

**CITY OF FERNDALE
WASTEWATER TREATMENT PLANT UPGRADE**

**ADDENDUM NO. 3 (27 pages total)
Issue Date: December 20, 2019**

General: Recitations of each and every section of the bid documents impacted by this addendum are not given. The described changes impact all relevant portions of the bid documents whether specifically cited below or not.

PART 1 BIDDING REQUIREMENTS

SECTION 00 31 13 – PRELIMINARY PROJECT PHASES

- **QUESTION:** Dewatering requirements for installation of new telescoping valve/piping in west lagoon: It looks like the Contractor will need to remove about 10-ft of liquid, which is roughly 6 million gallons. Can the Contractor use the temporary bypass pump for this? Where does the water go?
- **ANSWER:** See Section 00 31 13, C. which was updated in Addendum 2. Once the new WWTP is on-line, the Contractor will need to pump clear liquid from West Lagoon to the new Grit Basins in the new Headworks at a flow rate of 350 gpm. Water level will need to be reduced roughly 10', so depth is 4-ft (elevation = 15' above sea level) or so. Anticipate that it will take 12 days +/- to pump down. This work needs to be carefully coordinated, because the new WAS system for the new wastewater treatment plant needs to be online and functional within 21 days of the switch over to the new WWTP (Section 00 31 13, C.4.)

PART 2 – CONTRACTING REQUIREMENTS

PART 3 – TECHNICAL SPECIFICATIONS:

SECTION 03 01 30 – REPAIR OF HEADWORKS CONCRETE

- Pages from existing O&M for Screw Pump Equipment Installation is included for reference. Pages are attached at end of addendum and are labeled "20" to "34" (15 pages total).

SECTION 09 51 00 – ACOUSTICAL CEILINGS

- **CHANGE** paragraph 2.2, B to "Armstrong Fine Fissured Second Look #1761, or approved substitution 24"x48"x3/4" thick, non-combustible tegular edge lay-in panels. Factory applied paint finish. Install at Operations Lab Building Break Room, Offices, and Corridor, and as indicated on the drawings."
- **ADD** paragraph 2.2,C: "Armstrong Clean Room VL #870, or approved substitution 24"x48"x3/4" thick, non-combustible square edge lay-in panels. Factory applied paint finish. Install at Operations Lab Building Lab Room, and as indicated on the drawings."

SECTION 26 80 00 – INSTRUMENTATION AND CONTROL

Section: 26 80 00; Paragraph: 2.03.C.2.a; Specification Requirement: Selector switches shall be for use on 120 volt control circuits. Contacts shall have a continuous current rating of 10 amperes both inductive and resistive. Selector switches shall be of the heavy duty oil tight type. Allen Bradley, Bulletin 800T, 800H, or equal.

Question: Is it acceptable to provide ABB 22mm selector switch with 6A at 120 VAC as standard?

Answer: Yes. Contractor to coordinate as needed.

Section: 26 28 00; Paragraph: 2.03.C.6; Specification Requirement: Control Relay: Relays for general purpose use shall be DPDT, 5 ampere minimum contacts with the appropriate coil voltage for the application. All relays shall include MOV snubbers (for AC) or diodes (for DC) applied across the relay coils to reduce the surge caused by coil breakdown transients. Relays shall be Idec RH2BULD, or equal.; Question: Is it acceptable to use a Phoenix contact PLC-RPT-24DC/21? It has 6A SPDT contact with Polarity protection diode and Free-wheeling Damping diode for coil.

Answer: Yes. Contractor to coordinate as needed.

Section: 26 80 00; Paragraph: 2.03.C.7; Specification Requirement: Terminal Blocks shall be 600 volt modular terminal blocks with tubular screw and pressure plate.

Question: Is push type acceptable?

Answer: Yes. Contractor to coordinate as needed.

Section: 26 80 00; Paragraph: 2.03.C.7; Specification Requirement: Provide a minimum of 20% or four whichever is greater, spare terminals in each panel.

Question: Is it acceptable not to provide 20% more terminals in the DC and HSC due to space limitations?

Answer: Yes. Contractor to coordinate as needed.

Section: 26 80 00; Paragraph: 2.05.C.4; Specification Requirement: Manufacturer: Allen-Bradley Panelview Plus 7, #2711P-B10C4D8

Question: Standard is Allen Bradley PV+7 2711P-T10C22D9P. HMI will not have keyboard, have only touch screen option. Is this acceptable?

Answer: Yes. Contractor to coordinate as needed.

Section: 26 28 00; Paragraph: 2.05.E; Specification Requirement: 1. UPS systems shall be provided for all PLC control panels. 2. The UPS system shall be for industrial applications as manufactured by Eaton, Allen Bradley, or equal.

Question: 120 VAC UPS is specified. Is it acceptable to provide Phoenix Contact 24VDC with 15 minutes back-up duration? Note that 120VAC UPS requires floor mount panel.

Answer: Yes. Contractor to coordinate as needed.

SECTION 46 66 00 – ULTRAVIOLET DISINFECTION EQUIPMENT

Section: 46 66 00; Paragraph: General; Specification Requirement: Performance Testing
Question: There is no reference to Performance Testing Requirement in UV section. Will there be performance testing requirements and if so, who will be responsible for conducting this and covering cost?

Answer: Contractor is responsible for all specified work. This includes equipment commissioning (section 01 91 00, 1.08). Contractor is to confirm that the installed system delivers the minimum design dosage (24 mJ/cm² at peak flow per section 46 66 00), validate intensity sensor measurements, and confirm (at a minimum) that everything functions as specified.

Section: 46 66 00; Paragraph: MWG; Specification Requirement: Gate shall be manufactured by Golden Harvest, Waterman, or approved equal. Gate manufacturer shall match the manufacturer used for all plant gates.

Question: Will RW Gates or Whipps be acceptable manufacturer?

Answer: Yes, Whipps is an acceptable equal to the specified gate manufacturers.

Section: 46 66 00 - 4; Paragraph: 1.03.A.8; Specification Requirement: The system will be designed for complete outdoor installation.

Question: As per contract drawing S7.01 to S7.06, UV system is placed in UV building and as per H2.01 and H2.02, this building has HVAC system. Is UV system located outdoor or indoor?

Answer: The UV building is designed to be a sheltered and ventilated space with minimal heating. In addition, wash down activities could splash equipment and controls. Outdoor rated equipment is desired.

Section: 46 66 00 - 8; Paragraph: PDC-2; Specification Requirement: PDC enclosure material will be Mild Painted Steel.

Question: Is 304SST Type 4X acceptable for enclosure for PDC?

Answer: Yes. Contractor to coordinate as needed.

Section: 46 66 00 – 11; Paragraph: Slide Gate; Specification Requirement: Each gate will be able to receive one opening and one closing signal from dry 10 amp contacts located in the SCC.

Question: Is it acceptable to provide interposing relay with 6A contact to control inlet slide gate?

Answer: Yes. Contractor to coordinate as needed.

DRAWINGS:

- **REPLACE** Drawing A0.01 with attached.
- **REPLACE** Drawing A2.02 with attached.
- **ADD** attached Drawing E1.06A to show required electrical work at existing Headworks.
- **REPLACE** Drawing E1.07 with attached. The drawing has been expanded to show the fiber routing to the existing Water Treatment Plant.
- **REPLACE** Drawing S3.02 with attached.
- **REPLACE** Drawing S5.03 with attached.
- **REPLACE** Drawing S5.04 with attached.

DRAWING C6.01 – AERATION BASINS OVERALL PLAN:

- **ADD:** Life preserver units are to be provided as follows:
Life preserver units are to be provided at locations around the perimeter of both aeration basins. Units to be spaced every 100-ft on center (approx.), and securely attached to handrail. Eight life preserver units per basin, 16 total. Life preservers are to be 30” diameter Ring Preservers, Type IV commercial buoy with vinyl coating over molded PVC shell. USA Bluebook # ME-44925, or equal. Each buoy is to include aluminum brackets, stainless steel fasteners, and 90 feet (min.) of heaving line. Install 16 complete Life Preserver units total, with fiberglass life ring cabinet and handrail attachments as needed. Cabinets are to be non-locking “T-Handle” entry, Cheyenne Manufacturing Inc. (800) 424-7575 or equal.

DRAWING M1.03, ADDENDUM 2

- **CHANGE** note “30”x36” DI ECCENTRIC REDUCER, MJxMJ.” to “30”x36” DI **CONCENTRIC** REDUCER, MJxMJ.”

DRAWING M1.05, M1.10, ADDENDUM 2

- **CHANGE** “6” FINAL EFFLUENT PIPE” to “8” FINAL EFFLUENT PIPE”

DRAWING S3.02

- **DELETE:** Delete note 05320 ALUMINUM ROOF DECK. No aluminum structural decking is used, though standing seam aluminum roof is used over steel decking as shown on A0.01.

DRAWING S5.03

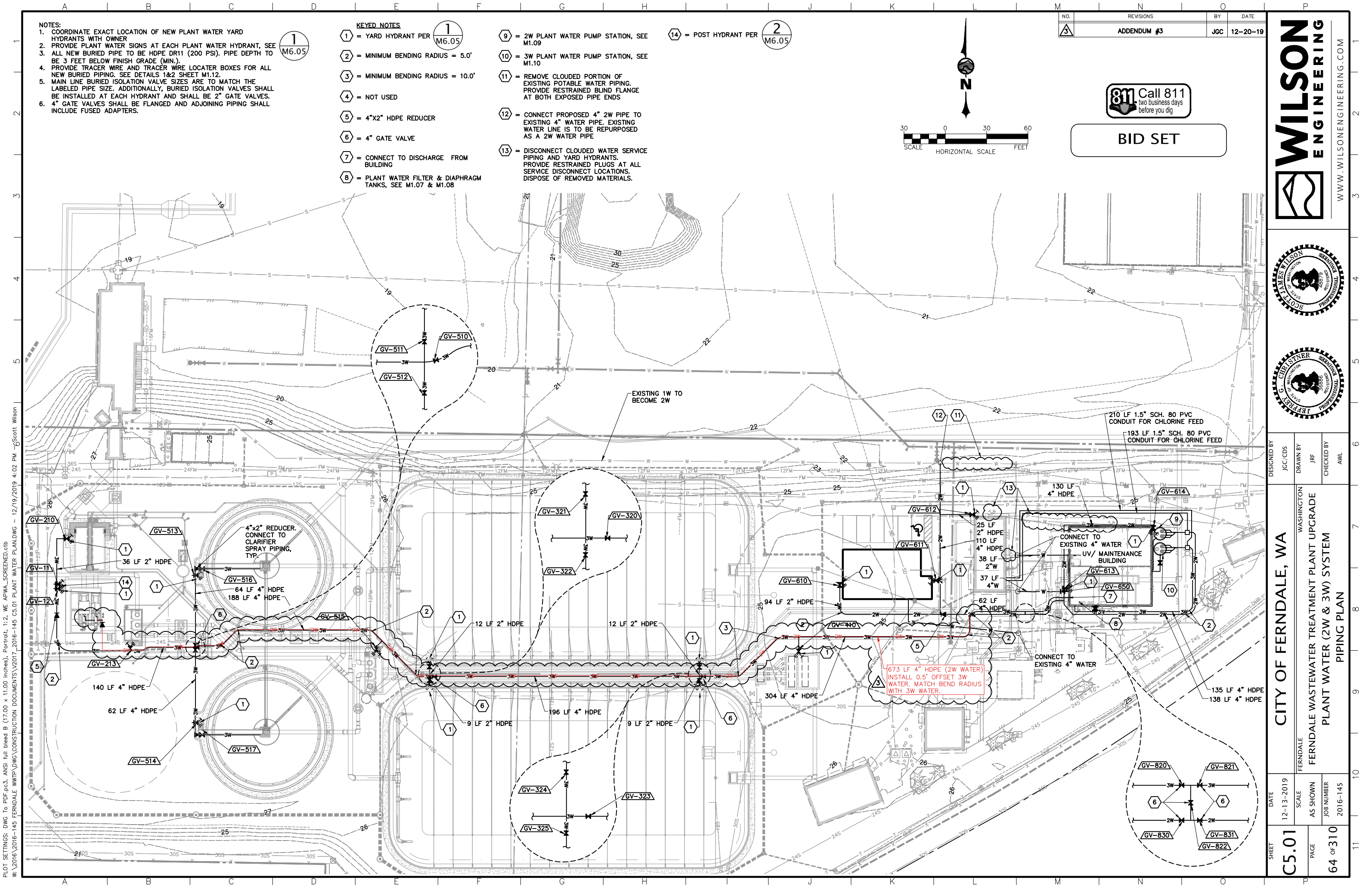
- **CHANGE:** All roof decking material shall be GALVANIZED per Spec 05 31 00, not aluminum. Headworks roofing shall be per detail section R2 on A0.01.
- **ADD** note #2: All bolts, nuts, and fasteners shall be 316 stainless steel.

DRAWING S5.04

- **CHANGE:** All roof decking material shall be GALVANIZED per Spec 05 31 00, not aluminum. Headworks roofing shall be per detail section R2 on A0.01.
- **ADD** note: All bolts, nuts, and fasteners shall be 316 stainless steel.

DRAWING E1.06

- **CHANGE** the line weight for the line tagged P-MV4 to be constant throughout its length. The line represents a new medium voltage cable installed as shown on the drawings.



- NOTES:
- COORDINATE EXACT LOCATION OF NEW PLANT WATER YARD HYDRANTS WITH OWNER
 - PROVIDE PLANT WATER SIGNS AT EACH PLANT WATER HYDRANT. SEE M6.05
 - ALL NEW BURIED PIPE TO BE HDPE DR11 (200 PSI). PIPE DEPTH TO BE 3 FEET BELOW FINISH GRADE (MIN.)
 - PROVIDE TRACER WIRE AND TRACER WIRE LOCATOR BOXES FOR ALL NEW BURIED PIPING. SEE DETAILS 1&2 SHEET M1.12.
 - MAIN LINE BURIED ISOLATION VALVE SIZES ARE TO MATCH THE LABELED PIPE SIZE. ADDITIONALLY, BURIED ISOLATION VALVES SHALL BE INSTALLED AT EACH HYDRANT AND SHALL BE 2" GATE VALVES.
 - 4" GATE VALVES SHALL BE FLANGED AND ADJOINING PIPING SHALL INCLUDE FUSED ADAPTERS.

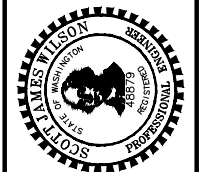
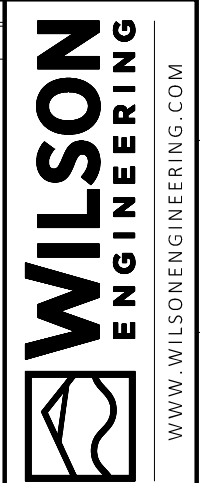
KEYED NOTES

- 1 = YARD HYDRANT PER M6.05
- 2 = MINIMUM BENDING RADIUS = 5.0'
- 3 = MINIMUM BENDING RADIUS = 10.0'
- 4 = NOT USED
- 5 = 4"x2" HDPE REDUCER
- 6 = 4" GATE VALVE
- 7 = CONNECT TO DISCHARGE FROM BUILDING
- 8 = PLANT WATER FILTER & DIAPHRAGM TANKS, SEE M1.07 & M1.08
- 9 = 2W PLANT WATER PUMP STATION, SEE M1.09
- 10 = 3W PLANT WATER PUMP STATION, SEE M1.10
- 11 = REMOVE CLOUDED PORTION OF EXISTING POTABLE WATER PIPING. PROVIDE RESTRAINED BLIND FLANGE AT BOTH EXPOSED PIPE ENDS
- 12 = CONNECT PROPOSED 4" 2W PIPE TO EXISTING 4" WATER PIPE. EXISTING WATER LINE IS TO BE REPURPOSED AS A 2W WATER PIPE
- 13 = DISCONNECT CLOUDED WATER SERVICE PIPING AND YARD HYDRANTS. PROVIDE RESTRAINED PLUGS AT ALL SERVICE DISCONNECT LOCATIONS. DISPOSE OF REMOVED MATERIALS.
- 14 = POST HYDRANT PER M6.05

NO.	REVISIONS	BY	DATE
3	ADDENDUM #3	JGC	12-20-19

811 Call 811
two business days
before you dig

BID SET



DESIGNED BY JCC/CDS
DRAWN BY JRF
CHECKED BY AVL

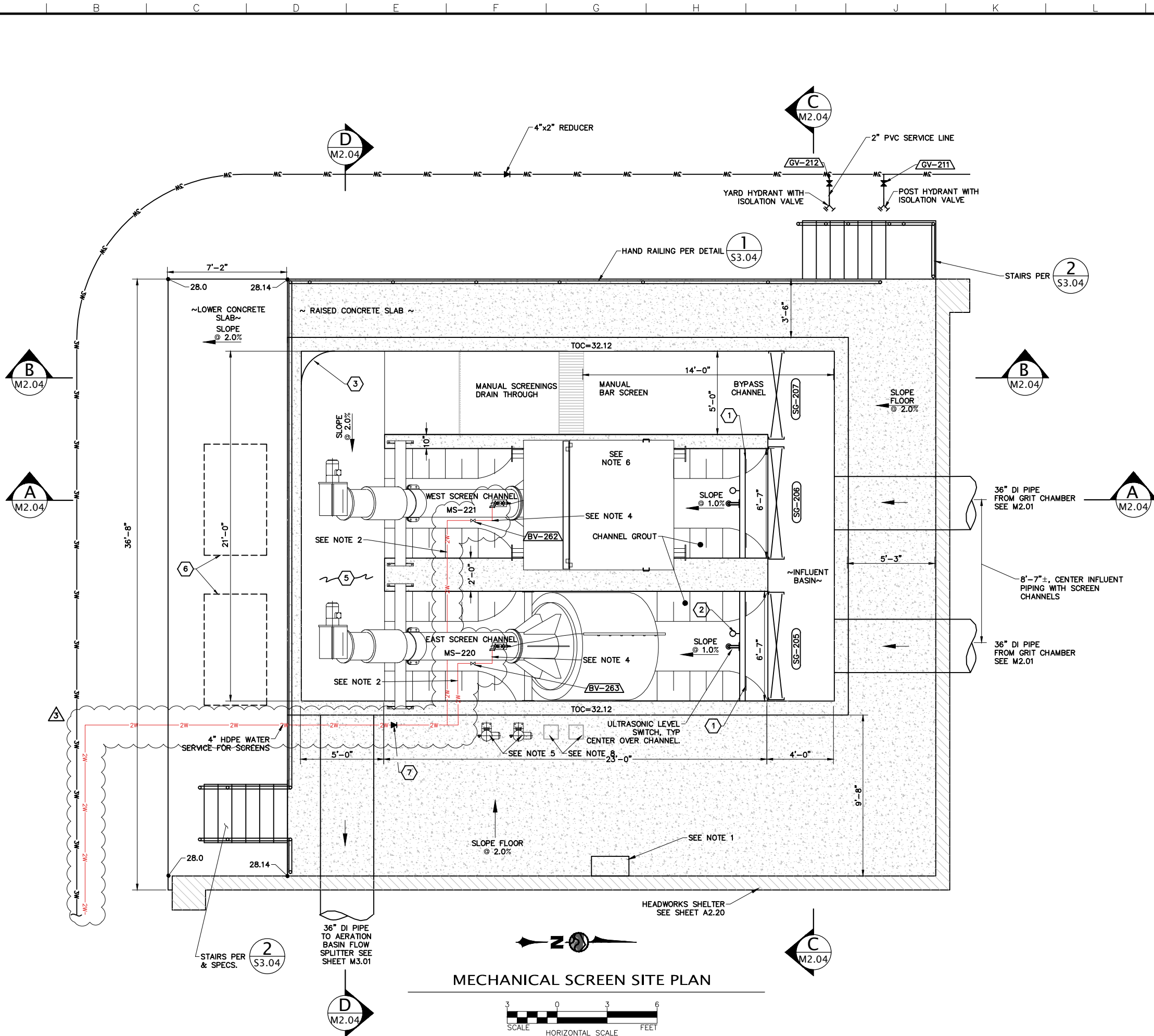
CITY OF FERNDAL, WA
FERNDAL WASTEWATER TREATMENT PLANT UPGRADE
PLANT WATER (2W & 3W) SYSTEM
PIPING PLAN

DATE 12-13-2019
SCALE AS SHOWN
JOB NUMBER 2016-145
SHEET C5.01
PAGE 64 OF 310

PLOT SETTINGS: DWG To PDF.pc3, ANSI full bleed B (17.00 x 11.00 inches), Portrail, 1:2, WE APWA_SCREENED.ctb

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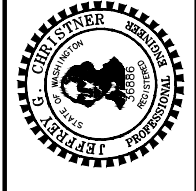
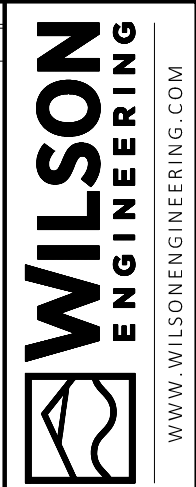
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NO.	REVISIONS	BY	DATE
3	ADDENDUM #3	JGC	12-20-19

- NOTES:
1. INSTALL H2S SENSOR IN SHELTER. MOUNT H2S SENSOR NEAR CONTROL PANELS. COORDINATE LOCATION WITH OWNER.
 2. 1-1/2 INCH STAINLESS STEEL PIPE (SCH. 40) WITH EXPOSED 1-1/2 INCH BALL VALVE FOR ISOLATION OF MECHANICAL SCREEN SUPPLY. INSULATE AND HEAT TRACE EXPOSED PIPE AND VALVES. SUPPORT PIPE AS NEEDED FOR ELEVATION WITH STAINLESS STEEL HARDWARE.
 3. ALL HARDWARE & FASTENERS AT HEADWORKS SHALL BE 316 STAINLESS STEEL.
 4. PROVIDE 2'-FT OF 1-1/2 INCH FLEXIBLE HOSE AT CONNECTION TO MECHANICAL SCREEN. HOSE SHALL BE UNISOURCE SERIES 2612 OR EQUAL. PROVIDE STAINLESS STEEL FITTINGS AS NECESSARY FOR CONNECTIONS.
 5. AUTOMATIC GREASE PUMP PER MECHANICAL SCREEN SPEC. MOUNT TO FLOOR PER MANUF. RECOMMENDATIONS WITH STAINLESS STEEL HARDWARE AND TUBING. COORDINATE LOCATION WITH OWNER.
 6. MECHANICAL SCREEN DRUM COVER PER MECH. SCREEN SPECS. DRUM COVER NOT SHOWN ON EAST SCREEN FOR CLARITY.
 7. ALL INTERIOR CONCRETE SURFACES TO BE PROTECTED WITH COATING. SEE CONCRETE PROTECTIVE COATING SPECIFICATION.
 8. MECHANICAL SCREEN SLURRY PUMPS. MOUNT TO CONCRETE SLAB PER MANUFACTURERS RECOMMENDATIONS AND PROVIDE ALL CONNECTIONS TO MECHANICAL SCREENS. COORDINATE LOCATION WITH OWNER.

- KEYED NOTES
- 1 = SS UNISTRUT SUPPORT. MOUNT TO SIDEWALL WITH STAINLESS STEEL HARDWARE
 - 2 = HIGH ALARM FLOAT, TYP
 - 3 = GROUT CHANNEL CORNER WITH 2' RADIUS FILLET TOP TO BOTTOM
 - 4 = EXPOSED 1.5" ISOLATION VALVE. INSULATE AND HEAT TRACE EXPOSED PIPE AND VALVES.
 - 5 = ALUMINUM GRATING OVER ALL CHANNELS, TYP. ALL GRATING SHALL BE REMOVABLE. CUT OPENINGS FOR EQUIPMENT PENETRATIONS
 - 6 = 3 YARD DUMPSTER, TYP.
 - 7 = ABOVE GROUND 4" HDPE TO 1.5" SST REDUCER. PROVIDE FITTINGS AS NECESSARY.



DESIGNED BY	JGC/SJW
DRAWN BY	JRF
CHECKED BY	AWL

CITY OF FERNDAL, WA	WASHINGTON
FERNDAL	FERNDAL WASTEWATER TREATMENT PLANT UPGRADE
	MECHANICAL SCREEN SITE PLAN

DATE	12-13-2019
SCALE	AS SHOWN
JOB NUMBER	2016-145
SHEET	M2.03
PAGE	113 of 310



BID SET

PLOT SETTINGS: DWG To PDF.pc3, Previous paper size (17.00 x 11.00 Inches), Portrait, 1:2, WE APWA_UNSCREENED.ctb
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STRUCTURAL NOTES (CONTINUED)

05210 OPEN-WEB STEEL JOISTS AND JOIST GIRDERS

1 Manufactured steel joists and joist girders shall conform to the latest appropriate standards and specifications of the Steel Joist Institute. Design all components of the system for the loads indicated in the Structural Notes and on the drawings, including modifications (if any) to standard designs and connection details as necessary to resist the indicated loads. Joist series and sizes shown on plan are the minimum which are required; the manufacturer shall be responsible to select members to resist the indicated loads.

In addition to their normal functions, the roof joists are intended to provide lateral bracing for the perimeter CMU bearing walls and for the structural steel members.

Design joists and connections to resist net uplift loading of 34 psf within 6 feet of the roof perimeter and 14 psf for balance of roof areas. Loads are ASD level. No increase in allowable fastener loads is allowed for wind.

2 Furnish complete shop drawings of all parts and their installation, and submit calculations showing analysis and design. The shop drawings shall provide all necessary information for permanent and erection bracing, for all supplied pieces. Shop drawings and calculations shall be sealed by a Washington State Registered Structural Engineer. Provide engineering calculations for all "non-standard" design and/or loading conditions, such as, but not limited to, net up-lift loading, headers, and special connections.

3 Make suitable allowance for roof or floor mounted mechanical equipment, and other special loads as indicated on plan. Coordinate with the mechanical contractor for loads, openings, and support conditions; final shop drawings shall show the agreed loads, openings, and positions. Include all accessories, bridging, headers and sub-framing as called on plan and/or as required for installation. Provide headers and trim members for all indicated openings, whether or not members are specifically shown on plan.

4 Fully shop fabricate all open-web steel joists and joist-girders. Bolted field splices are permitted only when fully detailed on the shop drawings.

5 Header Units: Provide header units to support tailed joists at openings in floor or roof system not framed with steel shapes. Design adjacent joists to carry header loads.

6 Provide bridging complying with SJI "Specifications" for all joists, but not less than that shown on drawings. Install bridging simultaneously with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams. Consult joist manufacturer's installation requirements prior to installation.

7 Supports:

A Provide field-welded end anchorages to adjacent construction to resist all design loads, complying with SJI "Specifications" unless otherwise indicated. Use not less than 3/16" x 2" fillet welds each side for K-series joists, 1/4" x 2" for LS-series. In addition, provide temporary bolts as required by OSHA regulations.

B Connect joist girders to supporting steel work with not less than (2) 3/4" Ø A325-N bolts.

C K-series joists shall bear not less than 2 1/2" over supporting steel; LS-series and Joist Girders shall bear not less than 4".

8 Chord extensions:

A Provide joist top chord extensions as indicated on the drawings and as required to support deck beyond the framing lines. Unless indicated, design for the same uniform loads as the joist main span.

B Extend bottom chords of all joists occurring at columns to stabilizing plate on the column. Connect for stability during erection with bolts at top and bottom chords; weld top chord after all dead loads applied.

C Provide and install ceiling extensions at all joists.

9 Do not field-bore holes in chords except as approved by joist manufacturer.

10Painting:

A All joists and joist-girders shall have one coat of rust-preventive shop paint, except for surfaces embedded in concrete.

B All joists and joist girders which are exposed to an uncontrolled exterior environment shall be shop-painted in accordance with SSPC-PS 14.01 and SSPC-PAINT 15.

C Touch up all damaged point surfaces in accordance with SSPC-SP 2 or SP 3.

05310 STEEL ROOF DECK

1 Steel deck shall conform to current standards and specifications of the Steel Deck Institute (SDI). Deck shall be galvanized and placed continuous over at least two spans, or lapped a minimum of 3' at central supports with #10 SMS in each flute on each edge of lap.

2 The roof metal deck is required to brace the steel support framing and bearing walls, and is an integral part of the lateral force resisting system of the building.

3 See details for typical fastening. Where not shown otherwise:

Roof deck: attach to supporting members with #10 screws at edge ribs and at alternate interior ribs. Fasten sidelaps at two places between supports, and at 24" o/c at perimeter supports.

3 Where other support not shown on drawings, support all edges of metal decking on not less than L3"x2"x3/16" (LLV) galvanized.

4 Install and anchor roof deck units to resist net uplift loading of 30 psf (ASD), with no increase in allowable fastener loads allowed.

5 Provide shop drawings showing: deck type(s), gauges, finishes, sheet layout & cutting, reinforcing, laps, closures and flashing, and similar details.

6 Welding:

A Conform to the requirements of AWS D1.3-98, Structural Welding Code - Sheet Steel

B All welds shall be flux-cored arc welding process, unless otherwise approved by architect. Use only pre-qualified weld procedures.

C Welding shall be carefully controlled to eliminate burn-through. Burn-through will be cause for rejection of the weld.

D Bring pieces into firm contact before welding.

05320 ALUMINUM ROOF DECK

NOT USED

1 Use full span length sheets.

2 Fasten aluminum decking panel-to-panel per manufacturer.

3 Fasten decking to structural members with #12 SS 316 screws @ 6" O.C.

COLD FORMED STEEL STUDS AND JOISTS

1 Materials (except as noted in drawings):

A All cold-formed members and accessories shall be galvanized, and shall be from same manufacturer as required for compatibility. All materials shall conform to the latest edition of the AISI "Specification for the Design of Cold-Formed Steel Structural Members"

B 16 gauge and heavier: fy = 50,000 psi min

C 18 gauge and lighter: fy = 33,000 psi min

2 Provide shop drawings for all required details which are not shown in manufacturer's catalog or detailed in these drawings. Provide manufacturer's catalog or cut sheets for all components.

3 Framing components may be pre-assembled into panels prior to erecting. Prefabricated panels shall be square, with components attached in a manner as to prevent racking.

4 Plumb, align and securely attach studs to the flange or web of both upper and lower tracks. Bear studs firmly against inside track web before stud and track attachment. Tracks top and bottom one gauge heavier than studs.

5 Multiple studs shall be joined by welds 1" long each edge @ 24" o/c, or by screws #8 @ 24" o/c each edge of web when joined back-to-back.

6 Splices in studs are not permitted. At track splices, butt-weld or splice with overlapping section at least 20" long.

7 Minimum connection of piece-to-piece in all bearing or shear walls is (4) #8 self-drilling self-tapping (SDST) screws or (2) 1" x1/8" fillet welds; place connections symmetrically.

8 Each face of studs shall be braced against rotation and weak-axis buckling by sheathing or by blocking and bridging, as follow:

A Solid blocking between pairs of studs at each wall end or corner and at 8'-0" maximum between, plus 22 ga. X 1" strap bracing between. Vertical spacing between rows shall be the lesser of 4'-0" or one-fourth of the wall height, except that for walls less than 10'-0" high, the spacing need not exceed 4'-0". Space rows evenly.

B Minimum 5/8" GWB sheathing with #8 screws at not more than 12" o/c, plus blocking as in A above, plus strap bracing on any face not sheathed.

9 Welding:

A Conform to the requirements of AWS D1.3-98, Structural Welding Code - Sheet Steel

B All welds shall be flux-cored arc welding process, unless otherwise approved by architect. Use only pre-qualified weld procedures.

C Welding shall be carefully controlled to eliminate burn-through. Burn-through will be cause for rejection of the weld.

D Bring pieces into firm contact before welding.

06100 ROUGH CARPENTRY

1 All wood-framed walls shown on plan are structural walls, and are to be constructed per details on these drawings. Non-bearing walls and partitions are not shown, except as noted.

2 Materials (except as noted in drawings); all are kiln-dried, moisture content not to exceed 19%:

Posts and Beams: Douglas Fir #1

Studs, Sills and Plates: Hem/Fir #2

Sawn Joists: Hem/Fir #1

Blocking and Bridging: Hem/Fir Construction Grade

Commercial Clips: Per the Simpson Strong-Tie Company as called out on plans. Provide full catalog attachment to wood.

Fabricated Connectors: As detailed on plans

Pressure Treatment: Water-borne salts per AWPA LP-2

3 Use pressure treated materials as follows and where indicated on plan:

A Lumber exposed to weather: AWPA C2

B Lumber exposed to or within 6" of soil: AWPA C2

C Lumber against concrete or masonry walls and slabs exposed to weather or soil: AWPA C31

D Plywood where indicated: AWPA C9

E Glued-laminated Timbers where indicated: AWPA C28

4 Provide typical nailing per the IBC where not called out in plans. Unless noted otherwise, all nails are common wire nails.

5 At all exterior applications, and where high moisture levels are present, use galvanized fasteners, and galvanized or similarly protected hardware and fittings.

6 Lag bolts or screws shall be square-head steel bolts with cut threads. Use washers under heads, typical. Pre-drill holes with bit approximately 60% of shank diameter; install bolts by turning, do not hammer into place.

7 Machine bolts shall be ASTM 307 bolts, unless otherwise noted. Use washers under head and nut.

06160 SHEATHING AND STRUCTURAL PANELS

1 Materials (except as noted in drawings):

All structural panel sheathing will be APA Rated Sheathing Exp. 1

A Roof sheathing: T&G edges or pyclicps @ 8"o/c, except where blocked;

Supports @ 48": 23/32" min, Span Rating 48/24, Blocked

Supports @ 32": 19/32" min, Span Rating 40/20, Unblocked

Supports @ 24" or less: 15/32" min, Span Rating 32/16, Unblocked

B Floor sheathing: T&G edges, glue per APA specifications, nail per Table.

Supports @ 24" or less: 23/32" min, Span Rating 48/24, (alternate: APA SturdiFloor, 24" Span)

C Wall sheathing: 15/32" min., Span 24/0

D Panel Adhesive: Per APA AFG-01

2 Nail sheathing per the following minimums, except as shown at shear walls or diaphragms:

at panel edges at intermediate support

Wall Sheathing 8d @ 6" o/c 8d @ 12" o/c

Roof Sheathing 8d @ 6" o/c 8d @ 12" o/c

Floor Sheathing 10d @ 6" o/c 10d @ 10" o/c

Nail roof sheathing at eaves without soffits 6" at all supports.

3 Place all roof and floor sheathing with face grain in direction of span.

4 Place cants or crickets over basic roof sheathing.

5 Sheathing nails into manufactured truss chords shall not be closer than 6" in any row of nails; separate rows by 1/2".

6 Where roof sheathing panels are less than 24" wide, but greater than 12", edges must be blocked. Adjust panel cutting to avoid pieces less than 12".

06190 MANUFACTURED WOOD TRUSSES

1 Design, supply and install a complete manufactured truss roof framing system as shown on the drawings, including, but not limited to:

-Typical Trusses
-Collector, Gable, and Header Trusses
-Connectors between trusses
-All erection hardware, braces, and blocking

2 Design for all live loads and dead loads shown on drawings, in conformance with the IBC and the appropriate Standards of the Truss Plate Institute. The IBC governs over Truss Plate Institute Standards in the case of any conflicts.

3 Submit design calculations and shop drawings sealed by a Washington State registered Structural Engineer.

4 Where sizes of supporting wood plates are shown on the drawings, they govern and shall not be changed by the truss design engineer in order to accommodate the bearing requirements for the truss(es). Submittal that show notations indicating that plate sizes need to be changed shall be rejected, and the truss manufacturer shall resubmit in accordance with the design.

5 Truss nail-plates shall be galvanized or of corrosion resistant material not less than 36 mil coated thickness. Design of truss nail-plate connections shall conform to the Design Specification for Metal Plate Connected Wood Trusses, by the Truss Plate Institute.

4 Truss profiles shown on plan are for outline configuration only. Determine differences in vertical loading and support conditions at various locations, based on information given on plans, and design the structure of each truss accordingly.

5 Coordinate with the mechanical contractor for mechanical equipment loads and support conditions.

6 Provide all temporary and permanent bracing as required for safe erection and performance of the trusses. Truss Plate Institute guidelines "Commentary and Recommendations for Handling, Installing and Bracing Metal Plate Connected Wood Trusses shall be a minimum standard. Replace or repair any trusses damaged by mishandling or temporary lateral buckling.



BID SET



CITY OF FERNDAL, WA

DATE
12-13-2019

SHEET
S3.02

FERNDAL WASHINGTON
FERNDAL WASTEWATER TREATMENT PLANT UPGRADE

SCALE
AS SHOWN

PAGE
169 of 310

FERNDAL
FERNDAL WASTEWATER TREATMENT PLANT UPGRADE

JOB NUMBER
2016-145

STRUCTURAL NOTES

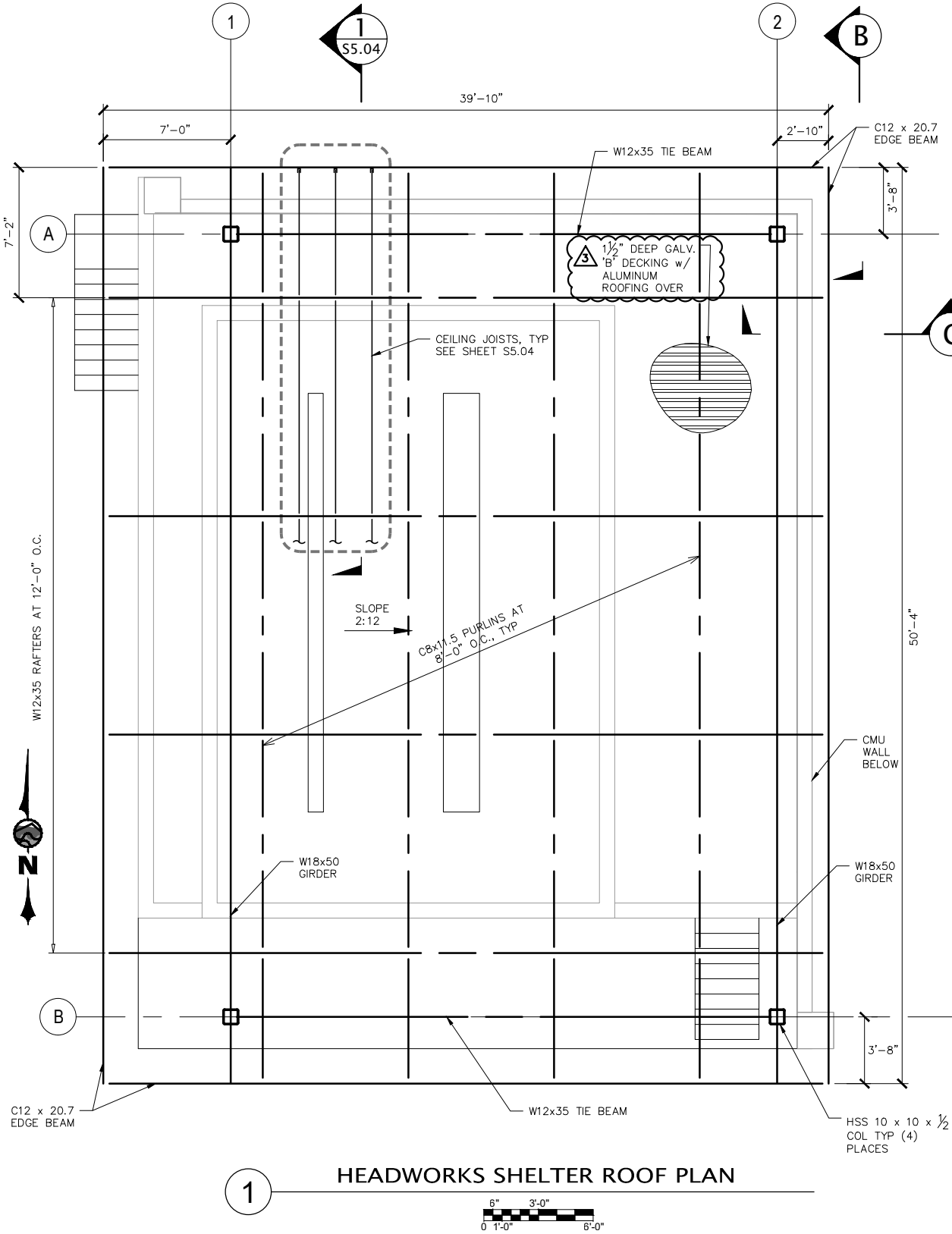
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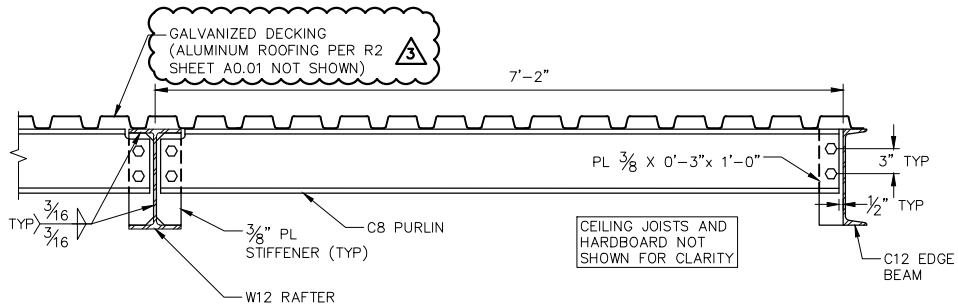
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3	ADDENDUM #2	CBW	12-20-19

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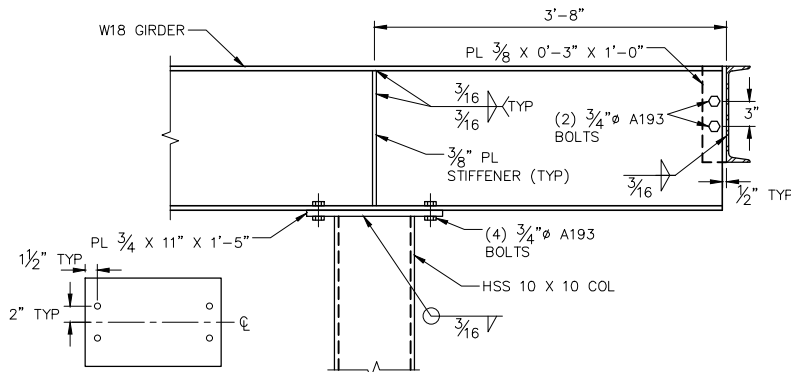
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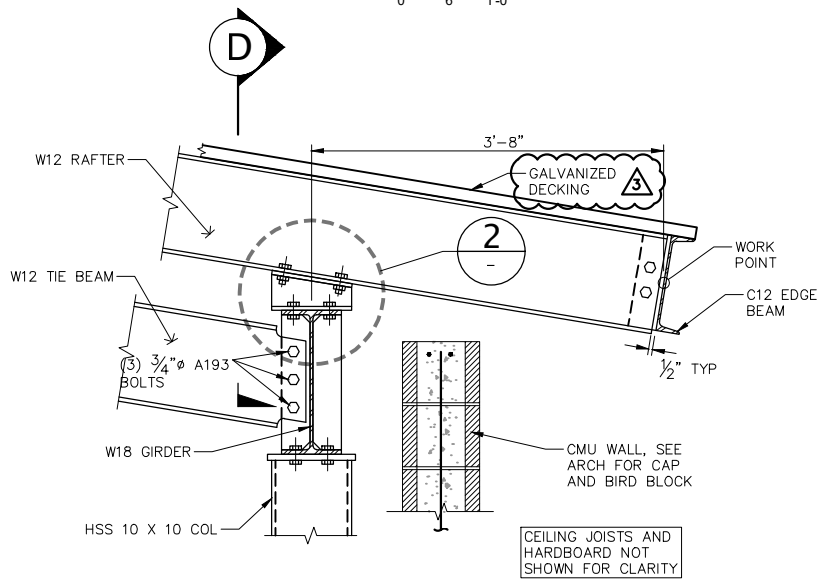
HEADWORKS SHELTER ROOF PLAN



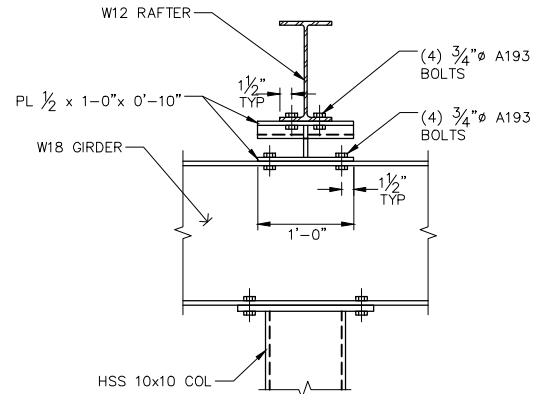
SECTION A - C8 PURLIN TO W12 RAFTER



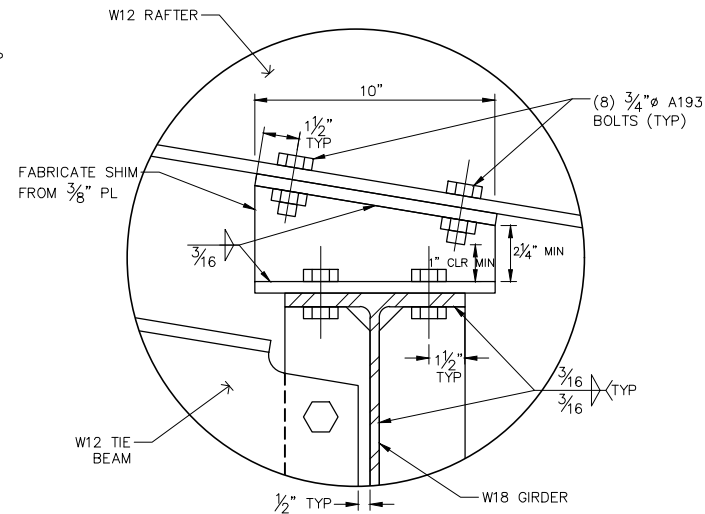
SECTION B - HSS10 TO W18 & C12



SECTION C - HSS COL TO RAFTER & TIE BEAM



SECTION D - W18 GIRDER TO W12 RAFTER



W18 TO W12 SHIM DETAIL

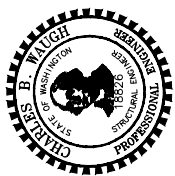
NOTES:

- SEE NOTES ON SHEET S5.01.
- ALL FASTENERS SHALL BE 316 SS.

VERIFY ALL DIMENSIONS
AND ELEVATIONS WITH
ARCH AND MECH



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CITY OF FERNDAL, WA

WASHINGTON

FERNDAL

FERNDAL WASTEWATER TREATMENT PLANT UPGRADE

HEADWORKS SHELTER

ROOF PLAN & DETAILS

DATE

12-13-2019

SHEET

S5.03

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PAGE

175 of 310

JOB NUMBER

2016-145

DESIGNED BY

JCC/SJW

DRAWN BY

RDN/JCS

CHECKED BY

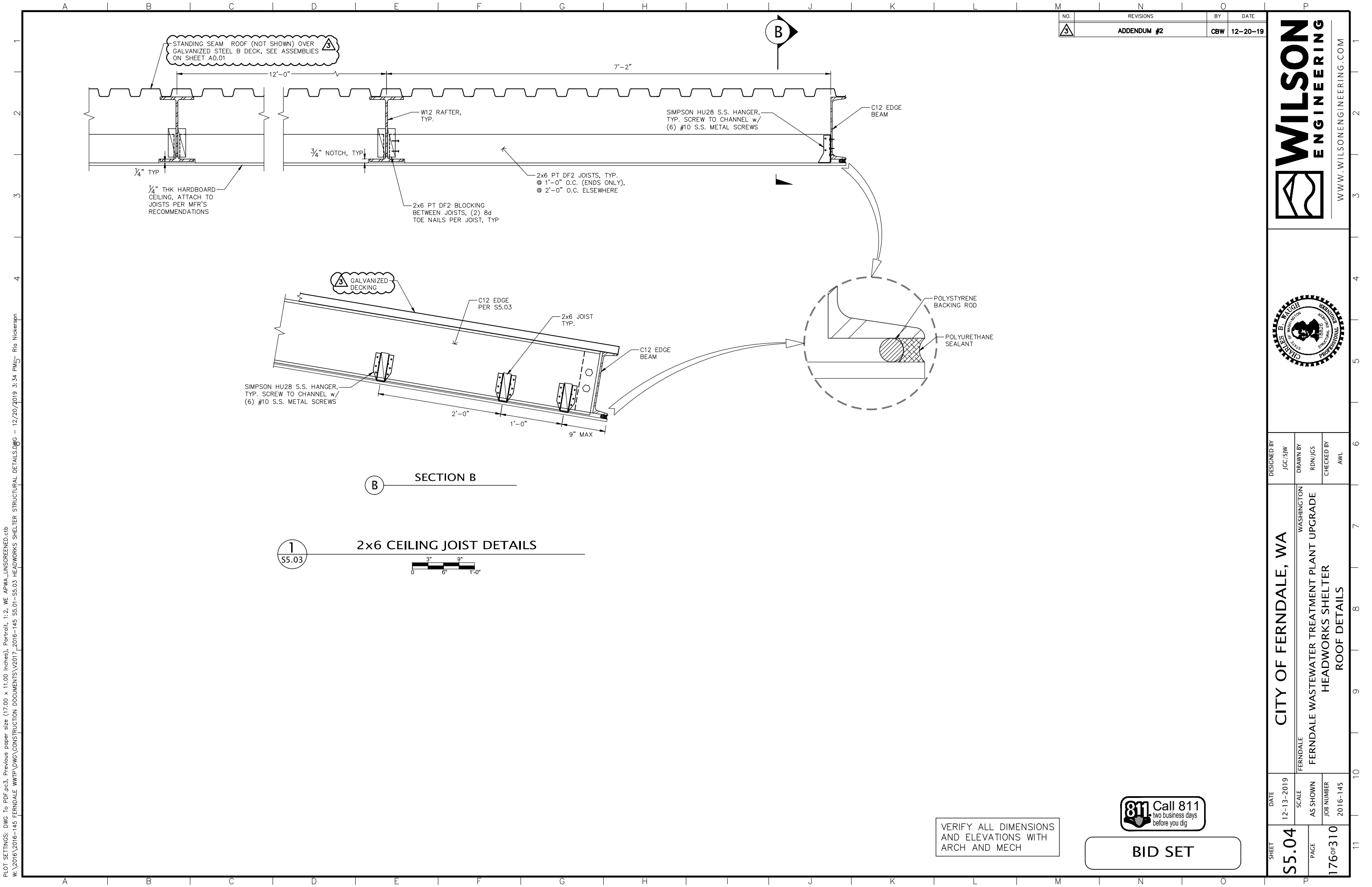
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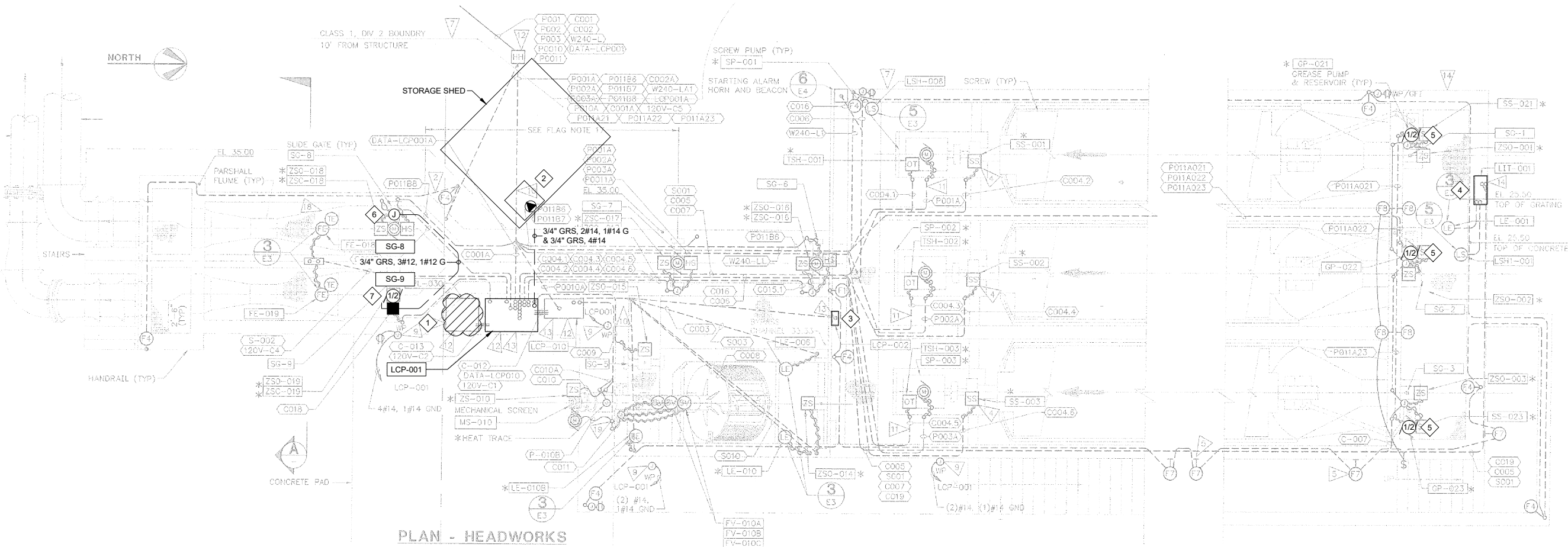
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SHEET	DATE	CITY OF FERDALE, WA	
		FERDALE	WASHINGTON
PAGE	SCALE	FERDALE WASTEWATER TREATMENT PLANT UPGRADE	
		HEADWORKS SHELTER ROOF DETAILS	
176 of 310	JOB NUMBER	2016-145	

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EXISTING HEADWORKS ELECTRICAL PLAN
SCALE: NONE

GENERAL NOTES:

1. ALL CONDUIT ROUTING IS NOT SHOWN. ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST ROUTING PATH AND CIRCUIT COMBINATIONS BASED ON FIELD CONDITIONS AND ELECTRICAL CODES.
2. CONDUCTOR AND CONDUIT SIZING SHALL BE AS REQUIRED BY NEC.
3. EQUIPMENT LOCATIONS AND ARRANGEMENT ARE SCHEMATIC. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER FOR DETAILED CONNECTION REQUIREMENTS AND PROVIDE MATERIALS AND INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.

KEY NOTES:

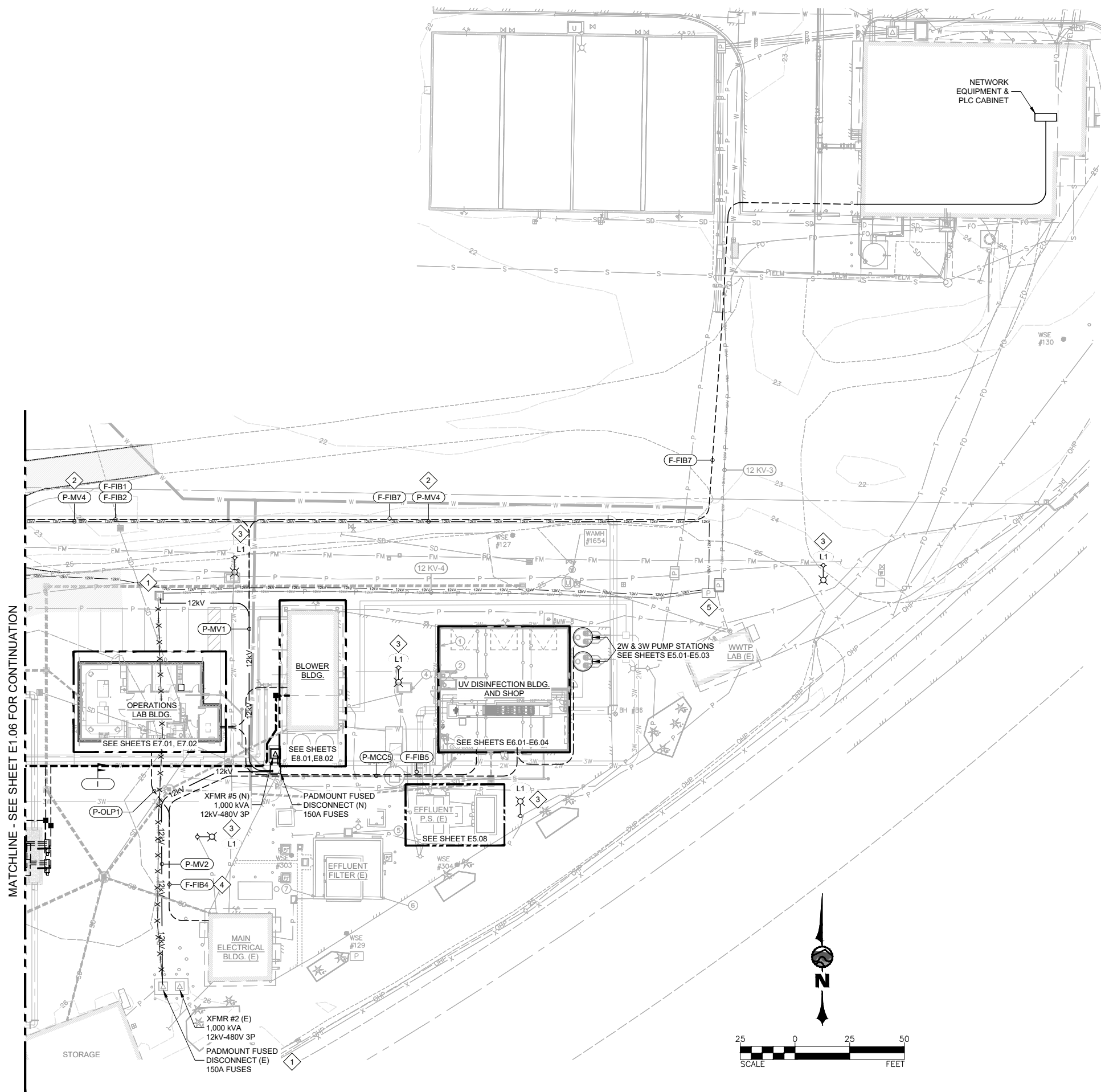
- 1 DEMOLISH EXISTING INFLUENT SAMPLER AND ALL ASSOCIATED CONDUITS AND CONDUCTORS.
- 2 PROVIDE NEW INFLUENT SAMPLER IN EXISTING STORAGE SHED. FIELD COORDINATE LOCATION WITH OWNER. NEW INFLUENT SAMPLER SHALL BE RE-CONNECTED TO THE EXISTING SAMPLER POWER AND CONTROL CIRCUITS IN LCP-001.
- 3 DEMOLISH AND REMOVE EXISTING LCP-002 SCREW PUMPS CONTROL PANEL. PROVIDE NEW NEMA 4X STAINLESS STEEL PANEL TO MATCH EXISTING AND RE-CONNECT TO EXISTING CIRCUITS.
- 4 DEMOLISH AND REMOVE EXISTING WETWELL LEVEL PANEL LT-001. PROVIDE NEW NEMA 4X STAINLESS STEEL PANEL TO MATCH EXISTING AND RE-CONNECT TO EXISTING CIRCUITS. CONTRACTOR SHALL RE-LOCATE EXISTING LEVEL TRANSMITTER TO NEW PANEL.
- 5 DEMOLISH AND REMOVE EXISTING GREASE PUMPS. PROVIDE NEW GREASE PUMPS AND RE-CONNECT TO EXISTING CIRCUITS.
- 6 CONTRACTOR SHALL INTERCEPT EXISTING SG-8 POWER CONDUIT AND INSTALL A NEW JUNCTION BOX. RE-CONNECT THE EXISTING WHIP TO SG-8 AND INSTALL NEW POWER CONDUIT AND CONDUCTORS TO SG-9.
- 7 CONTRACTOR SHALL PROVIDE NEW GATE ACTUATOR FOR SG-9 AND A NEW HAND SWITCH TO MATCH EXISTING ON SG-8. PROVIDE 5#14 AWG CONDUCTORS IN EXISTING CONTROL CONDUIT FOR THE NEW HAND SWITCH AND TERMINATE ON SPARE I/O IN LCP-001.



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SHEET E1.06A	DATE 12-20-2019	CITY OF FERNDALE, WA FERNDALE WASHINGTON FERNDALE WASTEWATER TREATMENT PLANT UPGRADE EXISTING HEADWORKS ELECTRICAL PLAN	DESIGNED BY BZ	WILSON ENGINEERING www.wilsonengineering.com
	SCALE AS SHOWN		DRAWN BY MM	
	JOB NUMBER 2016-145		CHECKED BY MM	
	PAGE OF			

PLOT SETTINGS: DWG To PDF.pc3, ANSI full bleed B (17.00 x 11.00 inches), Portrait, 1/2" WF, AFWA, UNSCREENED.ctb
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WASTEWATER TREATMENT PLANT FACILITIES SITE PLAN
SCALE: 1" = 25'

GENERAL NOTES:

1. ALL CONDUIT ROUTING IS NOT SHOWN. ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST ROUTING PATH AND CIRCUIT COMBINATIONS BASED ON FIELD CONDITIONS AND ELECTRICAL CODES.
2. CONDUCTOR AND CONDUIT SIZING SHALL BE AS REQUIRED BY NEC.
3. EQUIPMENT LOCATIONS AND ARRANGEMENT ARE SCHEMATIC. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER FOR DETAILED CONNECTION REQUIREMENTS AND PROVIDE MATERIALS AND INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.

KEY NOTES:

1. ROUTE NEW PRIMARY CABLE AROUND THE NEW LAB BUILDING'S CONSTRUCTION AREA. SPLICE THE NEW PRIMARY CABLE TO THE EXISTING CABLE IN THE EXISTING VAULT AND TERMINATE THE NEW PRIMARY CABLE WITH STRESS CONES IN THE EXISTING PADMOUNT FUSED DISCONNECT.
2. PROVIDE NEW PRIMARY CABLE AND ROUTE AROUND THE NEW NORTH CLARIFIER CONSTRUCTION AREA. TERMINATE NEW PRIMARY CABLE WITH LOAD BREAK ELBOWS IN EXISTING TRANSFORMER 'XFMR-3'.
3. CONTRACTOR SHALL PROVIDE NEW LIGHT FIXTURE ON EXISTING POLE. CONTRACTOR SHALL REMOVE EXISTING POLE FROM ITS BASE AND CONFIRM LIGHT FIXTURE MOUNTING REQUIREMENTS PRIOR TO ORDERING NEW LIGHT FIXTURES. SEE SHEET E1.05 FOR LIGHTING SCHEDULE.
4. SEE SHEETS E9.03 & E9.04 FOR NETWORK CONNECTION DETAILS.
5. DISCONNECT EXISTING PRIMARY CONDUCTORS FROM THE EXISTING 15KV LOAD BREAK JUNCTIONS IN VAULT. TERMINATE NEW PRIMARY CONDUCTORS WITH LOAD BREAK ELBOWS ON THE EXISTING 15KV LOAD BREAK JUNCTIONS.


CONSTRUCTION NOTES:

- OPERATIONS LAB BUILDING:**
1. CONSTRUCTION IN THIS AREA INTERFERES WITH THE MAIN ELECTRICAL BUILDING'S MEDIUM VOLTAGE FEEDER. PROVIDE NEW CONDUIT AND CONDUCTORS AND ROUTE AROUND THE NEW OPERATIONS BUILDING CONSTRUCTION AREA TO REFEED 'XFMR-2'.
- BLOWER BUILDING:**
1. THE BLOWER BUILDING IS THE PROPOSED CONVERSION OF THE EXISTING 'CHEMICAL STORAGE BUILDING' REPURPOSED TO HOUSE THE (6) SIX BLOWERS REQUIRED FOR THE BIOLAC AERATION BASINS.
- UV DISINFECTION BUILDING:**
1. THE UV DISINFECTION BUILDING IS THE PROPOSED CONVERSION OF THE EXISTING 'DECHLORINIZATION CHAMBER'.
- EFFLUENT PUMP STATION:**
1. THE EFFLUENT PUMP STATION WILL ADD AN ADDITIONAL PUMP TO THE EXISTING EFFLUENT WET WELL.
- 2W/3W PUMP STATIONS:**
1. NEW PLANT WATER PUMP STATIONS.



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	DRAWN BY MM		FERNDAL E		SCALE AS SHOWN	PAGE
	CHECKED BY MM		WASHINGTON		JOB NUMBER 2016-145	
			FERNDAL E WASTEWATER TREATMENT PLANT UPGRADE PLANT FACILITIES SITE PLAN			237 of 310

2. Checkout Procedure

- a. Bolt the upper bearing and the lower bearing housing assembly to the screwbody.
- b. With the screw assembly on the ground, check bolt connections with a calibrated torque wrench, Figure D1. The Drawings section has a chart with the torque values required at these connections.

NOTE: The torque tube ends of the spiral are machined on centers. Handle assembly carefully. Damage can be determined by the use of dial indicators. Warranty will be affected if field handling damages the screwbody.

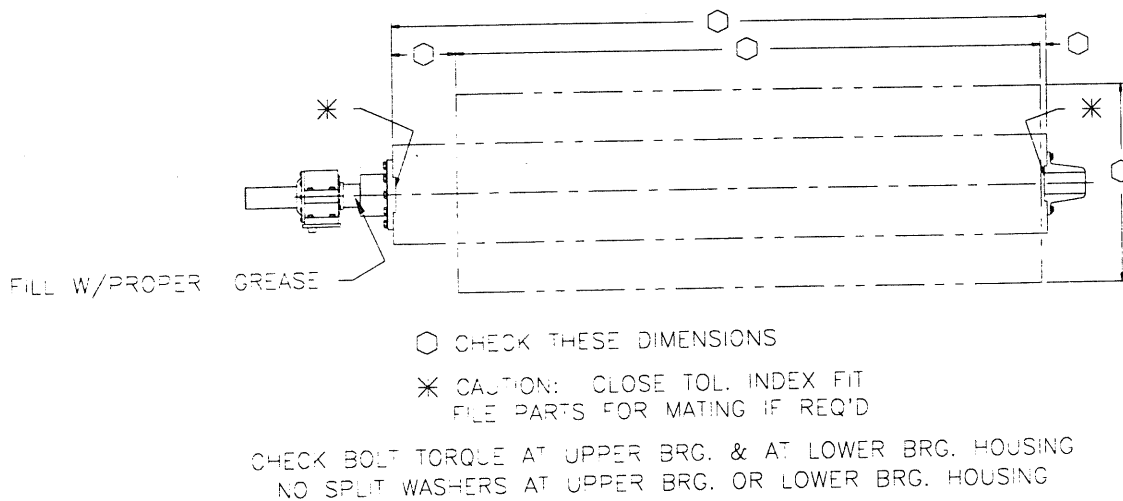


Figure D1

- c. Install the anchor bolts to the lower bearing stand. Do not tighten the anchor bolt nuts at this time. Place the lower bearing stand assembly into the grout pockets, Figure D2. Clean the inside well of the lower bearing of dirt, sand, or grit. Hand pack with clean grease just before pump installation. Refer to the lubrication instructions for type of grease. Keep clean until covered by the lower bearing housing.

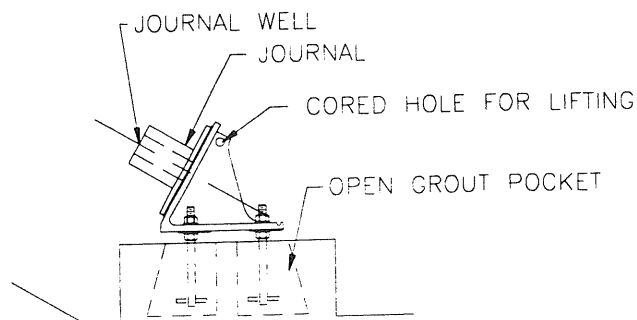


Figure D2

Remove the lower bearing cover for future assembly, Figure D3.



Figure D3

CAUTION: No personnel are to be stationed at the lower bearing area or in a position to be injured if the supporting cables or pump lifting lugs break during the next step.

3. Screw and Bearing Installation

NOTE: Direct sunlight and high ambient temperatures cause expansion and/or deflection of the equipment. Perform alignment activities in the morning, since the equipment will have cooled off overnight. Clean cooling water and a means of applying it to the length of the screw pump are required during alignment work.

- a. Use two cranes or other means which will not damage the flights or bend the torque tube to lower the screw assembly into the trough, Figure D4. When the pump is about 1' from the trough, secure the upper bearing plate to the gearbox base with a strong chain to prevent the screw pump from sliding onto personnel stationed at the lower bearing.

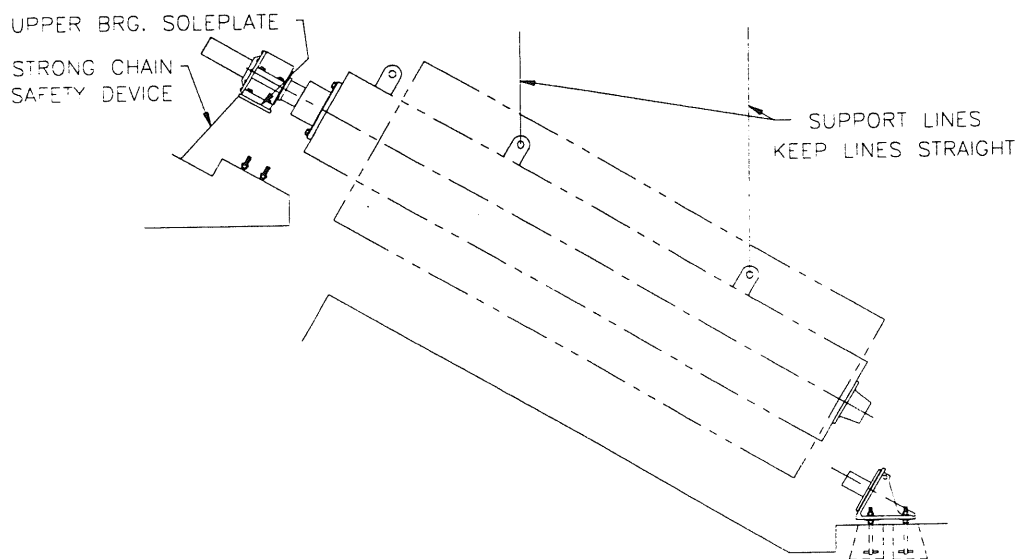


Figure D4

- b. Locate a man in the lower and upper bearing areas. Place the upper bearing soleplate over the anchor bolts. Guide the lower bearing journal into the bronze bushing in the lower bearing housing bolted to the screw. Move the screw and lower bearing stand to dimensions on the "07" drawing, Figure D5.

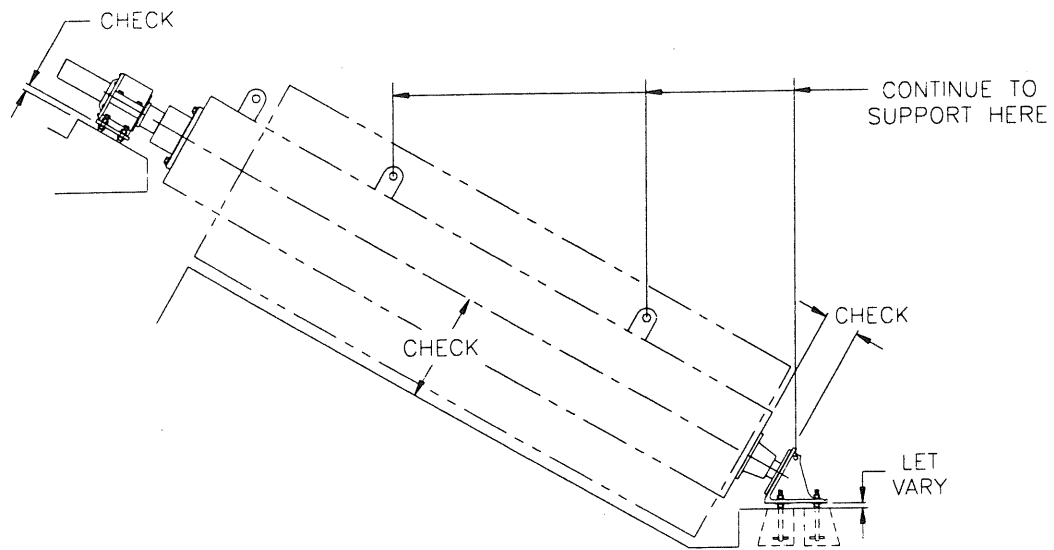


Figure D5

- c. Shim under the bottom flights. Rest the screw on the shims. Install a temporary brace against the bottom of the screw. Check dimensions shown in Figure D6.

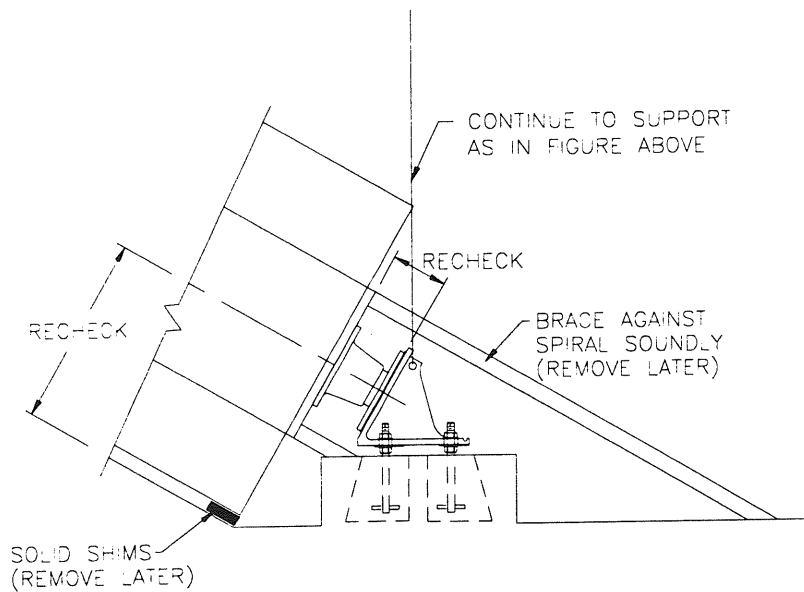


Figure D6

- d. Position the upper bearing, Figure D7. Shim and tighten the anchor bolts.

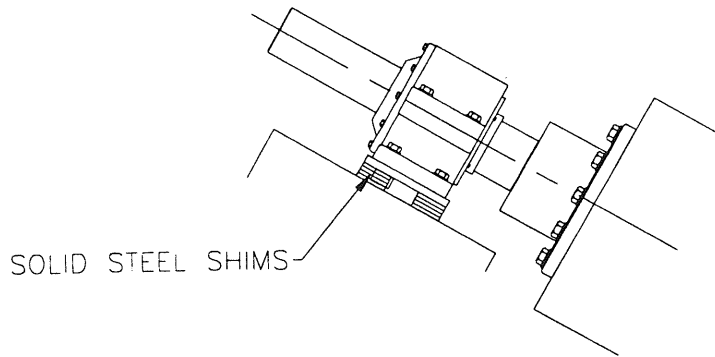


Figure D7

- e. After the lower end of the screw is blocked and shimmed, remove the support line from the top end of the screw.
- f. If dimensions are in accordance with the "07" drawing, shim the lower bearing soleplate. Place nuts over anchor bolts and tighten.
- g. Do not grout before inspection. Grout between the upper bearing soleplate and concrete. Supporting pad grout must set up before grouting trough.
- h. With the upper bearing grouted in its position, move the lower bearing journal to the dimension shown on the "07" drawing, Figure D8. Remove the braces at the bottom of the screw but not the shims.

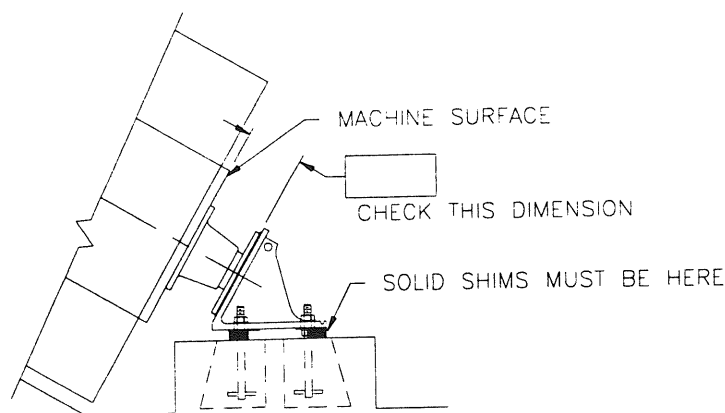


Figure D8

- i. The lower bearing is a sleeve bearing. Align with careful shimming. Wedge shims between the concrete and the lower bearing stand until the anchor bolt nuts can be tightened without moving the lower bearing stand. Tighten the anchor bolt nuts. Brace the stand so it cannot move.

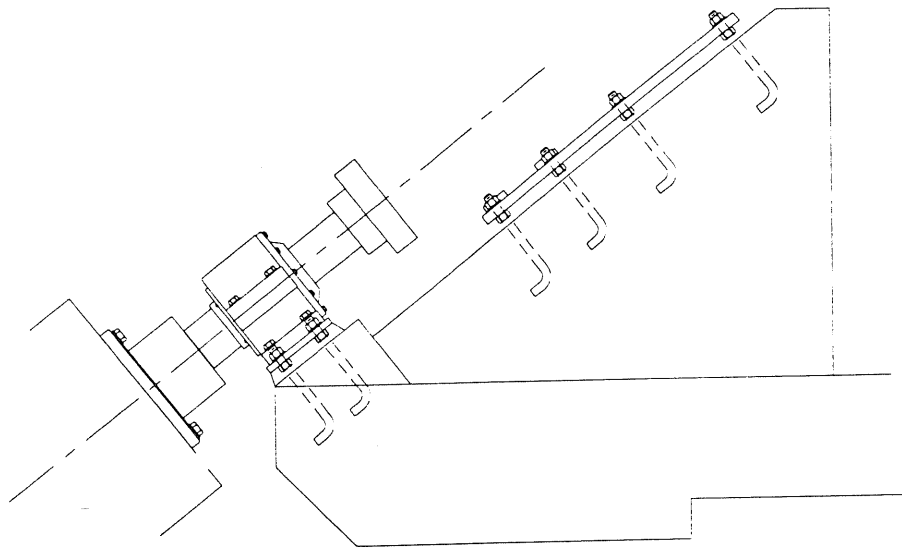
- j. Remove the shims between the screw and the concrete. Remove set screws in the upper bearing shipping collar. Rotate the screw by hand. If the screw does not rotate by hand, block up the screw and repeat step "i" using dial indicators against the journal.
- k. Step "j" complete, grout the lower bearing stand.

4. Gearbox Mounting Procedure Foot-Mounted Gearboxes - Belt Driven

Review the coupling, gearbox and motor manufacturer manuals found in the Vendor Literature and U.S. Filter/Zimpro's drawings before proceeding with installation.

NOTE: Direct sunlight and high ambient temperatures cause expansion and/or deflection of the equipment. Perform alignment activities in the morning, since the equipment will have cooled off overnight. Clean cooling water and a means of applying it to the length of the screw pump are required during alignment work.

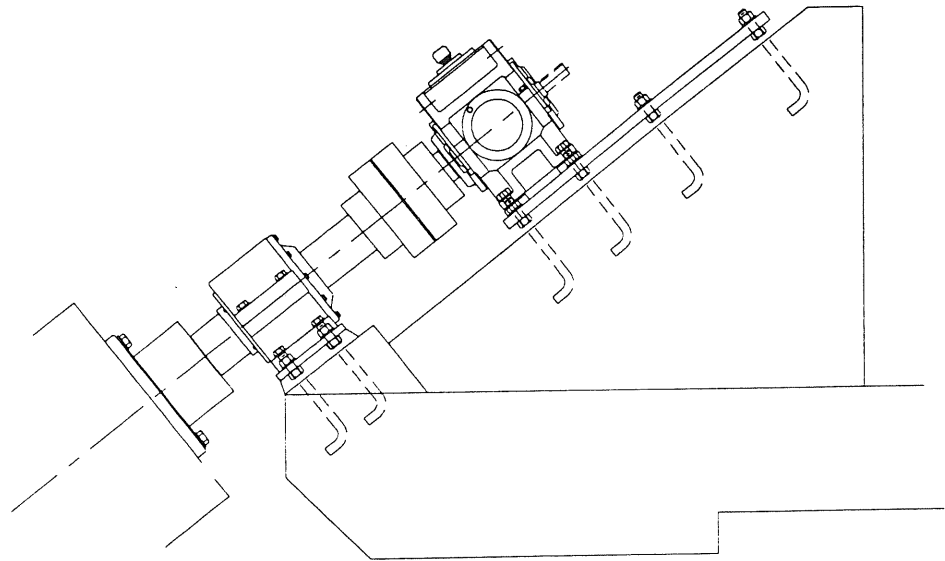
- a. Clean debris (i.e., rust, concrete) from the anchor bolt threads. Apply an anti-seize compound to the threads. Place one nut and one washer on each anchor bolt. The top of the washers are to be approximately 2" from the concrete surface.
- b. Clean foreign material (i.e., corrosion protection, sand, rust) off the motor/gearbox soleplate.
- c. Place the motor/gearbox soleplate over the anchor bolts on the concrete pad. Level the soleplate to the dimensions on the "07" drawing, using the lower anchor bolt nuts.



CAUTION: DO NOT GROUT THE SOLEPLATE AT THIS TIME.

- d. Clean the upper bearing shaft extension, keyway and key and the mating coupling half of corrosion protection material. Check the shaft and coupling on upper bearing and gearbox (input and output shafts) for nicks, scratches or other surface irregularities. Dress-up as necessary.
- e. Clean the gearbox/motor soleplate. Clean the tapped holes in the soleplate(s) and apply an anti-seize compound.

- f. Place solid shim stock 1/8" thick at each bolt location on the gearbox's soleplate.
- g. Take required safety precautions and measures to avoid equipment damage. Lower the gearbox onto its soleplate. Make sure the shim stock is in place. Apply an anti-seize compound to bolts and fasten gearbox to its soleplate.
- h.. Slowly back off on each of the anchor bolt nuts to uniformly lower the gearbox/motor soleplate until the gearbox's output shaft coupling half and the screw pump's upper bearing coupling half come into alignment.



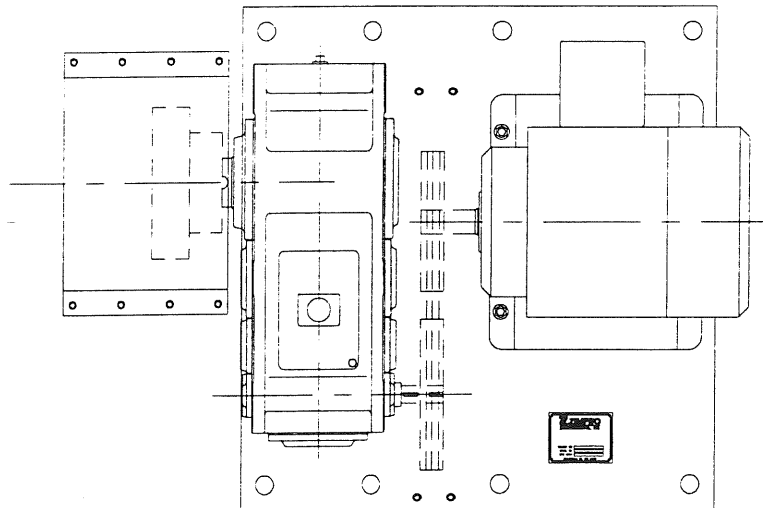
- i. Use jack screws to align the gearbox's output shaft coupling half to the upper bearing's shaft coupling half, in the vertical plane (side-to-side) only.
- j. Clean the underside of the drive motor's feet and the entire motor slidebase. Clean the motor's shaft of corrosion protection material and dress-up any nicks, scratches and any surface blemishes. Apply an anti-seize compound to the motor's slide base screws
- k. Lower the motor onto its soleplate. Take required safety precautions and measures to avoid equipment damage.
- l. Perform a "rough alignment" of the motor's shaft to the gearbox's shaft using the slide base. Temporarily fasten the motor in place.
- m. Use jack screws and anchor bolt nuts to align the gearbox to the upper bearing's shaft and achieve the coupling gap dimension and the other requirements outlined in the coupling manufacturer's literature.
- n. Complete the final alignment of the motor to the gearbox's input shaft using the motor slidebase.

CAUTION: DO NOT connect the motor to the gearbox at this time. Direction of rotation of the motor must be absolutely verified before the coupling connection is made. Severe damage to the gearbox's backstop and/or internal mechanisms could result.

- o. Wedge solid steel shims between the concrete pad and soleplate so that tightening the nuts at the upper anchor bolts does not change alignment. Tighten nuts at anchor bolts to secure alignment.
- p. Grout in the soleplate when alignment is correct.

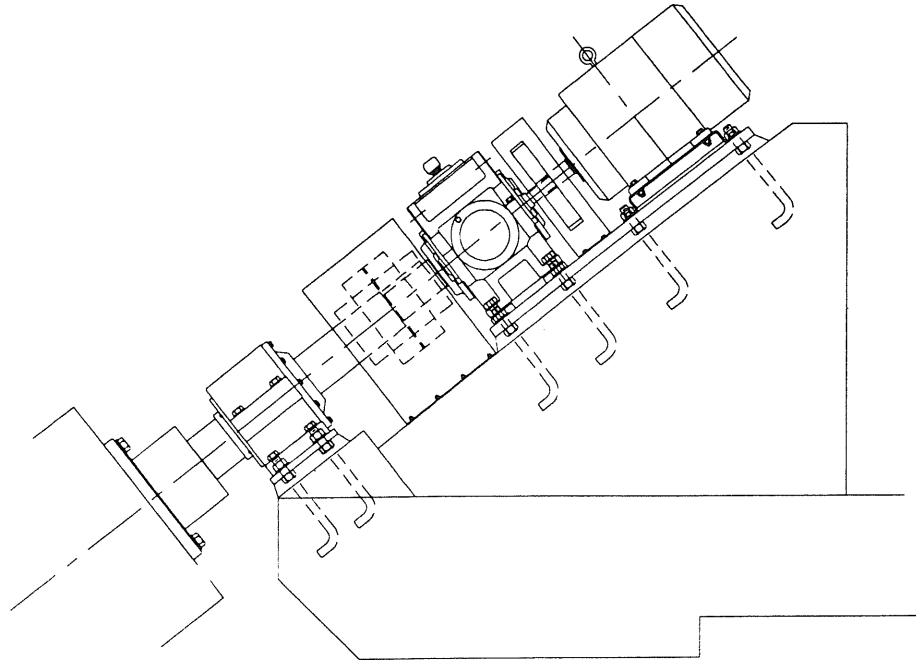
NOTE: U.S. Filter/Zimpro reserves the right to require grout removal if alignment is not satisfactory. U.S. Filter/Zimpro field personnel will verify alignment prior to start-up. If equipment is placed into operation prior to final checkout by U.S. Filter/Zimpro, equipment warranty is subject to cancellation. Request check-out services at least four (4) weeks in advance to schedule personnel.

- q. Verify that proper lubrication and lubrication levels for motors, couplings, gearboxes, and the upper and lower bearings.
- r. Install belts and sheaves per manufacturer's recommendations. Shafts to be parallel and sheaves properly aligned. Do not drive sheaves on or off of the shafts. Shafts and keyways to be smooth. Verify size of bore and key. Never force the belts over the sheaves -- decrease center distance using motor slide base, install belts, then increase to tighten. Keep belts clean. Use no belt dressing. Check after eight hours of operation. If belts slip, clean with cloth dampened with gasoline and readjust belt tension. Inspect all drives periodically to be sure belts are properly tensioned and are not slipping.



- s. Remove the drive motor. Install the temporary motor to be used for grouting the trough.

- t. After the trough is grouted, remove the temporary grouting motor. Re-install the drive motor, belts and sheaves. Perform final alignment. Install dowels to hold the motor in place.
- u. Connect all guards for personal safety.



5. Attachment of Screed Rods

These instructions are a guide only. U.S. Filter/Zimpro is not responsible for grouting. The contractor is responsible for all concrete and grouting and for temporary mounting of screed rods, motor belts and sheaves used for grouting. Grouting equipment is loaned to the contractor if the contract specifies.

- a. Three screed rods are required for three flight pumps.
- b. Run screed rods the entire length of the flights (tip to tip). Take the shortest route from tip to tip; disregard pump rotation.
- c. Screed rods must be straight and "level" between flights, no sags or concave spans allowed.
- d. Tack weld screed rods to each flight. See Figure D10.

NOTE: Attach ground to screw. Do not attach grounding cable to upper bearing. Current passing through the bearing can cause the bearing races and roller to be pitted from the weld arc.

- e. Clearance gap between the screw and the finished grout to be even the entire length of the spiral per Table I.

Table I

Pump O.D.	Maximum Gap
36" thru 84"	1/4"

- f. Grout finish at the upper end of the screw is critical. Poor finishing diminishes the pump capacity.

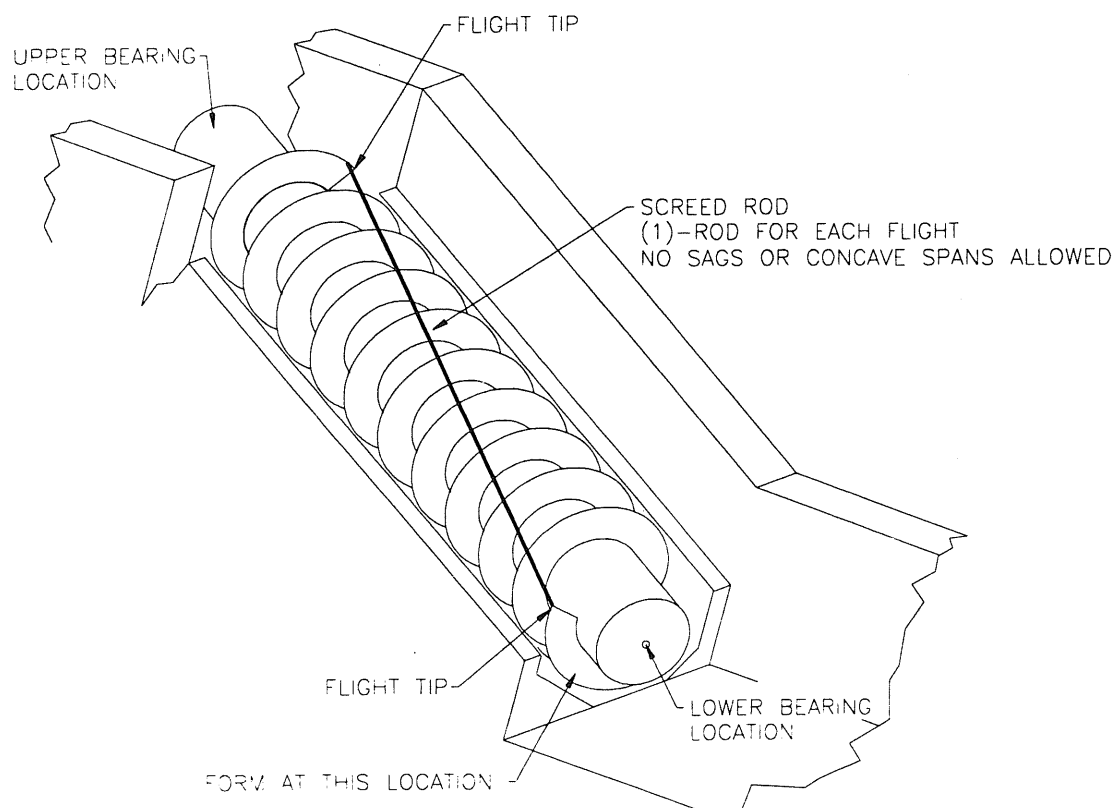


Figure 10

6. Deflector Installation

- a. Adjust the gap between deflector and pump flights per Table I.
- b. Place deflectors over the anchor bolts, position, and then grout.
- c. Drill holes in side walls of troughs for the anchors which will secure the Adjustment Strap and Angle Clip to Wall per the adhesive manufacturer's directions. Allow adhesive to cure.
- d. Attach the Angle Clip to Wall and the Splice Plate to the deflector section(s). Secure the Adjustment Strap to the Angle Clip to Wall and the Splice Plate such that the gap between the deflector and pump flights is per Table I. Caulk between the deflectors to prevent water loss.

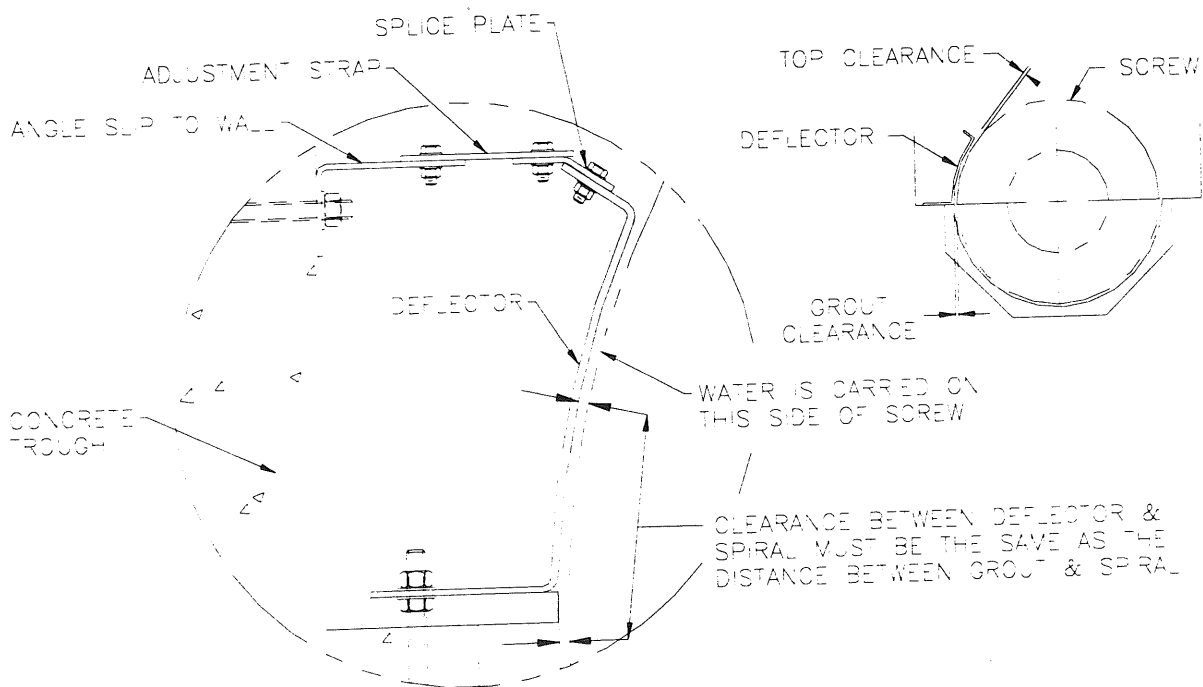


Figure D12

7. Lubrication System Installation (Lower Bearing)

- a. Anchor the motorized grease lubricator, Figure D13.

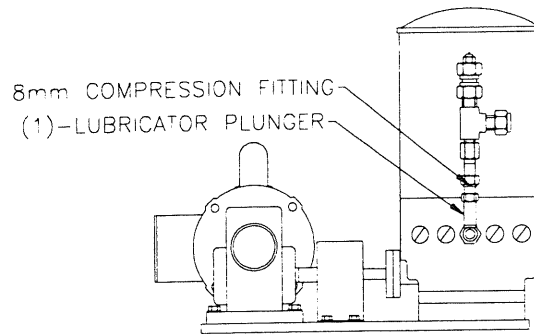


Figure D13

- b. A drawing in the manual lists parts for the grease line. Start installation at the lower bearing. Lines to be $1\frac{1}{2}$ " minimum radius with no creases.
- c. Protect submerged lines at lower bearing area with angle, etc. (by contractor).
- d. Fill the lubricator grease reservoir with proper grease.
- e. Totally fill the lower bearing. Use a grease gun at the grease fitting at the lubricator to fill the line until grease appears at the lower bearing exit, Figure D14.

NOTE: The lower bearing grease acts as a continuous seal and prevents the entrance of sand, glass, iron, etc., into the bronze bushing.

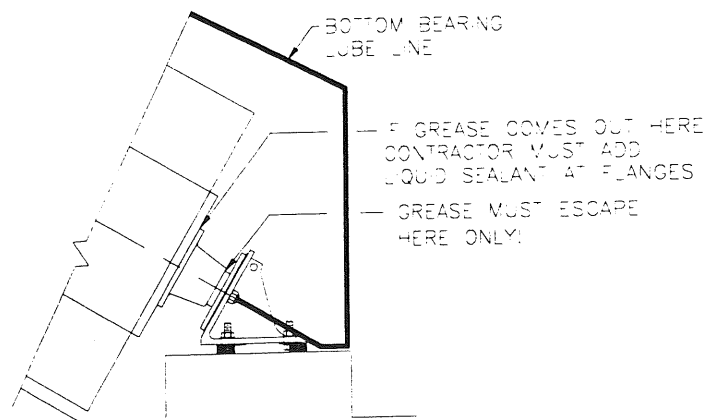


Figure D14

- f. Confirm that grease flows through the system and out the lower bearing.
- g. Place the split cover over the lower bearing.

8. Suggested Grouting of Trough

NOTE: Information about grout and grouting methods are suggestions only. U.S. Filter/Zimpro is not responsible for failures or defects related to grouting. U.S. Filter/Zimpro reserves the right to require partial or complete removal of grout which may affect equipment operation. The contractor must refer to the grouting section of the contract specifications for methods and materials to be used.

- a. Arrange the temporary drive for pump grouting. Make sure the gearbox has the proper operating oil. Attach screed rods to the pump. Make a simple form at the lower end of the screw to keep the grout from sliding away from the rotating screw. Do not allow grout to build up in this area.
- b. Take care when adding water to the grout mixture. If the grout is too loose, it won't have time to bond with the concrete before running down the trough.
NOTE: All grouted surfaces are to have a rough finish and be wet down so that the grout will bond. See table below for grouting speeds.

PUMP DIAMETER	GROUTING RPM
Over 66" – Including 84"	5 – 18

- c. Feed the grout in starting at the lower end of the screw. Start with relatively dry grout mixture with 3/4" 1 1/2" slump. When the screw starts pulling the grout up the trough, stop adding water. Add grout at 7 to 10 foot intervals up the screw, add water only if required. A light water spray on screw during grouting helps to keep the screw clean.
- d. Handpack grout only when the screw is locked out. If the side walls maintain the screeded contour with few cavities, handpack after the original grout has set. Pack all cavities. Run the screw allowing screeds to "finish" the handpacked surface until grout is set.
- e. Grouting troughs is a slow process. Do not grout if weather conditions are poor. Clearance between flights and the trough is more important than the surface texture, except for large cavities or cracks.
- f. When the entire screw is grouted, turn the screw off and lock it out. Clean chunks of grout off screw. Restart screw and run until the grout is set.
- g. Remove the screed rods after grout is set. Grind weld beads flush with flights. Run the screw, check for scraping and/or binding.
- h. Schedule a start-up trip (if included in contract) with U.S. Filter/Zimpro's Field Service Department to place units into operation after screws are grouted.
- i. For screws finish painted on site, refer to paint supplier for surface preparation methods for finish painting.