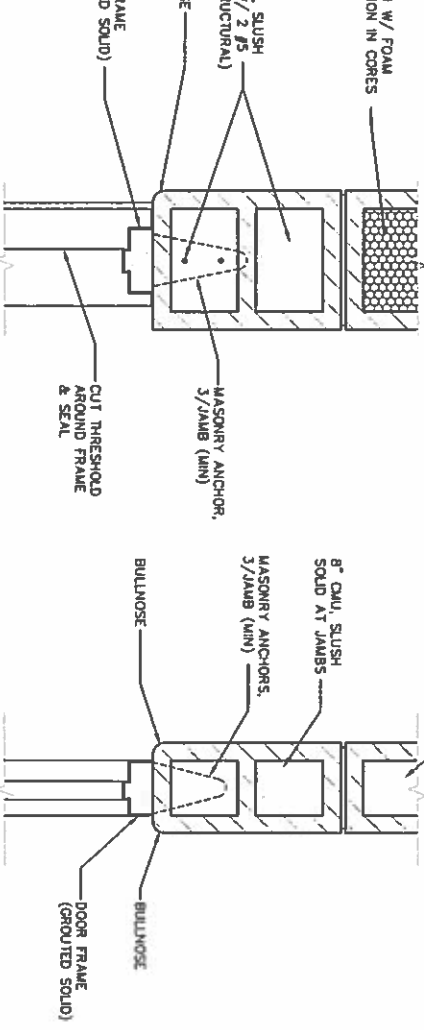




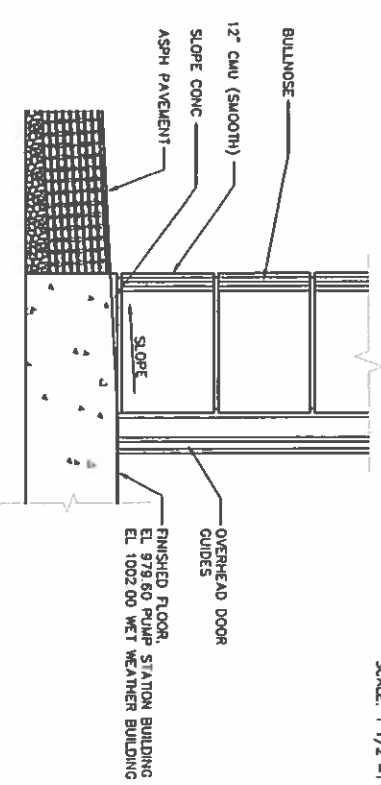
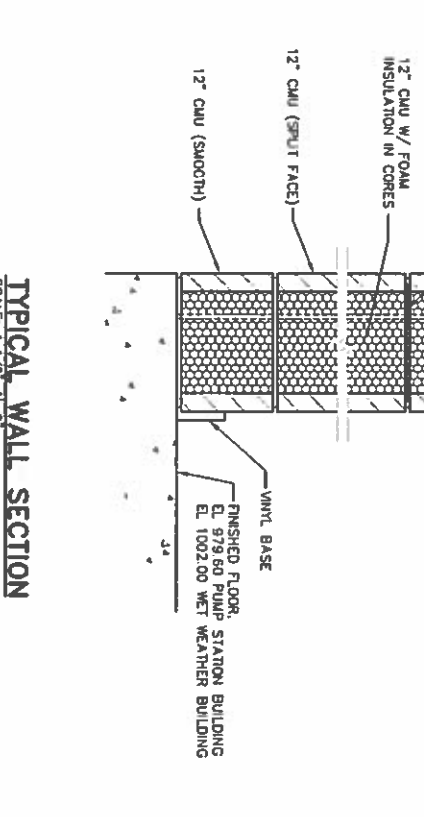
HEAD DETAILS  
SCALE: 1 1/2"=1'-0"



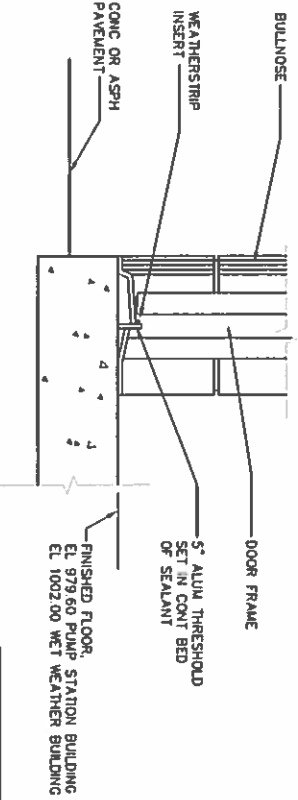
JAMB DETAILS  
SCALE: 1 1/2"=1'-0"



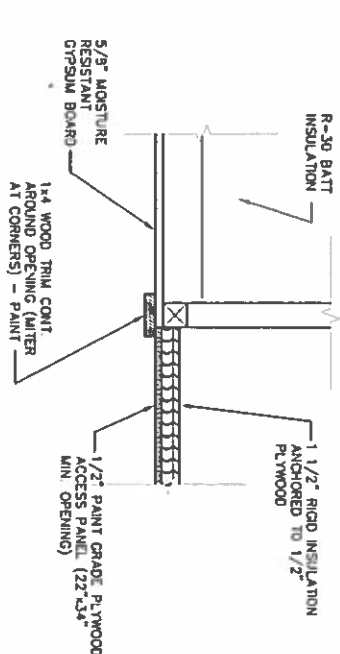
TYPICAL WALL SECTION  
SCALE: 1 1/2"=1'-0"



THRESHOLD DETAILS  
SCALE: 1 1/2"=1'-0"



CEILING ACCESS DETAIL  
SCALE: 1 1/2"=1'-0"



- NOTES
1. CMU FOAM INSULATION IS REQUIRED IN ALL WALLS EXCEPT THE TWO OUTSIDE WALLS AT GENERATOR AREAS
  2. WATER REPELLENTS ARE REQUIRED AT ALL MASONRY WALLS PER SPEC 07173.

PROJECT MANAGER P BENTON HANSON

DESIGNED J.T.M.

DRAWN C.P.L.

CHECKED P.B.H.

QA/QC R.K.S.

WEST HICKMAN 7 WET WEATHER

STORAGE FACILITIES

IMPROVEMENTS

CONTRACT NO. 2

PUMP STATION AND

WET WEATHER STORAGE TANK

BUILDING SECTIONS AND DETAILS

H2R



1	10-26-2017	ADDENDUM NO. 4
A	10-06-2017	BID DOCUMENTS
ISSUE	DATE	DESCRIPTION

PROJECT NUMBER	10055008
----------------	----------

0	20'	40'
SCALE	AS SHOWN	

DOOR AND FRAME SCHEDULE

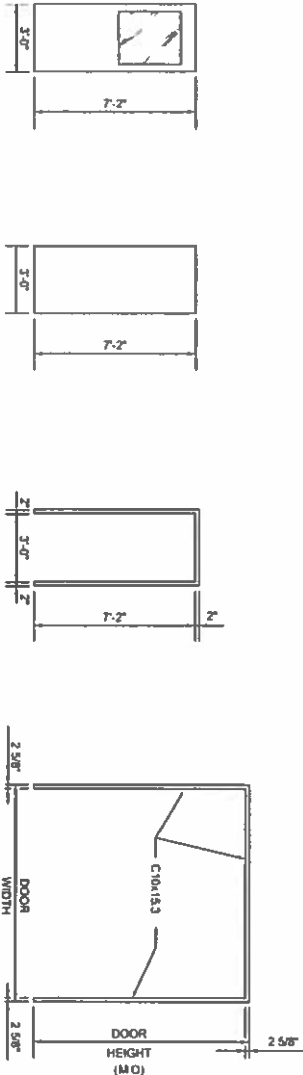
DOOR NO.	SIZE			MATERIAL	TYPE	GLASS	MATERIAL	TYPE	DEPTH	FRAME			REMARKS
	WIDTH	HEIGHT	THICK							HEAD	JAMB	SILL	
PUMP STATION BUILDING													
PS-1	3'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	GENERATOR AREA
PS-2	18'-0"	10'-0"	-	GS	-	-	GS	-	-	-	-	-	GENERATOR AREA, CHAIN LINK GATES
PS-3	12'-0"	14'-0"	-	ALUM	OCO	-	STL	B	10"	A	(B)	-	ODOOR CONTROL ROOM, MOTOR OPER
PS-4	14'-0"	15'-0"	-	ALUM	OCO	-	STL	B	10"	A	(B)	-	DUMPSTER AREA, MOTOR OPER
PS-5	6'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	ELECTRICAL ROOM
PS-6	3'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	ELECTRICAL ROOM
PS-7	6'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	SCREENINGS ROOM
PS-8	6'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	SCREENINGS ROOM
PS-9	3'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	SCREENINGS ROOM,DUMPSTER AREA
PS-10	3'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	ODOOR CONTROL ROOM
STORAGE TANK BUILDING													
ST-1	3'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	GENERATOR AREA
ST-2	18'-0"	10'-0"	-	GS	-	-	GS	-	-	-	-	-	GENERATOR AREA, CHAIN LINK GATES
ST-3	6'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	ELECTRICAL ROOM
ST-4	6'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	BLOWER ROOM
ST-5	3'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	BLOWER ROOM,CHEMICAL FEED ROOM
ST-6	12'-0"	14'-0"	-	ALUM	OCO	-	STL	B	10"	A	(B)	-	CHEMICAL FEED ROOM, MOTOR OPER
ST-7	12'-0"	14'-0"	-	ALUM	OCO	-	STL	B	10"	A	(B)	-	ODOOR CONTROL ROOM, MOTOR OPER
ST-8	3'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	ODOOR CONTROL ROOM
ST-9	-	-	-	-	-	-	-	-	-	-	-	-	NOT USED
ST-10	3'-0"	7'-2"	1½"	FG	A	1" I	FG	A	10"	B	B	B	ELECTRICAL ROOM

- (1) OCO = OVERHEAD COILING DOOR  
(2) ALUM = ALUMINUM  
(3) FG = FIBERGLASS  
(4) I = INSULATED GLASS  
(5) STL = STEEL  
(6) FRAMED WITH C10x15.3 ON JAMBS AND HEAD  
(7) GS = GALVANIZED STEEL

NOTE: FINISH ON ALL HARDWARE SHALL BE AS INDICATED IN HARDWARE SETS.

ROOM FINISH SCHEDULE													
ROOM NO.	ROOM NAME	FLOOR			BASE		WALL	CEILING		REMARKS			
		CONC. WITH SEALER	CERAMIC TILE	RESILIENT FLOORING	NONE	CERAMIC		VINYL	NONE		PAIN T ON CMU	GYPSUM BD. W/ PAINT	PRECAST ROOF PANELS W/PAINT
	PUMP STATION BUILDING												WATER PROOF OUTSIDE BLOCK
PSB-1	GENERATOR AREA												
PSB-2	ODOR CONTROL ROOM											18'-2.38"	
PSB-3	DUMPSTER AREA											18'-2.38"	
PSB-4	ELECTRICAL ROOM											18'-2.38"	
PSB-5	SCREENINGS ROOM											18'-2.38"	
	STORAGE TANK BUILDING												
STB-1	ODOR CONTROL ROOM											18'-2.38"	WATER PROOF OUTSIDE BLOCK
STB-2	CHEMICAL FEED ROOM											18'-2.38"	
STB-3	BLOWER ROOM											18'-2.38"	
STB-4	ELECTRICAL ROOM											18'-2.38"	
STB-5	GENERATOR AREA											18'-2.38"	

NOTE: FINISH ON ALL HARDWARE SHALL BE AS INDICATED IN HARDWARE SETS.

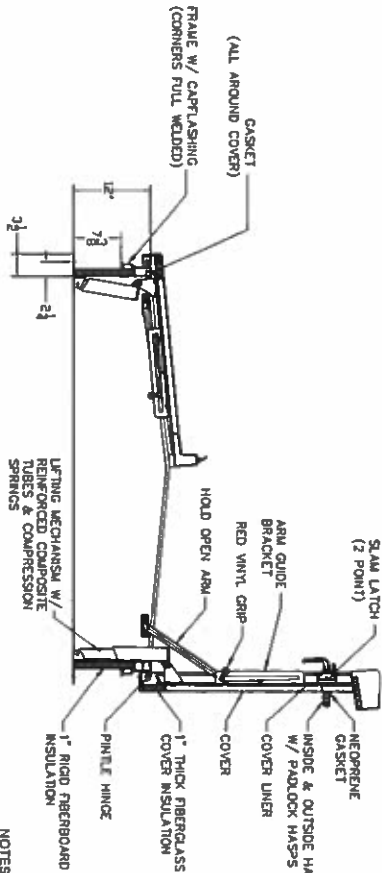


DOOR TYPES

SCALE: 1/4"=1'-0"

DOOR FRAME TYPES

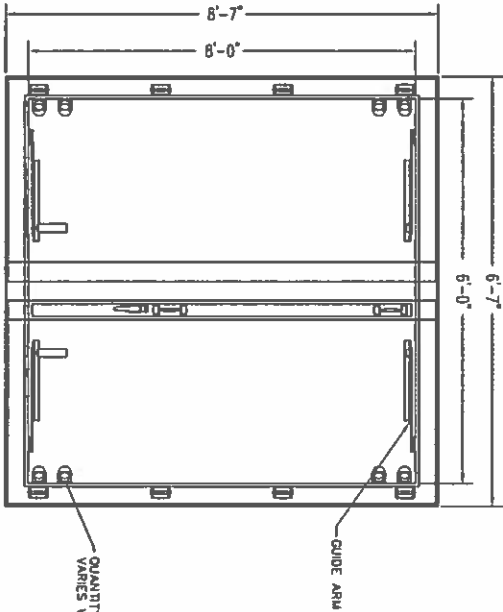
SCALE: 1/4"=1'-0"



SECTION

NOTES:

- HATCH SHALL BE 8' X 6' DOUBLE LEAF ROOF HATCH, BILCO TYPE D OR APPROVED EQUAL.
- COVERS SHALL BE 11 GAUGE ALUM WITH HEAVY EXTRUDED EPDM RUBBER GASKET.
- COVER INSULATION SHALL BE FIBERGLASS OF 1" THICKNESS, FULLY COVERED AND PROTECTED BY A 18 GAUGE ALUM LINER.
- CURB SHALL BE 12" IN HEIGHT AND OF 11 GAUGE ALUM WITH CURB INSULATION OF RIGID HIGH-DENSITY FIBERBOARD OF 1" THICKNESS.
- LIFTING MECHANISM SHALL BE COMPRESSION SPRING OPERATORS ENCLOSED IN TELESCOPING TUBES. THE LOWER TUBE SHALL INTERLOCK WITH A FLANGED SUPPORT SHOE WELDED TO THE CURB ASSEMBLY.
- COVERS SHALL AUTOMATICALLY LOCK IN THE OPEN POSITION WITH A RIGID HOLD OPEN ARM.
- COMPRESSION SPRING TUBES SHALL BE AN ANTI-CORROSIVE COMPOSITE MATERIAL.
- COVER HARDWARE SHALL BE BOLTED INTO HEAVY GAUGE CHANNEL REINFORCING WELDED TO THE UNDERSIDE OF THE COVER AND CONCEALED WITHIN THE INSULATION SPACE.
- FINISHES SHALL BE MILL FINISH ALUMINUM.



DOUBLE LEAF ROOF HATCH DETAIL

NTS

WEST HICKMAN 7 WET WEATHER STORAGE FACILITIES IMPROVEMENTS

CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK

BUILDING DETAILS AND SCHEDULES



SHEET  
03A-02

PROJECT MANAGER: P. BENTON HANSON		DESIGNED: J.T.M.	
DRAWN: C.P.L.		CHECKED: P.B.H.	
DATE: 10-25-2017		DESCRIPTION: ADDENDUM NO. 4	
DATE: 10-18-2017		DESCRIPTION: ADDENDUM NO. 3	
DATE: 10-06-2017		DESCRIPTION: BID DOCUMENTS	
PROJECT NUMBER: 10056008			

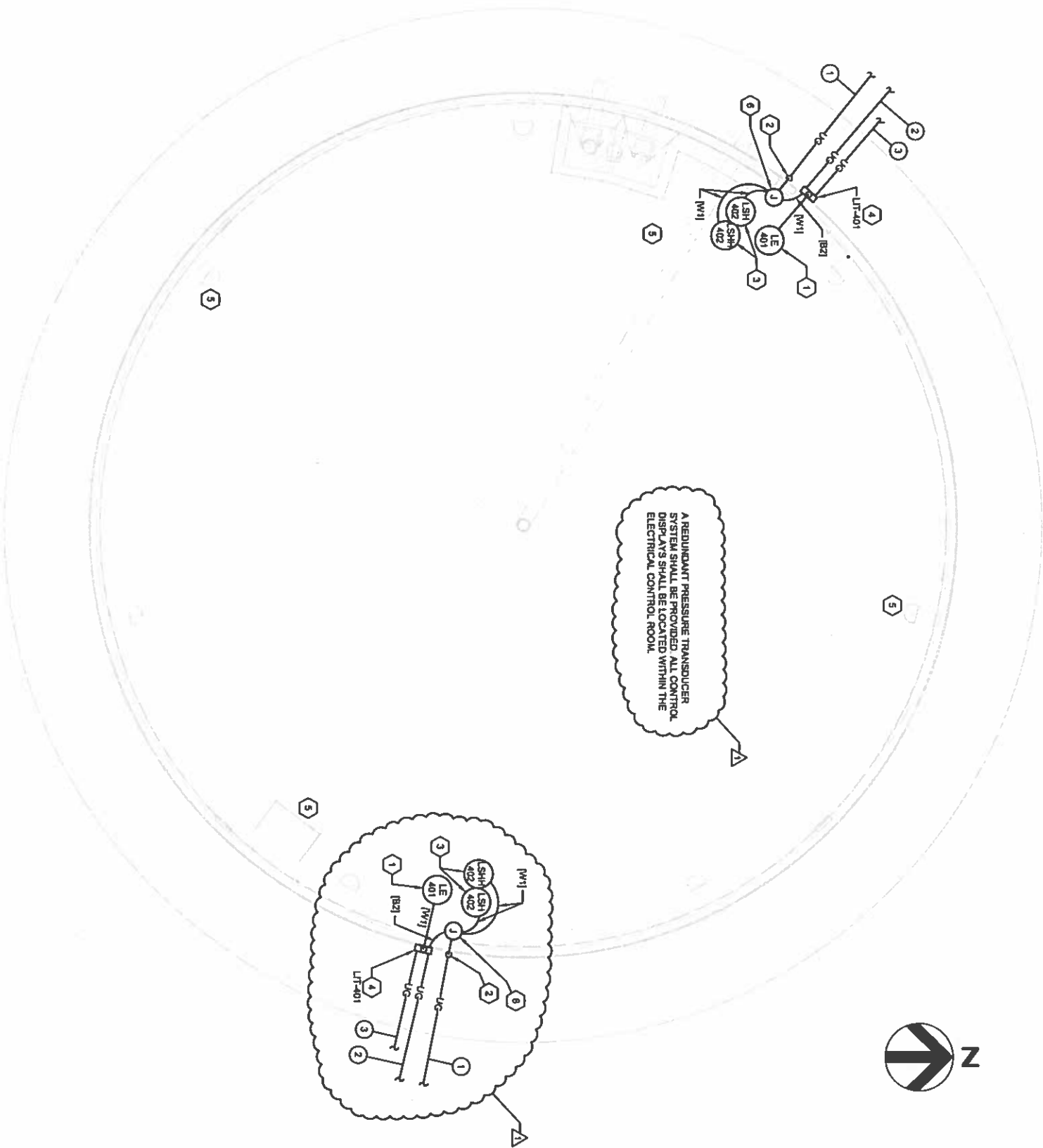
H-2

KEY NOTES:

- 1 SUBMERSIBLE LEVEL TRANSDUCER IN STILLING WELL. SEE DETAIL SHEET D07-04.
- 2 1" CONDUIT WITH CABLE SUPPLIED WITH EQUIPMENT. ROUTE CONDUIT DOWN SIDE OF TANK, TYPICAL.
- 3 HIGH LEVEL FLOAT SWITCHES MOUNTED INSIDE TANK. COORDINATE EXACT LOCATION, ELEVATION, AND METHOD OF MOUNTING.
- 4 ULTRASONIC LEVEL INDICATOR/TRANSMITTER MOUNTED ON SIDE OF TANK AT 48" ABOVE FINISHED GRADE. PROVIDE STAINLESS STEEL UNISTRUT MOUNTING BRACKET.
- 5 THE AREA INSIDE TANK HAS AN NFPA RATING OF CLASS 1, DIVISION 1, GROUP D. THE AREAS AROUND ALL HATCH OPENINGS AND CONCRETE TANK OVERFLOWS HAVE TWO DIFFERENT NFPA CLASSIFICATIONS. THE AREA 3'-0" ALL AROUND EACH TANK OPENING HAS AN NFPA RATING OF CLASS 1, DIVISION 1, GROUP D. AN ADDITIONAL 2'-0" AREA (6'-0" FROM TANK OPENING) ALL AROUND EACH TANK OPENING HAS AN NFPA RATING OF CLASS 1, DIVISION 2, GROUP D. ALL ELECTRICAL WORK AT THIS STRUCTURE SHALL COMPLY WITH THESE CLASSIFICATIONS.
- 6 NFPA 4X STAINLESS STEEL JUNCTION BOX FOR FLOAT SWITCH INTRINSICALLY SAFE BARRIER. SEE DETAIL SHEET D07-04.

GENERAL NOTES:

- 1 REFER TO SHEET D0E-01 FOR CIRCUIT CALLOUTS.
2. REFER TO SHEET D0E-01 FOR UNDERGROUND CONDUIT AND WIRE SCHEDULE.



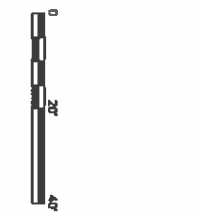
WET WEATHER STORAGE TANK POWER PLAN

1/16"=1'-0"

PROJECT MANAGER P. BENTON HANSON		
DESIGNED R. L. ANDERSON		
DRAWN L. M. DUFFY		
CHECKED R. L. ANDERSON		
QA/QC R. L. ANDERSON		
1	10-25-2017	ADDENDUM NO. 4
ISSUE	DATE	DESCRIPTION



WEST HICKMAN 7 WET WEATHER STORAGE FACILITIES IMPROVEMENTS CONTRACT NO. 2 PUMP STATION AND WET WEATHER STORAGE TANK



STORAGE TANK POWER PLAN

FILENAME: D1E-08.dwg  
SCALE: AS NOTED

SHEET 02E-07

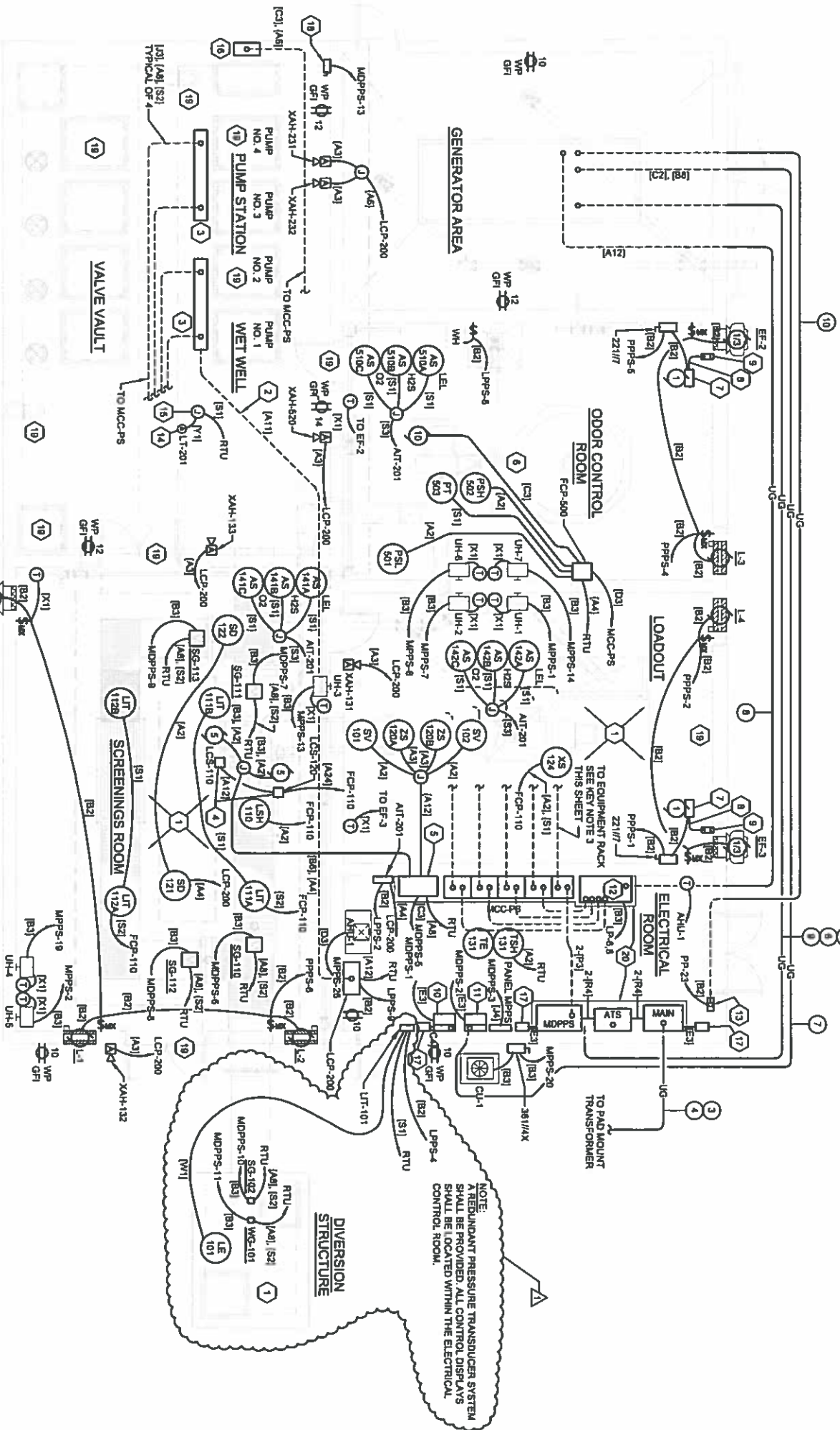


KEY NOTES:

- 1 ALL ELECTRICAL WORK IN THIS ROOM TO COMPLY WITH NFPA HAZARDOUS AREA CLASSIFICATION CLASS 1, DIVISION 1, GROUPS C & D.
- 2 FLOAT SIGNALS TO LCP-200
- 3 ELECTRICAL EQUIPMENT PACK FOR PUMP CABLE TO SINGLE CONDUCTOR TRANSITION, SEE DETAIL SHEET 01E-08.
- 4 NEMA 7 RATED SCREEN AND COMPACTOR CONTROL STATIONS PROVIDED WITH EQUIPMENT, INSTALLED BY CONTRACTOR, COORDINATE EXACT MOUNTING METHOD AND LOCATION
- 5 SCREEN CONTROL PANEL, FCP-110
- 6 ALL ELECTRICAL WORK IN THIS ROOM TO COMPLY WITH NFPA HAZARDOUS AREA CLASSIFICATION CLASS 1, DIVISION 2, GROUPS C & D.
- 7 OVERHEAD GARAGE DOOR OPERATOR PROVIDED WITH EQUIPMENT, INSTALLED BY DOOR INSTALLER, ALL CONDUIT AND WIRING BY ELECTRICAL CONTRACTOR.
- 8 PROVIDE CONDUIT AND CONTROL WIRING AS REQUIRED BY MANUFACTURER.
- 9 OPEN-CLOSE STOP SWITCH PROVIDED WITH CONTRACTOR.
- 10 PANEL LPPS WITH TRANSFORMER WALL MOUNTED ABOVE.
- 11 PANEL PPS WITH TRANSFORMER WALL MOUNTED ABOVE.
- 12 PUMP CONTROL PANEL, (PS-RTU).
- 13 GENERATOR REMOTE ANNUNCIATOR PANEL.
- 14 SUBSERSIBLE PRESSURE TRANSDUCER IN SIBLING WELL, SEE MOUNTING DETAIL SHEET 01E-04.
- 15 NEMA 4X JUNCTION BOX WITH TERMINAL STRIPS FOR CONNECTION OF PRESSURE TRANSDUCER CABLES, MOUNT BOX ON STAINLESS STEEL SUPPORT BRACKET.
- 16 REOSTAL MOUNTED LCP-251 FOR PUMP PUMP CABLES, REOSTAL SHULAS TO DETAIL ON SHEET NOTES 2, 8, 10 & 11 ON SHEET 01E-08 SHALL APPLY.
- 17 SURGE PROTECTION DEVICE.
- 18 NEMA 4X DISCONNECT SWITCH FOR HOIST, COORDINATE EXACT LOCATION AND PROVIDE FINAL CONNECTION TO HOIST.
- 19 HAZARDOUS CLASSIFICATION OF THE ENVELOPE AROUND ALL OPENINGS INTO HAZARDOUS AREAS SHALL BE AS SHOWN IN NFPA 820. ANY ELECTRICAL WORK OR EQUIPMENT IN THESE ENVELOPE AREAS SHALL COMPLY THE PROPER HAZARDOUS CLASSIFICATION.
- 20 17' HOUSEKEEPING PAD TO AVOID 100 YEAR FLOOD PLAIN ELEVATION

GENERAL NOTES:

- 1 REFER TO SHEET 01E-01 FOR CIRCUIT CALLOUTS.
- 2 REFER TO SHEET 01E-01 FOR UNDERGROUND CONDUIT AND WIRE SCHEDULE.
- 3 REFER TO SHEET 01E-02 FOR PANELBOARD SCHEDULES.
- 4 RECEPTACLES CIRCUITED TO PANEL LPPS, CIRCUIT NUMBERS SHOWN, TYPICAL.
- 5 COORDINATE CONDUIT STUB UP LOCATIONS WITH EQUIPMENT SUPPLIED, TYPICAL.
- 6 FOR AREA HAZARDOUS CLASSIFICATION, REFER TO SPECIFICATION SECTION 16050.



UPPER LEVEL POWER PLAN



PROJECT MANAGER P. BENTON HANSON	
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CHECKED R. L. ANDERSON	QA/QC R. L. ANDERSON
PROJECT NUMBER 10055006	
1	10-26-2017
ISSUE	DATE
ADDENDUM NO. 4	
DESCRIPTION	

H-2

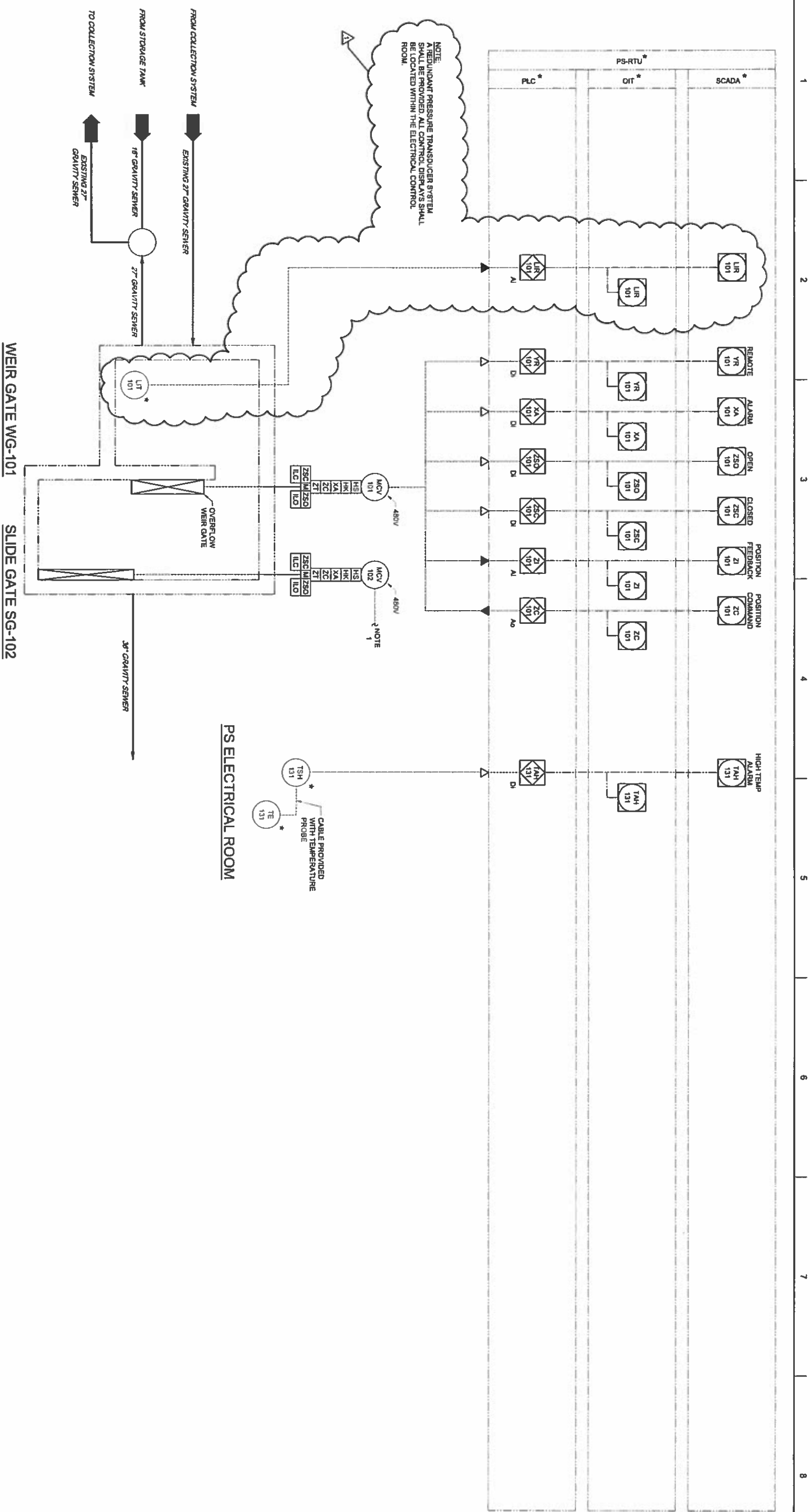


WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK



FILENAME 01E-08.dwg  
SCALE AS NOTED  
SHEET 01E-08

PUMP STATION  
UPPER FLOOR PLAN - POWER



**SHEET NOTES**  
**1. CONTROL AND INSTRUMENTATION**  
**REQUIREMENTS FOR WG-101 ARE TYPICAL FOR**  
**SG-102.**



		DESIGNED	R. L. ANDERSON
		DRAWN	L. M. DUFFY
		CHECKED	
		QA/QC	
1	10-26-2017	ADDENDUM NO. 4	
ISSUE	DATE	DESCRIPTION	PROJECT NUMBER
			10055008

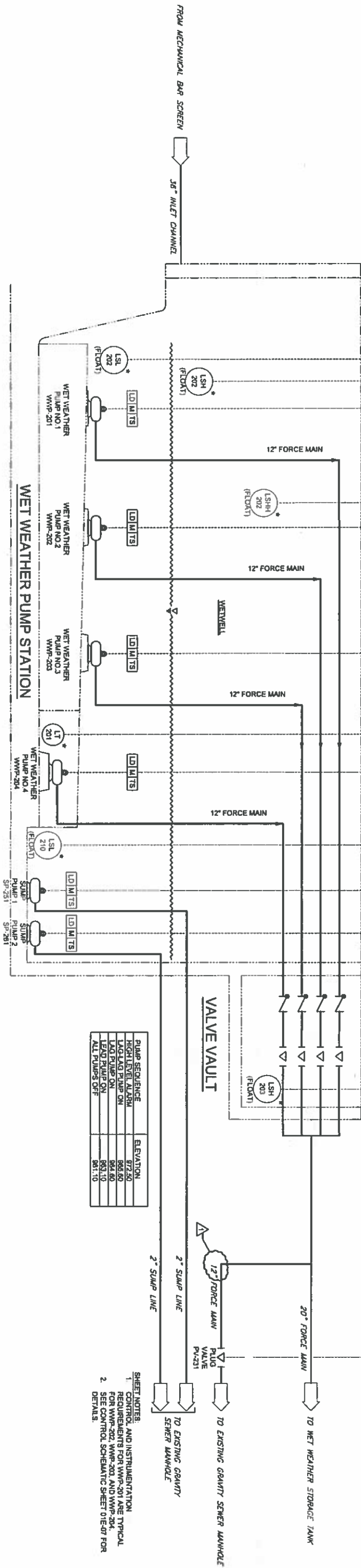
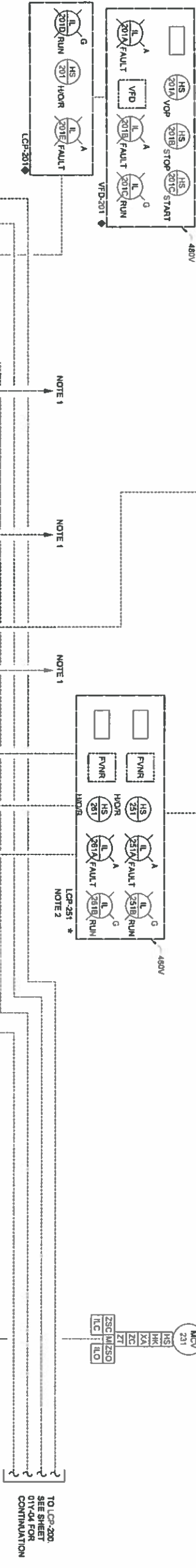
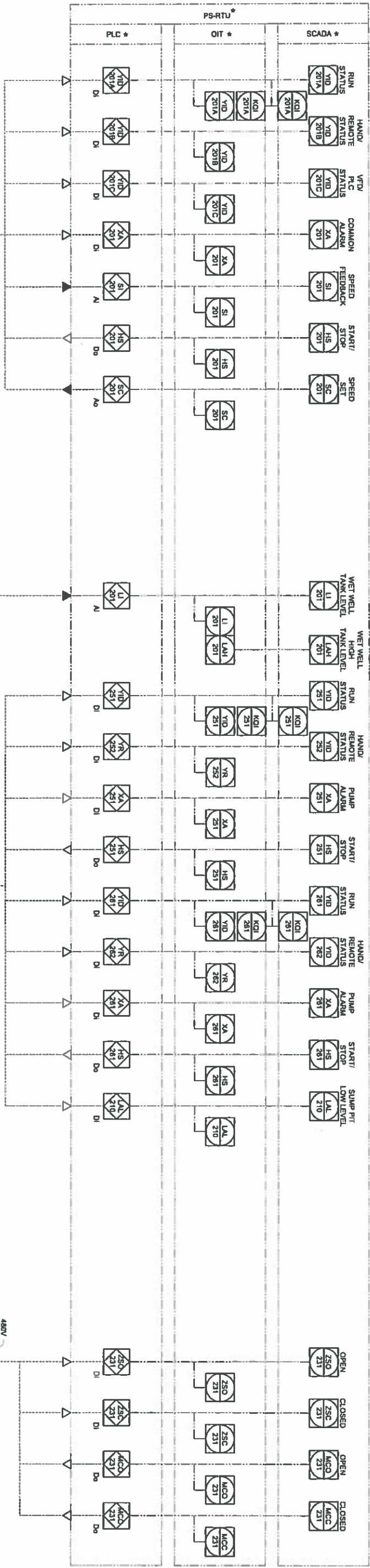


**WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK**

**PUMP STATION  
DIVERSION BOX  
P&ID**

0 20 40 FILENAME 01Y-Q1.dwg  
SCALE N.T.S.

**SHEET**  
**01Y-01**



PUMP SEQUENCE	ELEVATION
HIGH LEVEL ALARM	872.50
LAG LAG PUMP ON	865.50
LAG PUMP ON	864.50
LEAD PUMP ON	863.10
ALL PUMPS OFF	861.10

SHEET NOTES:  
1. CONTROL AND INSTRUMENTATION REQUIREMENTS FOR WWP-201 ARE TYPICAL FOR WWP-202, WWP-203, AND WWP-204.  
2. SEE CONTROL SCHEMATIC SHEET 01Y-07 FOR DETAILS.

PROJECT MANAGER	P. BENTON HANSON
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DRAWN	L. M. DUFFY
CHECKED	Q.A.C.
PROJECT NUMBER	10055006

ISSUE	1	10-25-2017	ADDENDUM NO. 4
DATE			
DESCRIPTION			

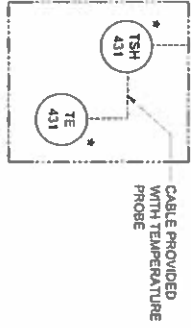
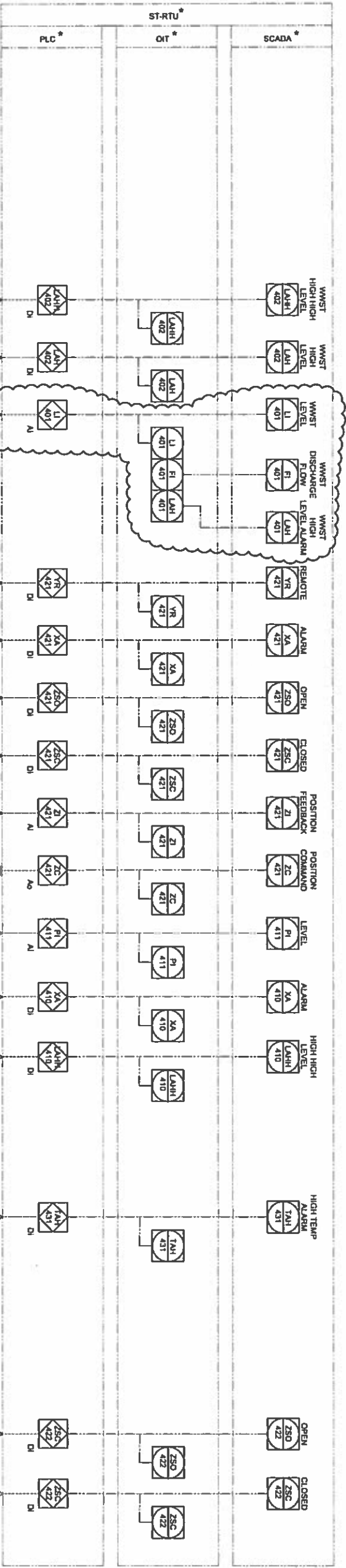


WEST HICKMAN 7 WET WEATHER STORAGE FACILITIES IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK



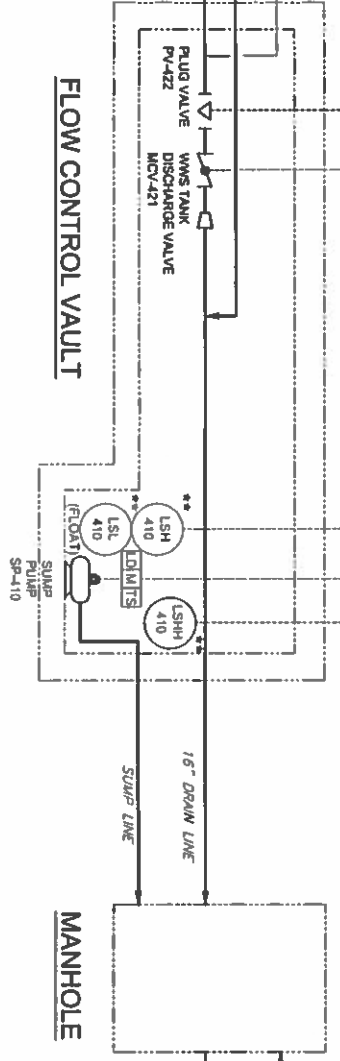
PUMP STATION  
P&ID

SHEET  
01Y-03

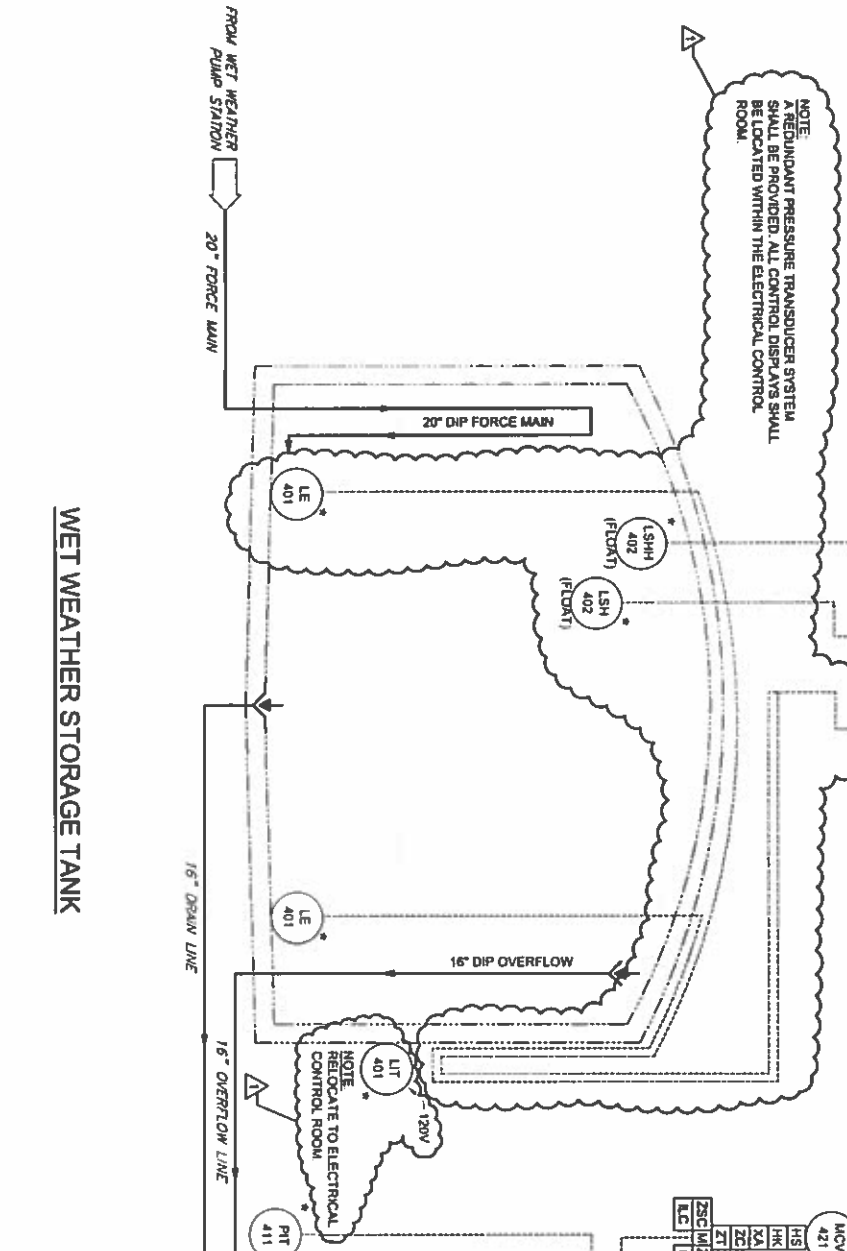


STORAGE TANK ELECTRICAL ROOM

FCP-410 \*\*  
SMART-EX  
PUMP CONTROL PANEL  
BY VENDOR



WET WEATHER STORAGE TANK



NOTE  
RELOCATE PRESSURE TRANSDUCER SYSTEM  
SHALL BE PROVIDED ALL CONTROL DISPLAYS SHALL  
BE LOCATED WITHIN THE ELECTRICAL CONTROL  
ROOM.

NOTE  
RELOCATE TO ELECTRICAL  
CONTROL ROOM

PROJECT MANAGER P. BENTON HANSON		
DESIGNED R. L. ANDERSON		
DRAWN L. M. DUFFY		
CHECKED R. L. ANDERSON		
QA/QC R. L. ANDERSON		
1	10-25-2017	APPENDIX NO. 4
ISSUE	DATE	DESCRIPTION
PROJECT NUMBER 10055008		

WEST HICKMAN 7 WET WEATHER  
STORAGE FACILITIES  
IMPROVEMENTS  
CONTRACT NO. 2  
PUMP STATION AND  
WET WEATHER STORAGE TANK

STORAGE TANK  
MODULATING STRUCTURE P&ID

FILENAME 02Y-01.dwg  
SCALE N.T.S.

SHEET  
02Y-01