



WASHINGTON STATE
UNIVERSITY

Addendum No. 2
March 29, 2023

WSU Sunrise Orchard Irrigation Line and Pond
Washington State University
Wenatchee, WA

Project No. 1262-2020
Washington State University
Facilities Services, Capital

Addendum No. 2
3/29/2023

WSU Sunrise Orchard Irrigation Line and Pond
Washington State University
Wenatchee, WA

Bid Date: April 5, 2023

1. This Addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated February 9, 2023, and any prior addenda, as noted below.
2. Please acknowledge receipt of this addendum on the Form of Proposal.

This Addendum consists of 36 total pages including the following Attachments:

SECTION 26 27 00 – Service and Metering
Drawing C-320 – Pond Site Plan
Drawing C-350 – Irrigation Pond Details – 1
DCPUD 3-Phase Guidelines

Changes to prior Addenda:

None

Changes to Bidding Requirements:

None

Changes to Specifications:

SP 1-1. SECTION 26 05 00 – Electrical General Requirements.

Item 1. Delete: Paragraph 1.03 and replace with the following:

1.03 PROJECT DESCRIPTION

A. General

In general, the project shall consist of all electrical construction required to make a complete and fully operational system. The following is a general description of the work anticipated to be provided by the Electrical Contractor:

1. Provide new 600 amp electrical service equipment per Specification 26 27 00.
2. Provide new power distribution including feeders, branch circuits, panels, disconnects, Secondary CT enclosure, transformer pad and other equipment.
3. Provide transformer and panel for 240v single phase shore power, 200amp service, along with 240 and 120 outlets and new exterior lighting systems for pump area. Power to pump controls and meters and required.
4. Provide power and control connections for all pump equipment required for the project.

5. Mitchell Lewis Staver 100 HP x 100 HP x 20 HP 3 phase tri-plex VFD pump control panel free standing on legs or similar. Features listed on plans
6. Additional electrical work not shown on the drawings and specifications yet required by Washington state electrical code, Douglas County PUD, or manufacturer requirements.
7. 4-3" and 1-2" conduit from the Douglas County PUD new pole to the transformer which PUD is estimating at ≈ 400 feet.

SP 1-2. SECTION 26 27 00 – Service and Metering

Item 1. Replace section in its entirety with attached section dated 3/28/2023

Bidder Questions:

Q 1. PRV – Is there a specific vault requirement for that item?

WSU Response: PRV we are assuming stands for Pressure Relief or Reducer Valve. There is no vault required for either on this portion of the project. Would be above ground as required for work on this project.

Q 2. I visited the job site yesterday and noticed there are four PCV pipes with caps sticking up vertically within the area the pond goes. Not sure if they are of any consequence or not. I don't see them on the plan sheets.

WSU Response: The PVC pipes/caps sticking up out of the ground are the viewing holes for the existing septic leach field. The septic is outside of the proposed pond location. Contractors are to protect this area from damage and refrain from conducting any activities in or immediately around all septic structures. There should be ample room between the septic structure and the border for the new berm at the pond. Refer to the revised sheet C-320 for the location of the septic in relation to the proposed pond.

Q 3. The description of the Woven Wire Elk Fence on Sheet C-002 does not match what is specified in 32 31 00. Can you clarify which of these two fence descriptions/specifications is the intended structure?

WSU Response: For sheet C-320 the note says Woven Wire Elk Fence per general notes. For Woven Wire Elk fence follow the notes on the general notes sheet. For the note, submit and install 14 foot wide gate, use the specifications 32 31 00 for your submittal.

Q 4. Is the existing Steel and HDPE pipe depths known?

WSU Response: We do not know.

Q 5. Has there been any investigation into contaminated soils in the proposed pond excavation area? Is there any guidance available as to how to handle and dispose of soils if contamination is discovered upon excavation? Section 02 22 00 E. Contamination appears to only address that the Contractor shall not contaminate Water of the State with excavation but nothing in terms of preexisting conditions.

WSU Response: No Soil testing has been done on the current on-site soils that Erlandsen knows of. Section 02 22 00 1.3 E which ask for a containment plan, which we be applying AKART standard which is similar to all TESC measure general contractors use thought the state of Washington on similar projects and similar jurisdictions. Applying your standard means of method similar to the contractor's Ecology standard construction stormwater permit should suffice to meet this section. With projects involving stormwater permits, WSU obtains the permit then transfers the permit to the contractor once all necessary BMP's have been installed and approved.

Q 6. Have utilities within the area of disturbance been located?

WSU Response: No, always call 811 before you dig. No WSU Utilities exist in that area to our knowledge.

Q 7. Sheet C-320 has a note to "Field Coordinate with DCPUD on New 3 phase power transformer & power connection point." What is the scope of this coordination as it relates to this project? Are contractors to install a pad for DCPUD to set the transformer atop? Are utility connection fees associated with this connection and coordination that are to be captured within the scope of this contract?

WSU Response: The Electrical specification called out the requirements of the scope of work for the new 3 phase service for the Power pump and controls. Working through load clarification items with Douglas County PUD (DCPUD) the pump motors sizes required were re-verified by Gould's supplier contact, and therefore changed the pump controller to - Mitchell Lewis Staver 100 HP x 100 HP x 20 HP 3 phase tri-plex VFD pump control panel free standing on legs or similar. Features listed on plans.

Q 8. May HDPE IPS be substituted for DIP?

WSU Response: bidders should bid based upon DIP pipe for this project.

Q 9. The transformer size call out of "50 KVA" is incorrect for the Pump Horse power requirements of the project. DCPUD requirements for a 600 amp 3 phase CT'd transformer service will be significantly different than what is stated within plans and specifications.

WSU Response: WSU will continue with the 600 amp service. Which will be a 500 KVA transformer whose final size and placement is by DCPUD. The 50 is a typo. CT and conduit have been added to the specifications based on the DCPUD service document in the addendum as noted above.

Q 10. The padmount transformer will be required to be set within 100' of the pump station control service panel for efficiency requirements of the DCPUD. This is a significant increase & price change to plan drawings and specifications with regards to owners assumed contractor responsibility call-outs and or district provided services.

WSU Response: DCPUD has revised there first design provided to WSU to a new 3-phase pole at sunrise court and 350 to 400 feet to the west the new transformer and CT will be set. Contractor shall provide the necessary infrastructure for panels, transformer pads, conduits, etc per the Drawings and the DCPUD 3-Phase Guidelines that have been added to this addendum for contractor reference.

- Q 11. The PUD requires that the contractor provide and install all required district owned electrical conduits on the incoming side of the transformer. If underground power is to be assumed as the plan sheets state. A significant increase in the amount of conduits will be required by the district to be installed prior to utility work being performed by the district. Quick trench footages look to be approx.. 450'+ of contractor electrical trenching that the district will require. The district would also require the supply and installation of 4 – 3” conduits & 1 – 2” conduit in the trench. These rough numbers would set the transformer I would assume within 100' of the pump station.

WSU Response: DCPUD did inform WSU of the 4-3” and 1-2” conduit requirements and they are included in this addendum.

- Q 12. The owner should clearly call out, the true actual size and number of conduits that will actually be required by the district to be provided and installed by the contractor for the proper placement of the actual transformer required for the project.

WSU Response: The updated specification section and updated two drawings included with this address represent what we anticipate the final DCPUD design to be. Minor location changes may occur.

- Q 13. The call out for a new flow meter installed into new 12” discharge line. I believe clarification is needed weather or not flow meter is intended to be installed below or above ground. Details such as underground vault providing human entrance for working and installing meter would be needed and or above ground layout piping for meter installation.

WSU Response: We have anticipated this flow meter of semetrics AG 3000 that is currently on the existing irrigation line. Existing flow meter shall be reinstalled on new line below grade within a bottomless manhole assembly. Contractor shall size the manhole appropriately for a single tradesmen to install/access the meter for servicing.

- Q 14. Per Sheet C-320, Note "Install Woven Wire Elk Fence Per General Notes", and Note "Submit and Install 14' Wide Gate". Spec 32 31 00 is the fencing specification, but it neglects to provide specific dimensions for the layout of the "Elk Fence" per our subcontractor. Can a detail be provided for the desired fence and gate dimensions?

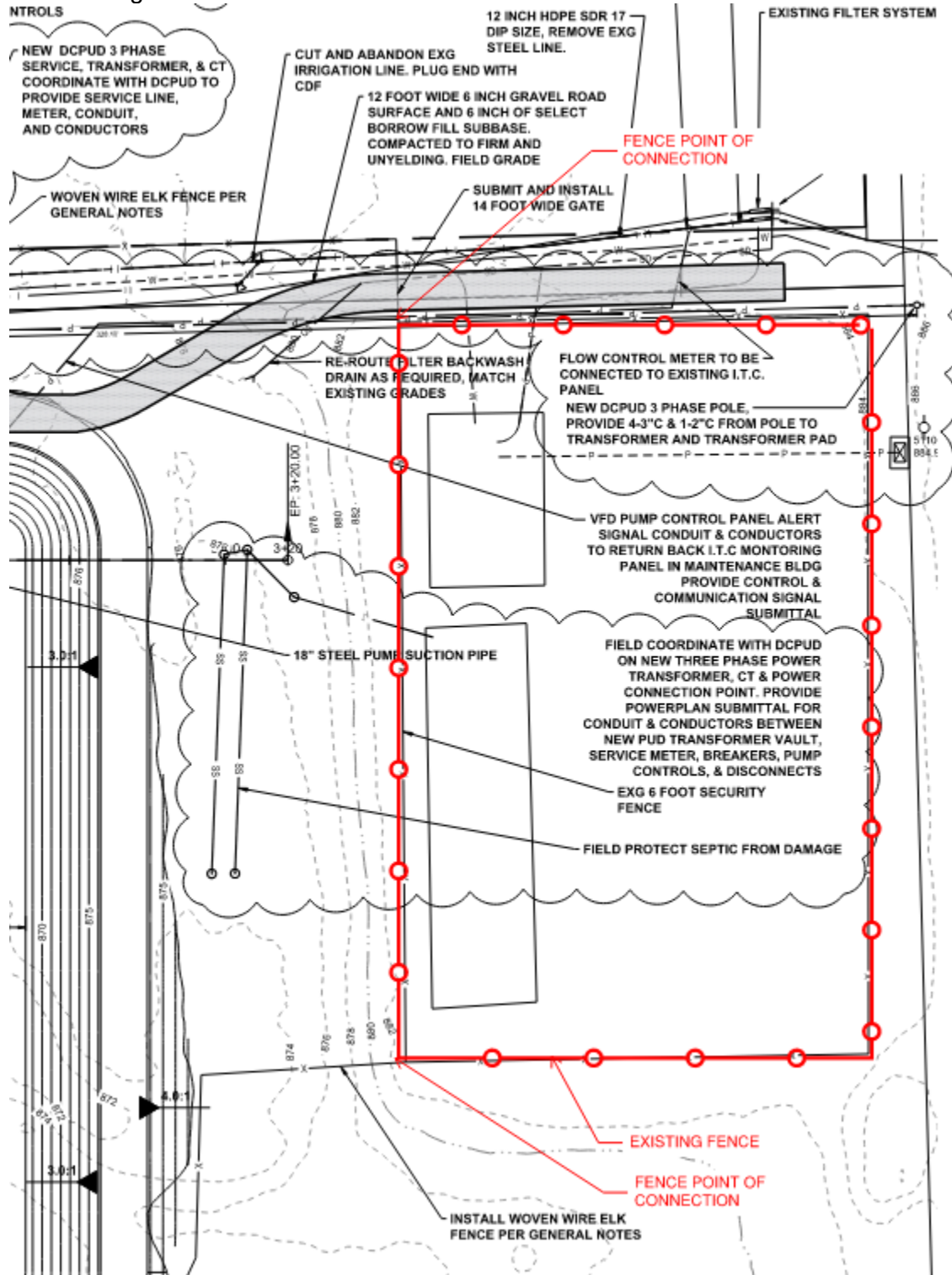
WSU Response: Refer to sheet C-002 of the project plans for the woven elk fence notes. Gate is to be steel chain link per the specifications, but shall comply with the height dimensions called out on C-002 fence general notes. Gates shall be submitted on for final approval.

- Q 15. Does the Owner have a location onsite for the Grubbings to be deposited?

WSU Response: Grubbings may be deposited on site south of the pond site evenly dispersed.

Q 16. Sheet C-320; where the "Elk Fence" meets the existing security fencing what is the plan? Does the existing fencing stay in place; if so, can the existing fence be delineated for take-off purposes?

WSU Response: Yes existing fence stays in place and new elk fence meets up to it see image below:



Changes to Drawings:

DWG 1-1. Drawing C-320 – Pond Site Plan

Item 1. Delete drawing and replace with attached drawing.

DWG 1-2. Drawing C-350 – Irrigation Pond Details - 1

Item 1. Delete drawing and replace with attached drawing.

END OF ADDENDUM No. 2

SECTION 26 27 00 – SERVICE AND METERING

PART 1 - GENERAL

1.01 DESCRIPTION

This section specifies the new electrical service, pad-mounted transformer and service entrance equipment.

1.02 SCHEDULING WORK WITH THE UTILITY COMPANY

- A. The Contractor shall be fully and completely responsible for all scheduling and coordination with the utility company. The Contractor shall coordinate and schedule power outages, power service for operation and construction, and power service as required by the facility prior to Certificate of Occupancy.

1.03 CONTRACTOR/UTILITY INTERFACE RESPONSIBILITIES

The electrical utility providing service to these facilities is Douglas County PUD. The Contractor shall comply with all utility company standards and requirements.

General Utility requirements are listed on the PUD website at douglaspud.org.

All conduit and materials shall be installed in accordance with Douglas County PUD standards. Call 509-881-2227 with any questions related to DCPUD conduit requirements.

Utility company charges for the new service shall be paid by Washington State University.

The following describes the general separation of Contractor and Utility responsibilities::

- A. Contractor
1. Provide coordination for service equipment. Installation of line extension equipment for new three phase commercial loads on private property is completed by the owner/owner's contractor. Equipment and associated materials will be purchased and supplied by the contractor
 2. Provide and install the primary and secondary service conduit per DCPUD standard drawing. 4-3" and 1-2" conduit from the Douglas County PUD new pole to the transformer which PUD is estimating at \approx 400 feet.
 3. Install communication conduit per standard drawing.
 4. Request trench inspection by Douglas County PUD field representative.
 5. Furnish trenching and backfill of the conduits per Douglas County PUD standard drawing.
 6. Install three phase concrete transformer pad per standard drawing. Provide H support for meter, disconnects, and circuit panels

7. Furnish and install concrete vault for secondary enclosure if necessary (see DCPUD final plans)
8. Provide, install and maintain all required service entrance equipment per standard drawings and applicable codes.
9. Provide, install and maintain all required secondary conductors per applicable codes from the transformer & secondary CT enclosure for 600 Amps. It is estimated the current load will be at 510 amps. The contractor is to verify the amp load with DCPUD.
10. Application and Inspections: Washington State Department of Labor and Industries Electrical Inspection AND Douglas County PUD field inspection prior to service being energized.
11. Three phase service 600 Amps require CT (Current Transformer) metering. The contractor is to supply all equipment associated with the meter base and CT enclosure, as well as interconnection equipment. The District will supply the current transformers and wire the equipment.

B. Utility

1. Coordinate with utility on requirements to provide and install new transformer and CT (as needed) from new 3 phase power supply line by DCPUD.
2. Douglas county Public Utility District staff will identify the equipment necessary for the project and provide specifications for installation. Installations will be inspected by District personnel prior to backfill.
3. Extend spare 3" conduit to transformer and into CTs, disconnects, meters, and breaker service panel.
4. Provide new parallel secondary service conductors from transformer to into CTs, disconnects, meters, and breaker service panel.
5. Provide connections at transformer and into CTs, disconnects, meters, and breaker service panel.
6. For new CTs and utility metering equipment the District will supply the current transformers and wire the equipment.
7. Energize new service.

1.04 QUALITY ASSURANCE

The Contractor shall comply with all serving Utility company standards and requirements.

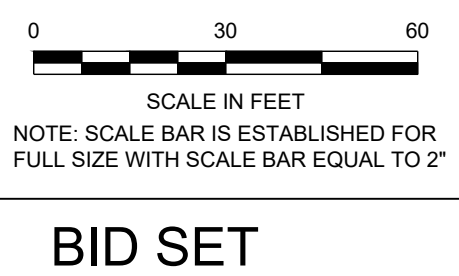
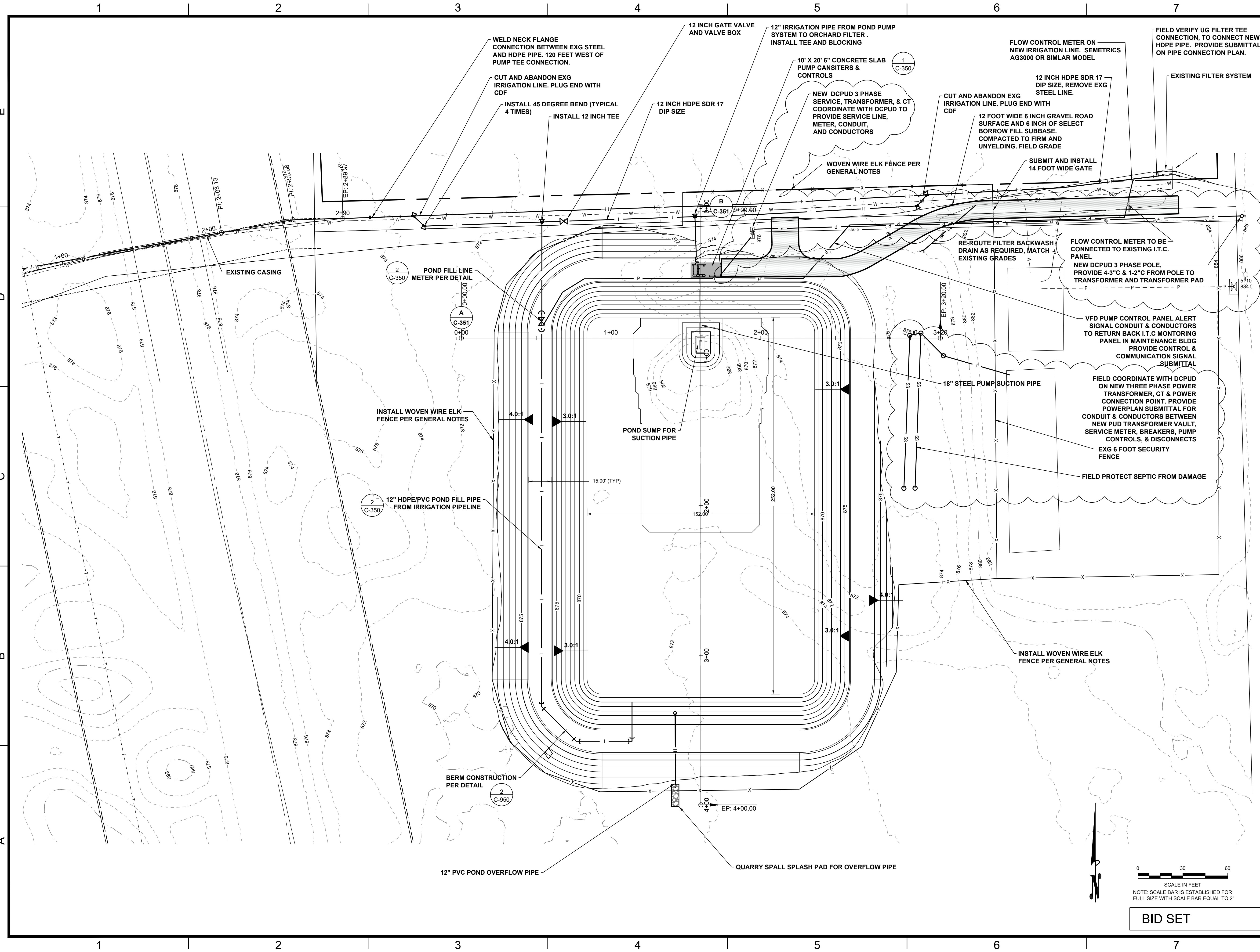
1.05 STANDARDS AND CODES

All work involving service installation shall be done in accordance with Douglas County PUD standards and the National Electrical Code (NEC).

Service equipment shall be listed and labeled by UL as "Suitable for Use as Service Equipment".

END OF SECTION 26 27 00

FILE: M:\jobs\2021\0257\00000\DWG\Final\20210257_0000-E2 Pump & Pond 23.dwg PLOT DATE: February 28, 2023, 3:01 PM ORIGINAL PAPER SIZE: 22" x 34"



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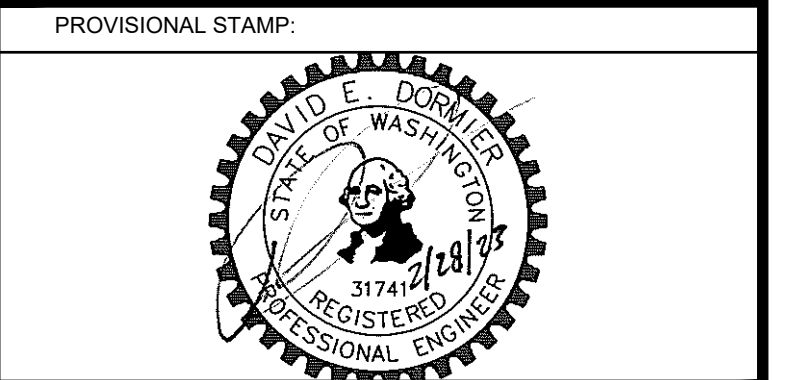


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WASHINGTON STATE UNIVERSITY

Facilities Services PH 509-335-5571
225 SE Idaho Street FAX 509-335-6875
Pullman, Wa. 99164-3611

WSU SUNRISE ORCHARD

NEW IRRIGATION POND AND PUMP SYSTEM

FACILITY NO. 3300

MARK	DATE	DESCRIPTION
A	03/28/23	DCPUD AND PUMP MOTOR UPDATE
	02/28/23	BID SET

CAD DWG FILE: 20210257_0000-E2 Pump & Pond 23.dwg

DESIGN BY: DD

DRAWN BY: NM CHECKED BY: DD

PROJECT No. 1262-2020 FILE No. 3300-G-001

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SHEET TITLE

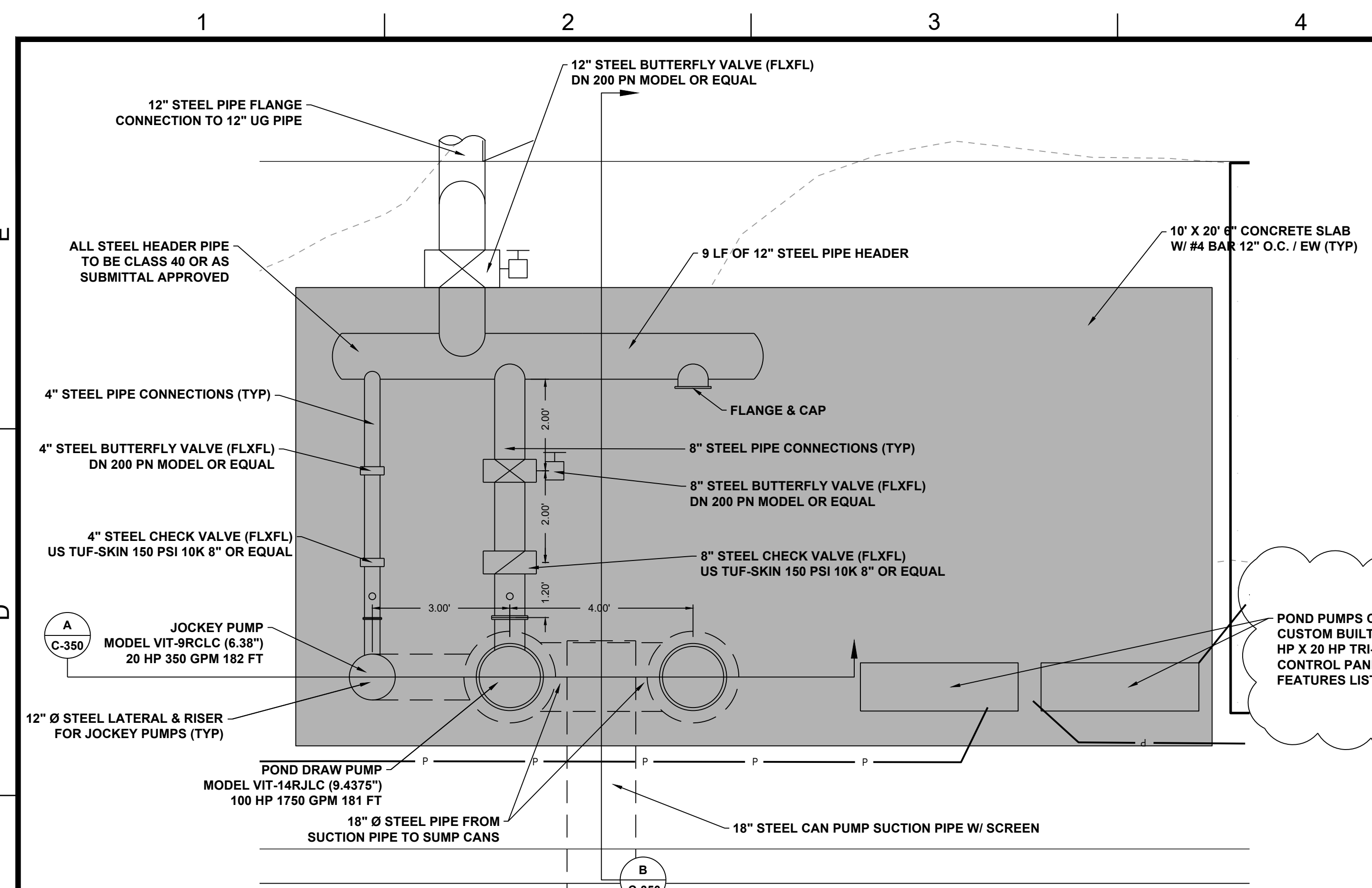
POND SITE PLAN

C-320

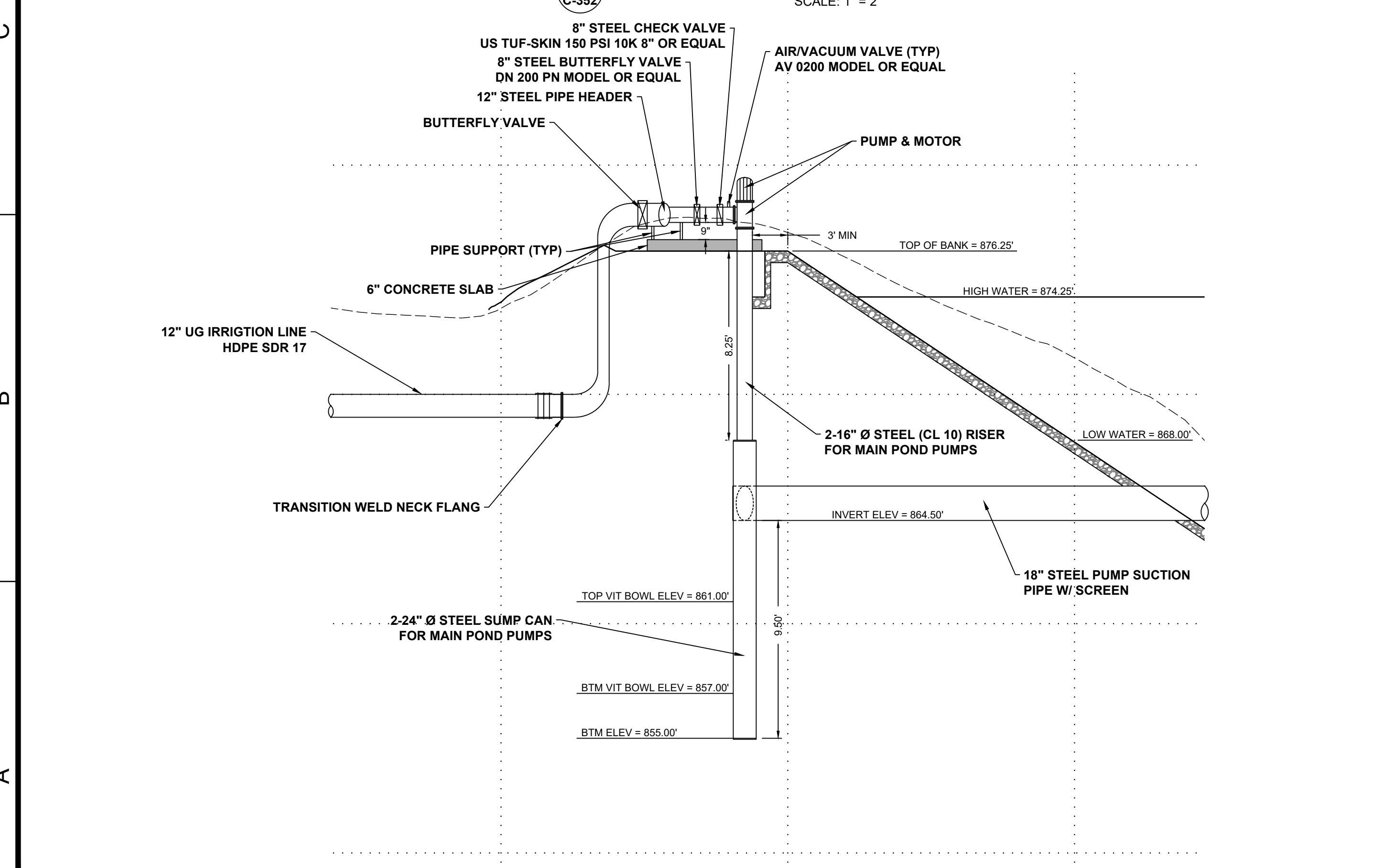
SHEET 5 OF 11 SHEETS

BID SET

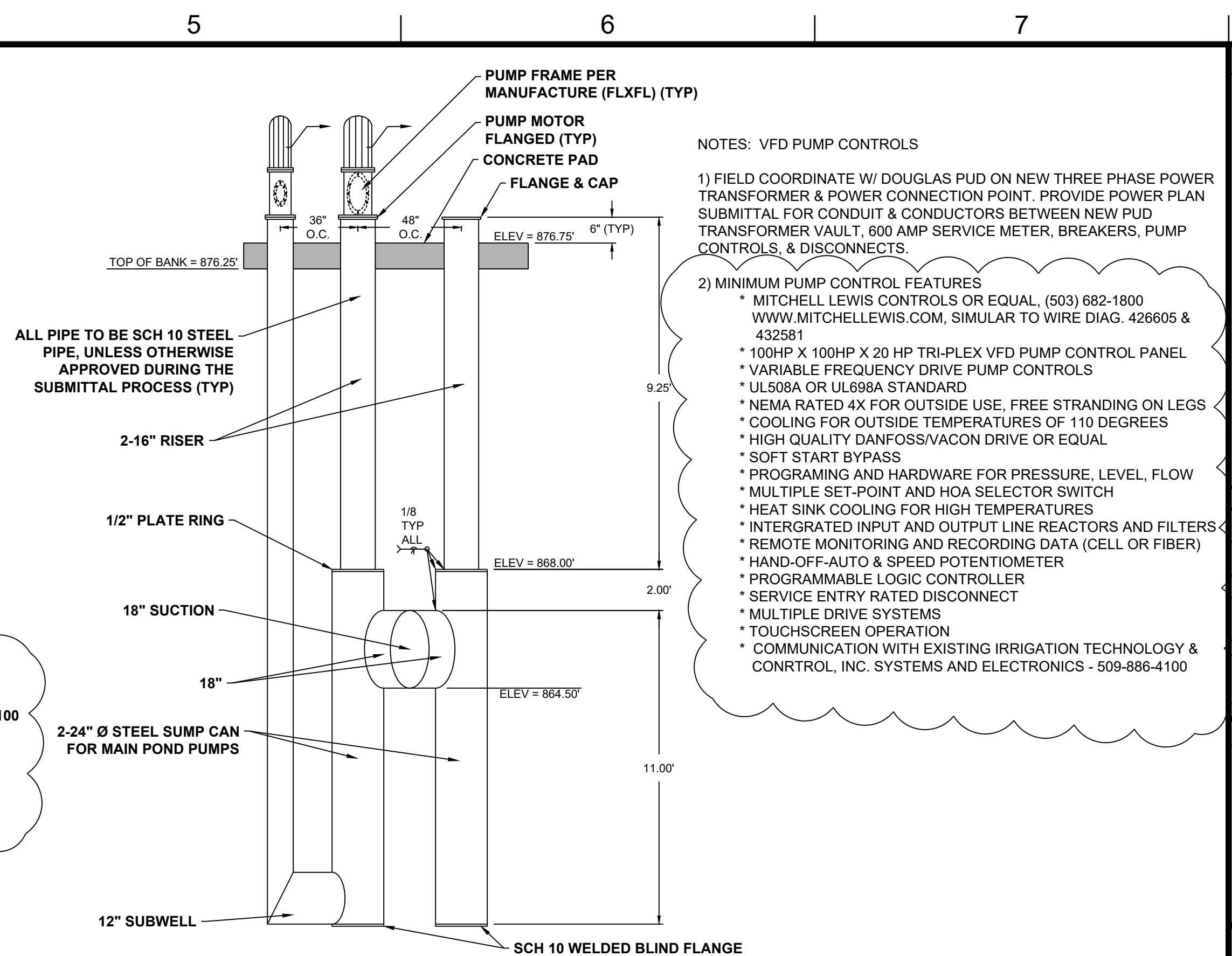
FILE: M:\jobs\2021\0257\0000\Drawings\20210257_0000-E2 Pump & Pond 23.dwg PLOT DATE: February 28, 2023, 3:01 PM ORIGINAL PAPER SIZE: 22" x 34"



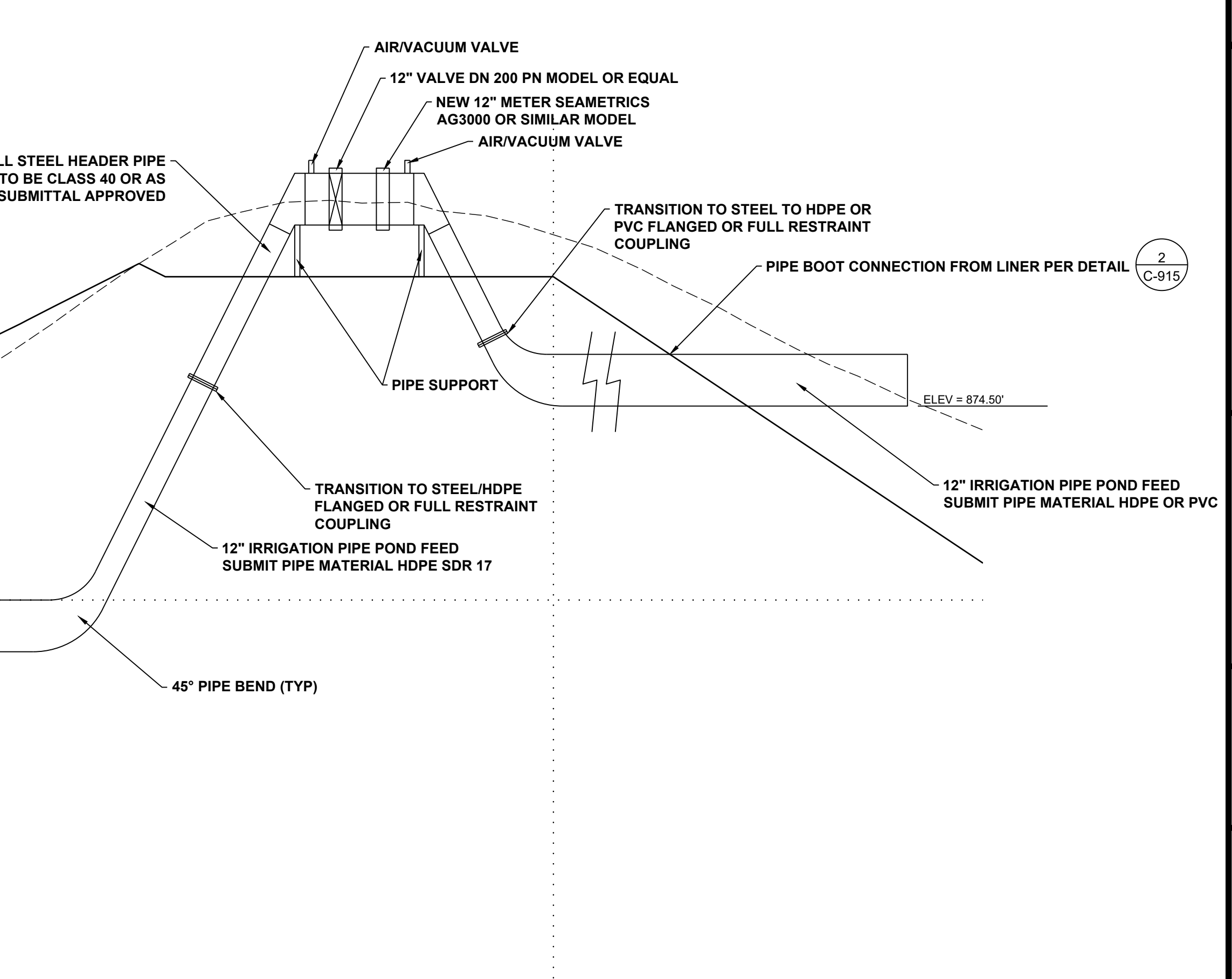
PUMP STATION PLAN
SCALE: 1" = 2'



PUMP STATION SECTION
NOT TO SCALE



PUMP STATION SECTION
NOT TO SCALE



POND FILL PIPELINE SECTION
SCALE: HORZ: 1" = 4' / VERT: 1" = 2'

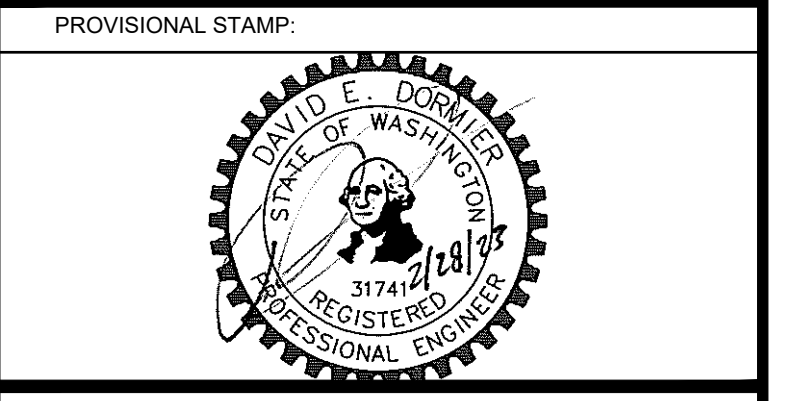
- NOTES: VFD PUMP CONTROLS
- FIELD COORDINATE W/ DOUGLAS PUD ON NEW THREE PHASE POWER TRANSFORMER & POWER CONNECTION POINT. PROVIDE POWER PLAN SUBMITTAL FOR CONDUIT & CONDUCTORS BETWEEN NEW PUD TRANSFORMER VAULT, 600 AMP SERVICE METER, BREAKERS, PUMP CONTROLS, & DISCONNECTS.
 - MINIMUM PUMP CONTROL FEATURES
 - * MITCHELL LEWIS CONTROLS OR EQUAL, (503) 682-1800 WWW.MITCHELLEWIS.COM, SIMILAR TO WIRE DIAG. 426605 & 432581
 - * 100HP X 100HP X 20 HP TRI-PLEX VFD PUMP CONTROL PANEL
 - * VARIABLE FREQUENCY DRIVE PUMP CONTROLS
 - * UL508A OR UL698A STANDARD
 - * NEMA RATED 4X FOR OUTSIDE USE, FREE STRANDING ON LEGS
 - * COOLING FOR OUTSIDE TEMPERATURES OF 110 DEGREES
 - * HIGH QUALITY DANFOSS/VACON DRIVE OR EQUAL
 - * SOFT START BYPASS
 - * PROGRAMING AND HARDWARE FOR PRESSURE, LEVEL, FLOW
 - * MULTIPLE SET-POINT AND HOA SELECTOR SWITCH
 - * HEAT SINK COOLING FOR HIGH TEMPERATURES
 - * INTERGRATED INPUT AND OUTPUT LINE REACTORS AND FILTERS
 - * REMOTE MONITORING AND RECORDING DATA (CELL OR FIBER)
 - * HAND-OFF-AUTO & SPEED POTENTIOMETER
 - * PROGRAMMABLE LOGIC CONTROLLER
 - * SERVICE ENTRY RATED DISCONNECT
 - * MULTIPLE DRIVE SYSTEMS
 - * TOUCHSCREEN OPERATION
 - * COMMUNICATION WITH EXISTING IRRIGATION TECHNOLOGY & CONNTROL, INC. SYSTEMS AND ELECTRONICS - 509-886-4100

POND PUMPS CONTROL SYSTEMS
CUSTOM BUILT DUPLEX 100 HP X 100
HP X 20 HP TRI-PLEX VFD PUMP
CONTROL PANELS. SEE MINIMUM
FEATURES LISTED ON LIST SHEET

DESIGN FIRM:

Erlandsen
SURVEYING | PLANNING | ENGINEERING

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250 SIMON ST. SE
EAST WENATCHEE, WA 98802
PH: 509.884.2562
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DESIGN BY: DD
DRAWN BY: NM CHECKED BY: DD
PROJECT No. 1262-2020 FILE No. 3300-G-001
COPYRIGHT: WASHINGTON STATE UNIVERSITY

SHEET TITLE
**IRRIGATION POND
DETAILS - I**

C-350
SHEET 6 OF 11 SHEETS

BID SET

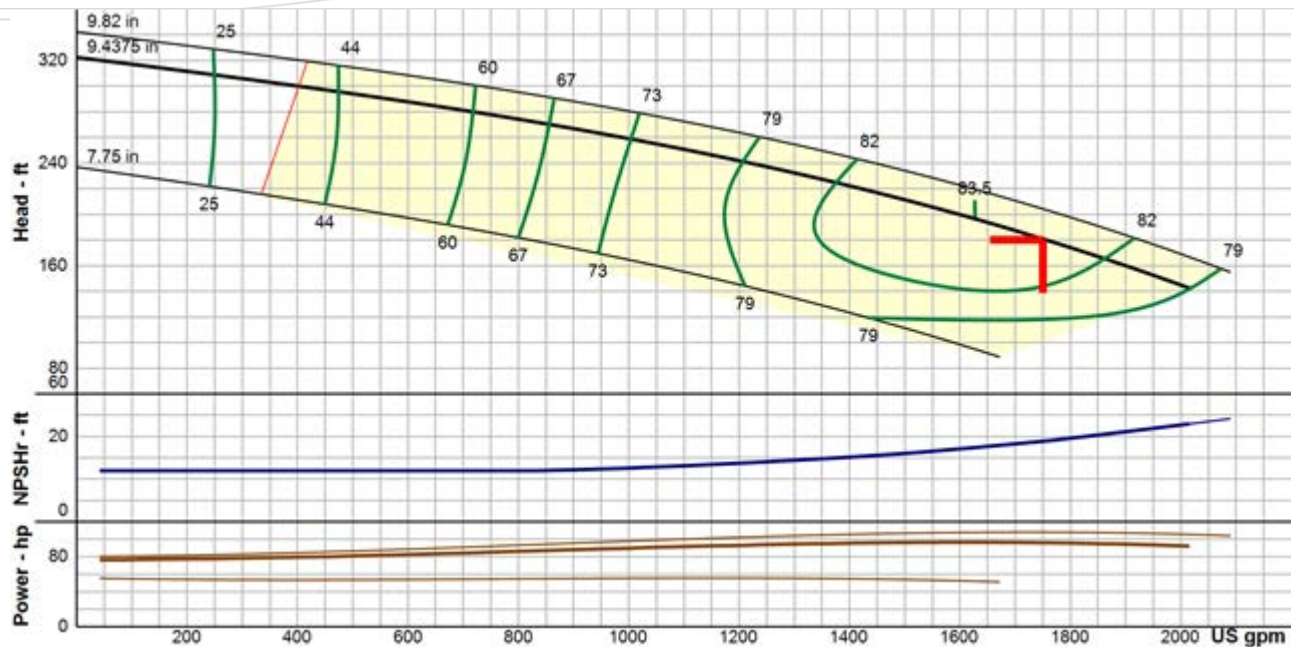


Performance Curve

Product Name: VIT - Short Set Lineshaft Turbine Pumps
 Product Id: VIT

Quote Number

9003-221115-002



Curve & hydraulic data presented is nominal performance based on ANSI/HI 14.6 acceptance grade 2B. Design values are guaranteed within the following tolerances: Flow \pm 8%, Head \pm 5%, and optionally either Power + 8% or Efficiency - 5% at manufacturer's discretion.

Series	VIT	Max Power on Design Curve	96.60 Hp
Size	14RJLC	Flow at BEP	1,627 USgpm
Additional Size	-	Head at BEP	197 ft
Speed	1,770 RPM	NPSH Required	18.9 ft
Number of Stages	3	Specified NPSH Avail.	33.17 ft
Frequency	60 Hz	Specified NPSH Avail. Margin	1.1
Impeller Trim	9.4375 in	Min Flow	407 USgpm
Additional Impeller	-	Shut Off Head	323 ft
Specified Flow	1,750 USgpm	Shut Off Power	76.5 Hp
Specified Head	180 ft	Shut Off Disc Pressure	140 psi
Flow at Design	1,750 USgpm	Fluid Type	Water
Head at Design	181 ft	Water Temperature	68 °F
Run Out Flow	2,015 USgpm	Allowable Sphere Size	1.06 in
Run Out Head	142 ft	Exact Bowl Diameter	13.63 in
Run Out Power	92.2 Hp	Thrust K Factor	16.2 lb/ft
Run Out Efficiency	78.6 %	Add Thrust K Factor	16.2 lb/ft
Run Out NPSHr	23 ft	Max Lateral	1.25 in
Efficiency at Design	83.00 %	Total Flow Derate Factor	1
Guaranteed Efficiency at Design	78.85 %	Total Head Derate Factor	1
Best Efficiency	83.5 %	Total Efficiency Derate Factor	1
Driver Size	125 Hp	Total NPSHr Derate Factor	1
Power at Design	96 Hp	Acceptance Grade	2B
Guaranteed Power	103.90 Hp		
Flow on Design Trim @ Max Power	1,627 USgpm		
Service Factor	No		

NAMEPLATE DATA

CATALOG NUMBER:	HO100V2SLG		NAMEPLATE PART #:	422707-005	
MODEL	HF50	FR	404TP	TYPE	RUSI ENCL WPI
SHAFT END BRG	6212-J - QTY 1		OPP END BRG	7222 BEM - QTY 1	
PH	3	MAX AMB	40 C	ID#	
INSUL CLASS	F	Asm. Pos.		DUTY	CONT
HP	100	RPM	1785	HP	
VOLTS	460	VOLTS		FL AMPS	
FL AMPS	114.0	SF AMPS	131.0	SF	
SF	1.15	DESIGN	B	CODE	G
NEMA NOM EFFICIENCY	95.4	NOM PF	86.3	KiloWatt	74.60
GUARANTEED EFFICIENCY	94.5	MAX KVAR		HZ	60

HAZARDOUS LOCATION DATA (IF APPLICABLE):

DIVISION		CLASS I		GROUP I	
TEMP CODE		CLASS II		GROUP II	



VFD DATA (IF APPLICABLE):

VOLTS	460	AMPS	119.7
TORQUE 1	294.30LB-FT	TORQUE 2	
VFD LOAD TYPE 1	VT/PWM	VFD LOAD TYPE 2	
VFD HERTZ RANGE 1	6-60	VFD HERTZ RANGE 2	
VFD SPEED RANGE 1	180-1800	VFD SPEED RANGE 2	
SERVICE FACTOR	1.00	FL SLIP	
NO. POLES		MAGNETIZING AMPS	
VECTOR MAX RPM		Encoder PPR	
Radians / Seconds		Encoder Volts	

TEAO DATA (IF APPLICABLE):

HP (AIR OVER)		HP (AIR OVER M/S)		RPM (AIR OVER)		RPM (AIR OVER M/S)	
FPM AIR VELOCITY		FPM AIR VELOCITY M/S		FPM AIR VELOCITY SEC			

ADDITIONAL NAMEPLATE DATA:

DCPUD 3-Phase Guidelines

Decal / Plate	WD=165975,CP=132839	Customer PN	
Notes		Non Rev Ratchet	NRR
Max Temp Rise	80C RISE/RES@1.00SF	OPP/Upper Oil Cap	5 QT/4.7 L
Thermal (WDG)	OVER TEMP PROT 2	SHAFT/Lower Oil Cap	GREASE
Altitude		Usable At	
Regulatory Notes		Regulatory Compliance	
COS		Marine Duty	
Balance	0.08 IN/SEC	Arctic Duty	
3/4 Load Eff.	95.5	Inrush Limit	
Motor Weight (LBS)	1110	Direction of Rotation	
Sound Level		Special Note 1	
Vertical Thrust (LBS)	6700	Special Note 2	
Thrust Percentage	100% HT	Special Note 3	
Bearing Life		Special Note 4	
Starting Method		Special Note 5	
Number of Starts		Special Note 6	
200/208V 60Hz Max Amps		SH Max. Temp.	
190V 50 hz Max Amps		SH Voltage	SH VOLTS=115V
380V 50 Hz Max Amps		SH Watts	SH WATTS=144W
NEMA Inertia		Load Inertia	
Sumpheater Voltage		Sumpheater Wattage	
Special Accessory Note 1		Special Accessory Note 16	
Special Accessory Note 2		Special Accessory Note 17	
Special Accessory Note 3		Special Accessory Note 18	
Special Accessory Note 4		Special Accessory Note 19	
Special Accessory Note 5		Special Accessory Note 20	
Special Accessory Note 6		Special Accessory Note 21	
Special Accessory Note 7		Special Accessory Note 22	
Special Accessory Note 8		Special Accessory Note 23	
Special Accessory Note 9		Special Accessory Note 24	
Special Accessory Note 10		Special Accessory Note 25	
Special Accessory Note 11		Special Accessory Note 26	
Special Accessory Note 12		Special Accessory Note 27	
Special Accessory Note 13		Special Accessory Note 28	
Special Accessory Note 14		Special Accessory Note 29	
Special Accessory Note 15		Special Accessory Note 30	
Heater in C/B Voltage		Heater in C/B Watts	
Zone 2 Group		Division 2 Service Factor	
Note 1		Note 2	
Note 3		Note 4	
Note 5		Note 6	
Note 7		Note 8	
Note 9		Note 10	
Note 11		Note 12	
Note 13		Note 14	
Note 15		Note 16	
Note 17		Note 18	
Note 19		Note 20	
Note 21		Note 22	

NIDEC MOTOR CORPORATION
ST. LOUIS, MO

TYPICAL NAMEPLATE DATA
ACTUAL MOTOR NAMEPLATE LAYOUT MAY VARY
SOME FIELDS MAY BE OMITTED



Nidec trademarks followed by the ® symbol are registered with the U.S. Patent and Trademark Office.

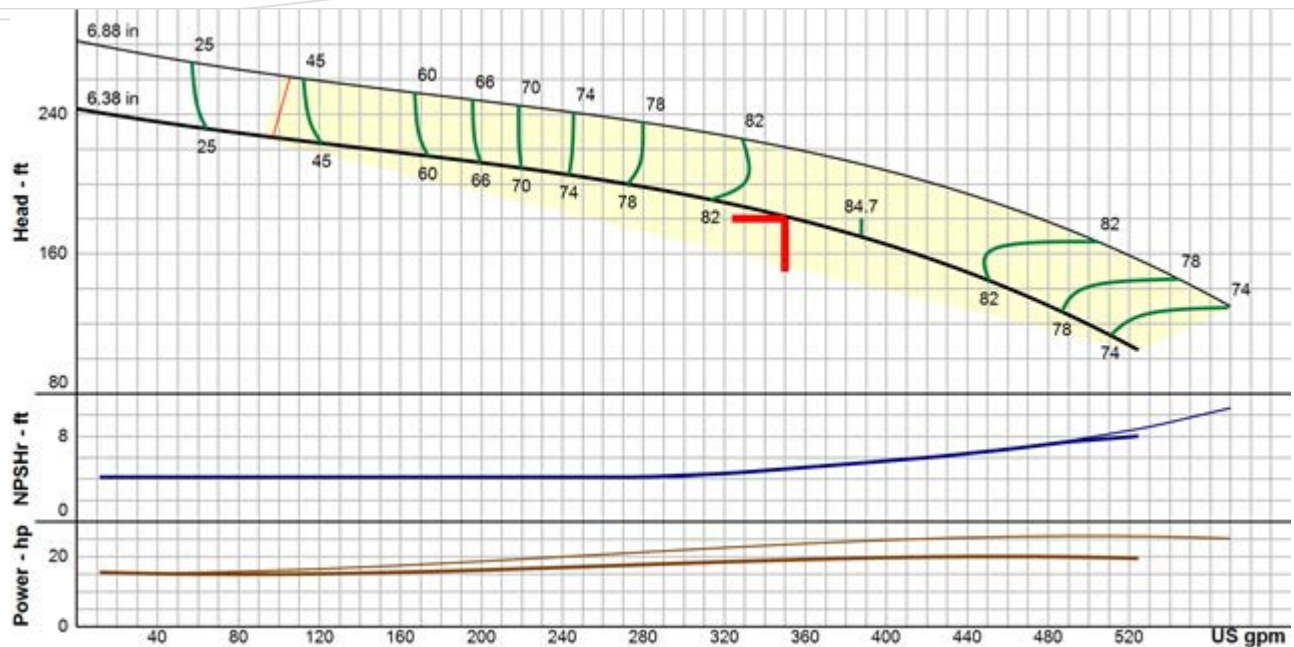


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Series	VIT	Max Power on Design Curve	20.10 Hp
Size	9RCLC	Flow at BEP	388 USgpm
Additional Size	-	Head at BEP	170 ft
Speed	1,770 RPM	NPSH Required	4.95 ft
Number of Stages	5	Specified NPSH Avail.	33.17 ft
Frequency	60 Hz	Specified NPSH Avail. Margin	1.1
Impeller Trim	6.38 in	Min Flow	96.9 USgpm
Additional Impeller	-	Shut Off Head	243 ft
Specified Flow	350 USgpm	Shut Off Power	15.8 Hp
Specified Head	180 ft	Shut Off Disc Pressure	105 psi
Flow at Design	350 USgpm	Fluid Type	Water
Head at Design	182 ft	Water Temperature	68 °F
Run Out Flow	524 USgpm	Allowable Sphere Size	0.75 in
Run Out Head	105 ft	Exact Bowl Diameter	9.25 in
Run Out Power	19.6 Hp	Thrust K Factor	4.9 lb/ft
Run Out Efficiency	71.1 %	Add Thrust K Factor	4.9 lb/ft
Run Out NPSHr	8.03 ft	Max Lateral	0.88 in
Efficiency at Design	84.00 %	Total Flow Derate Factor	1
Guaranteed Efficiency at Design	79.80 %	Total Head Derate Factor	1
Best Efficiency	84.7 %	Total Efficiency Derate Factor	1
Driver Size	25 Hp	Total NPSHr Derate Factor	1
Power at Design	19 Hp	Acceptance Grade	2B
Guaranteed Power	20.63 Hp		
Flow on Design Trim @ Max Power	456 USgpm		
Service Factor	No		

NAMEPLATE DATA

CATALOG NUMBER: <input style="width: 150px;" type="text" value="HO20V2BLF"/>		NAMEPLATE PART #: <input style="width: 150px;" type="text" value="422707-005"/>	
MODEL <input style="width: 60px;" type="text" value="FB97"/>	FR <input style="width: 60px;" type="text" value="256TPH"/>	TYPE <input style="width: 60px;" type="text" value="AUSI"/>	ENCL <input style="width: 60px;" type="text" value="WPI"/>
SHAFT END BRG <input style="width: 150px;" type="text" value="7310 BEP - QTY 1"/>		OPP END BRG <input style="width: 150px;" type="text" value="6210-2Z-J/C3 - QTY 1"/>	
PH <input style="width: 40px;" type="text" value="3"/>	MAX AMB <input style="width: 60px;" type="text" value="40 C"/>	ID# <input style="width: 150px;" type="text"/>	
INSUL CLASS <input style="width: 40px;" type="text" value="F"/>	Asm. Pos. <input style="width: 150px;" type="text"/>	DUTY <input style="width: 150px;" type="text" value="CONT"/>	
HP <input style="width: 40px;" type="text" value="20"/>	RPM <input style="width: 60px;" type="text" value="1775"/>	HP <input style="width: 40px;" type="text"/>	RPM <input style="width: 60px;" type="text"/>
VOLTS <input style="width: 40px;" type="text" value="460"/>	<input style="width: 40px;" type="text" value="230"/>	VOLTS <input style="width: 40px;" type="text"/>	<input style="width: 40px;" type="text"/>
FL AMPS <input style="width: 40px;" type="text" value="23.7"/>	<input style="width: 40px;" type="text" value="47.0"/>	FL AMPS <input style="width: 40px;" type="text"/>	<input style="width: 40px;" type="text"/>
SF AMPS <input style="width: 40px;" type="text" value="27.3"/>	<input style="width: 40px;" type="text" value="55.0"/>	SF AMPS <input style="width: 40px;" type="text"/>	<input style="width: 40px;" type="text"/>
SF <input style="width: 40px;" type="text" value="1.15"/>	DESIGN <input style="width: 40px;" type="text" value="B"/>	CODE <input style="width: 40px;" type="text" value="G"/>	
NEMA NOM EFFICIENCY <input style="width: 40px;" type="text" value="93.0"/>	NOM PF <input style="width: 40px;" type="text" value="84.8"/>	KiloWatt <input style="width: 40px;" type="text" value="14.92"/>	
GUARANTEED EFFICIENCY <input style="width: 40px;" type="text" value="91.7"/>	MAX KVAR <input style="width: 40px;" type="text"/>	HZ <input style="width: 40px;" type="text" value="60"/>	

HAZARDOUS LOCATION DATA (IF APPLICABLE):

DIVISION <input style="width: 100px;" type="text"/>	CLASS I <input style="width: 100px;" type="text"/>	GROUP I <input style="width: 100px;" type="text"/>
TEMP CODE <input style="width: 100px;" type="text"/>	CLASS II <input style="width: 100px;" type="text"/>	GROUP II <input style="width: 100px;" type="text"/>



VFD DATA (IF APPLICABLE):

VOLTS <input style="width: 60px;" type="text" value="460"/>	<input style="width: 60px;" type="text" value="230"/>	AMPS <input style="width: 60px;" type="text" value="24.9"/>	<input style="width: 60px;" type="text" value="49.4"/>
TORQUE 1 <input style="width: 100px;" type="text" value="59.20LB-FT"/>	TORQUE 2 <input style="width: 100px;" type="text"/>		
VFD LOAD TYPE 1 <input style="width: 100px;" type="text" value="VT/PWM"/>	VFD LOAD TYPE 2 <input style="width: 100px;" type="text"/>		
VFD HERTZ RANGE 1 <input style="width: 100px;" type="text" value="6-60"/>	VFD HERTZ RANGE 2 <input style="width: 100px;" type="text"/>		
VFD SPEED RANGE 1 <input style="width: 100px;" type="text" value="180-1800"/>	VFD SPEED RANGE 2 <input style="width: 100px;" type="text"/>		
SERVICE FACTOR <input style="width: 60px;" type="text" value="1.00"/>	FL SLIP <input style="width: 60px;" type="text"/>		
NO. POLES <input style="width: 60px;" type="text"/>	MAGNETIZING AMPS <input style="width: 60px;" type="text"/>		
VECTOR MAX RPM <input style="width: 60px;" type="text"/>	Encoder PPR <input style="width: 60px;" type="text"/>		
Radians / Seconds <input style="width: 60px;" type="text"/>	Encoder Volts <input style="width: 60px;" type="text"/>		

TEAO DATA (IF APPLICABLE):

HP (AIR OVER) <input style="width: 60px;" type="text"/>	HP (AIR OVER M/S) <input style="width: 60px;" type="text"/>	RPM (AIR OVER) <input style="width: 60px;" type="text"/>	RPM (AIR OVER M/S) <input style="width: 60px;" type="text"/>
FPM AIR VELOCITY <input style="width: 60px;" type="text"/>	FPM AIR VELOCITY M/S <input style="width: 60px;" type="text"/>	FPM AIR VELOCITY SEC <input style="width: 60px;" type="text"/>	

ADDITIONAL NAMEPLATE DATA:

DCPUD 3-Phase Guidelines

Decal / Plate	WD=159833,CP=132839	Customer PN	
Notes		Non Rev Ratchet	NRR
Max Temp Rise		OPP/Upper Oil Cap	GREASE
Thermal (WDG)	OVER TEMP PROT 2	SHAFT/Lower Oil Cap	GREASE
Altitude		Usable At	
Regulatory Notes		Regulatory Compliance	
COS		Marine Duty	
Balance	0.08 IN/SEC	Arctic Duty	
3/4 Load Eff.	94.1	Inrush Limit	
Motor Weight (LBS)	300	Direction of Rotation	
Sound Level		Special Note 1	
Vertical Thrust (LBS)	3300	Special Note 2	
Thrust Percentage	100% HT	Special Note 3	
Bearing Life		Special Note 4	
Starting Method		Special Note 5	
Number of Starts		Special Note 6	
200/208V 60Hz Max Amps		SH Max. Temp.	
190V 50 hz Max Amps		SH Voltage	SH VOLTS=115V
380V 50 Hz Max Amps		SH Watts	SH WATTS= 48W
NEMA Inertia		Load Inertia	
Sumpheater Voltage		Sumpheater Wattage	
Special Accessory Note 1		Special Accessory Note 16	
Special Accessory Note 2		Special Accessory Note 17	
Special Accessory Note 3		Special Accessory Note 18	
Special Accessory Note 4		Special Accessory Note 19	
Special Accessory Note 5		Special Accessory Note 20	
Special Accessory Note 6		Special Accessory Note 21	
Special Accessory Note 7		Special Accessory Note 22	
Special Accessory Note 8		Special Accessory Note 23	
Special Accessory Note 9		Special Accessory Note 24	
Special Accessory Note 10		Special Accessory Note 25	
Special Accessory Note 11		Special Accessory Note 26	
Special Accessory Note 12		Special Accessory Note 27	
Special Accessory Note 13		Special Accessory Note 28	
Special Accessory Note 14		Special Accessory Note 29	
Special Accessory Note 15		Special Accessory Note 30	
Heater in C/B Voltage		Heater in C/B Watts	
Zone 2 Group		Division 2 Service Factor	
Note 1		Note 2	
Note 3		Note 4	
Note 5		Note 6	
Note 7		Note 8	
Note 9		Note 10	
Note 11		Note 12	
Note 13		Note 14	
Note 15		Note 16	
Note 17		Note 18	
Note 19		Note 20	
Note 21		Note 22	

NIDEC MOTOR CORPORATION
ST. LOUIS, MO

TYPICAL NAMEPLATE DATA
ACTUAL MOTOR NAMEPLATE LAYOUT MAY VARY
SOME FIELDS MAY BE OMITTED



Nidec trademarks followed by the ® symbol are registered with the U.S. Patent and Trademark Office.



THREE PHASE COMMERCIAL SERVICE GUIDE

Welcome to Douglas County PUD

We are committed to providing the best possible utility services at the lowest possible cost consistent with sound business principles.

To better serve you, please fill out an Application for Service electronically and email to newservice@dcpud.org OR print and fill out prior to visiting our office. A Service Request will be generated using the information in this application. You will be asked to review and sign the Service Request to begin processing and engineering for your project.

The Distribution Engineering department will assign an engineer to your project upon receipt of your application. Fees will be calculated based on the project type. All fees must be paid in advance of construction.

Please review the Customer Checklist below and complete the necessary items to get your service energized as soon as possible.

CUSTOMER CHECKLIST

- Application for Service
- Detailed plans of site/project
- Deposit (if applicable)
- Load calculations

Before construction of your project can begin:

- Line extension and service connection fees paid.
- Complete and return Easements and Permits as necessary.
- Supply and install equipment and materials per specifications.
- Application and Inspections: Washington State Department of Labor and Industries Electrical Inspection AND Douglas County PUD field inspection prior to service being energized.

Three Phase Delivery Options

Three phase service is offered at 120/208 volt, 120/240 volt and 277/480 volt, 4 wire service.

Motor loads are typically served as follows:

Motors up to 5HP	120/240 volt single phase
5HP to 25HP	120/240 or 120/208 volt three phase
25HP and Greater	277/480 volt three phase (reduced voltage starter required)

- Provide and install the primary and secondary service conduit per standard drawing.
- Install communication conduit per standard drawing.
- Request trench inspection by Douglas County PUD field representative.
- Furnish trenching and backfill of the conduits per standard drawing.
- Install three phase concrete transformer pad per standard drawing.
- Furnish and install concrete vault for secondary enclosure if necessary.
- Provide, install and maintain all required service entrance equipment per standard drawings and applicable codes.
- Provide, install and maintain all required secondary conductors per applicable codes from the transformer or secondary enclosure to the service if service is greater than 200 Amps.
- Application and Inspections: Washington State Department of Labor and Industries Electrical Inspection AND Douglas County PUD field inspection prior to service being energized.

Applicable Standard Drawings

Please review the standard drawings attached in this document before starting construction. Drawings contain important information required for your project.

Trench and Conduit Requirements

Three Phase Concrete Transformer Pad/Conduit Installation

Three Phase Junction Box Excavation/Conduit Installation

Typical CT Can Metering Arrangement

Three Phase Meter Base Requirements

Secondary Enclosure Vault/Conduit Arrangement

Site Plan Submittal

Please submit a detailed plan (preferably engineered) of your construction site. If your project is in preliminary stages, please include the following information on a drawing:

- Nearest public road and distance to proposed home/building site
- Nearest District facility (pole or transformer)
- Proposed building site and transformer/metering location
- Proposed drain field and septic lines
- Fences (existing & future)
- North arrow

Installation of line extension equipment for new three phase commercial loads on private property is completed by the owner/owner's contractor. Equipment and associated materials will be purchased by the owner or supplied by the District and included in the CIAC costs. District staff will identify the equipment necessary for the project and provide specifications for installation. Installations will be inspected by District personnel prior to backfill.

Point of Delivery

The point of delivery and meter for a service from a dedicated transformer may be at the transformer. At the District's option, current transformers may be mounted in a three phase padmount transformer that is only dedicated to one customer. In this case, the meter enclosure must be mounted next to the pad or in an approved location not to exceed 10' from the transformer. A secondary termination enclosure will be required if the number of customer secondary conductors exceeds the District maximum of six landing spaces in the transformer.

Fees - Contribution In Aid of Construction (CIAC):

A customer is required to pay for a line extension in advance of construction. The CIAC will be calculated based on approved engineering plans, and may include primary cable, vaults, junction cabinets, switches, transformers and other associated facilities. Costs may also include relocation of existing electrical facilities, professional engineering design services, and other costs including, but not limited to the cost of permits, easements, road crossings, clearing and any other special costs to provide service. The CIAC does not give the customer ownership rights of any facilities constructed with these funds.

Inspections

Electrical installations must be applied for and inspected by the Washington State Department of Labor and Industries Electrical inspector **AND** a Douglas County PUD field representative prior to energizing the service. The customer (or customer's electrician) is responsible for meeting all of the requirements for temporary and permanent service equipment in compliance with the NEC (National Electric Code), WAC (Washington Administrative Code) and any other federal, state and local codes and ordinances that apply to the project. The Washington State Department of Labor and Industries Electrical Inspections Department can be reached at 509-886-6500, the 24 hour inspection line is 509-886-6520.

Easements and Permits

Before installation of any poles or equipment, or commencement of any work, all easements and permits must be executed and on file with District.

The customer will provide the necessary signatures on easement forms prepared by the District and will furnish such easements to the District. An easement is required from owner(s) of all properties that District facilities will cross, in addition to the property being served. The Customer, at the customer's expense, and to the satisfaction of the District, shall secure all necessary easements.

Trenching in a public right-of-way or crossing under a public roadway requires a roadway use permit from the governing jurisdiction. This must be applied for and issued to the licensed and bonded contractor doing the work in the right-of-way. The Customer is responsible for all fees associated with this permit. No work in the right-of-way shall be performed until this permit has been secured. The customer may be required to provide a copy of the permit prior to District work commencing.

Secondary Service Connection

A secondary service connection connects an existing Douglas County PUD transformer or handhole to a meter base using secondary cable or wire. Three phase secondary service lengths are based on voltage drop and proposed load calculations. It may be allowable to use an existing padmount transformer if it is the correct voltage and size for your project.

Meter Base Location

The meter base must be located on the outside of the structure and in an area that will allow for unrestricted access by Douglas County PUD personnel. Typically, this is the front one-third of the building that faces the street or driveway. All meters must be located 5'-6' above finish grade. Recessed or flush mounted meter bases are NOT allowed. Meter bases for dedicated transformers with current transformers (CTs) installed on the bushings must be installed within 10' of the padmount transformer.

Three Phase Service Metering

Three phase service up to 200 Amps will be served with a self-contained meter base except for motor loads greater than 100 horsepower. Three phase service over 200 Amps require CT (Current Transformer) metering. The customer supplies all equipment associated with the meter base and CT enclosure, as well as interconnection equipment. The District will supply the current transformers and wire the equipment.



APPLICATION FOR SERVICE – Large Commercial & Developments

New Douglas County PUD Customers may be asked to provide a LETTER OF CREDIT or a DEPOSIT to start service.
This is NOT an electrical permit application – Electrical Permits may be obtained at WA Dept. of Labor & Industries.

Please submit this application with an **ELECTRONIC CAD FILE** of your preliminary plat to newservice@dcpud.org.

Applicant/Owner Name: _____ Spouse/Alt Contact: _____

Development Name (if applicable): _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____ Work: _____ Cell: _____

Washington State Driver's License # _____

UBI #: _____

Email Address: _____

Contractor Name: _____ Phone: _____

Excavator Name: _____ Phone: _____

Service Information

Quarter Section: _____ Section: _____ Township: _____ Range: _____

Tax Parcel # _____ Nearest Intersection: _____

Number of Parcels/Lots: _____ Size of Parcels: _____ (acres) Approx Sq Ft of Homes: _____

OR Square Footage of Commercial Building/Development: _____

Desired Service Date: _____

Have you been a Douglas County PUD Customer before? Yes No

If yes, last service address: _____

Service Requested

Subdivision Three Phase Commercial Line Extension in excess of one mile

Load Information (Commercial/large load)

DESIRED VOLTAGE

Three Phase 120/208 volts, 4 wire 277/480 volts, 4 wire 120/240 volts, 4 wire

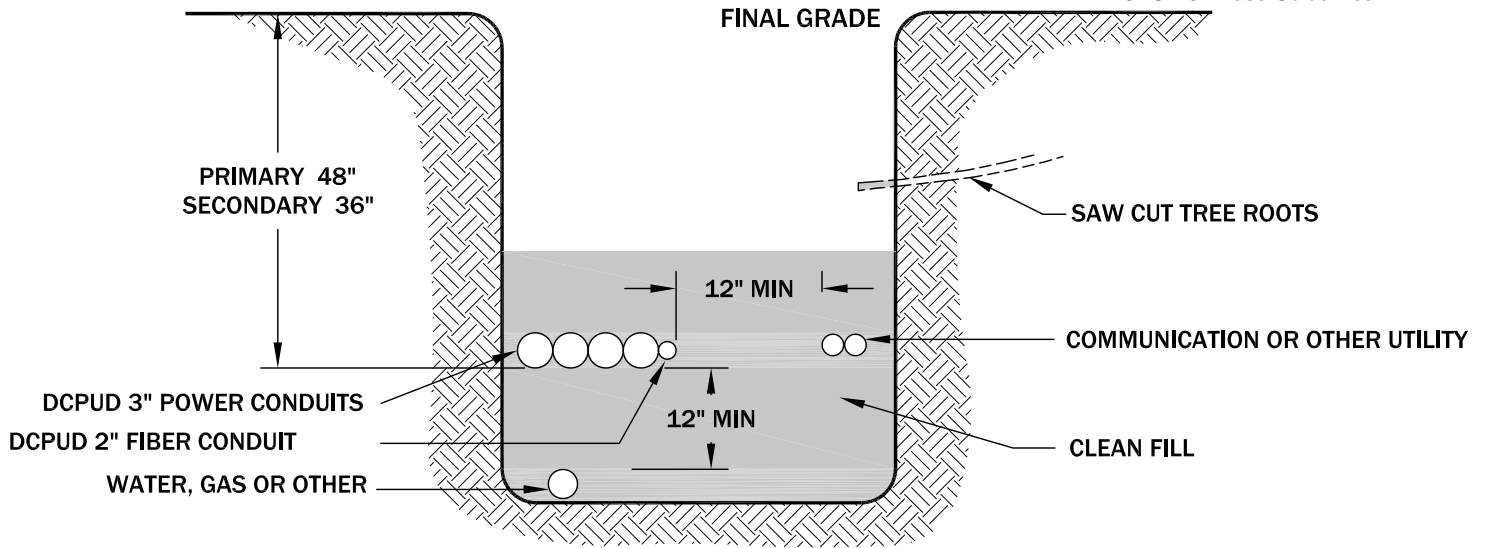
Calculated Load _____ Amps

Motor Load _____ HP

Lighting Load _____ Amps

HVAC Load _____ Amps

Misc Load (Describe) _____ Amps



PRIMARY POWER CONDUIT MINIMUM DEPTH	48"
SECONDARY POWER CONDUIT MINIMUM DEPTH	36"
COMMUNICATION CONDUIT MINIMUM DEPTH	18"

CONDUIT & INSTALLATION

- All material supplied by customer unless otherwise noted.
- All power conduit shall be 3" schedule 40 gray electrical PVC.
- Sweeps shall be 36" minimum radius and kept to a minimum. Back to back sweeps are not permitted.
- Backbone communication conduit shall be 2" gray schedule 40 PVC. Install 2 inch gray schedule 40 PVC from DCPUD transformer, handhole or pole location to home/business.
- Cap ends of power conduits to prevent material from entering.
- Cap ends of communication conduits (no glue, please).
- Provide pull string in conduit. String shall pull freely and shall not be glued to conduit.
- Conduit fitting and joints shall be installed clean, square and thoroughly glued.

TRENCHING

- Customers are to provide trenching, backfilling and compaction in accordance with Douglas County PUD standards.
- Trench shall be as straight as possible.
- Backfill with a minimum 3 inch layer of clean backfill, rocks no larger than 1 inch and no sharp objects placed over conduits. (clean native backfill meeting the aforementioned standards is acceptable).
- Trench shall be free of trash and frozen or organic material and be thoroughly compacted throughout.
- Trenching in a public right-of-way or crossing under a public roadway requires a roadway use permit, applied for and issued to the licensed and bonded excavation contractor who will perform all work in the public right-of-way.

SPECIAL NOTES

CALL BEFORE YOU DIG! 811

ALL CONDUIT MUST BE INSPECTED BEFORE COVERING - CALL DCPUD AT 881-2366 TO SCHEDULE INSPECTION. CALL 686-4501 FOR AN INSPECTION IN THE BRIDGEPORT AREA INCLUDING ALL AREAS NORTH AND EAST OF WITHROW.

DO NOT INSTALL CONDUITS INTO EXISTING TRANSFORMERS, HANDHOLES, VAULTS OR ANY ENERGIZED EQUIPMENT



DOUGLAS
COUNTY
PUD

THREE PHASE CONSTRUCTION STANDARDS

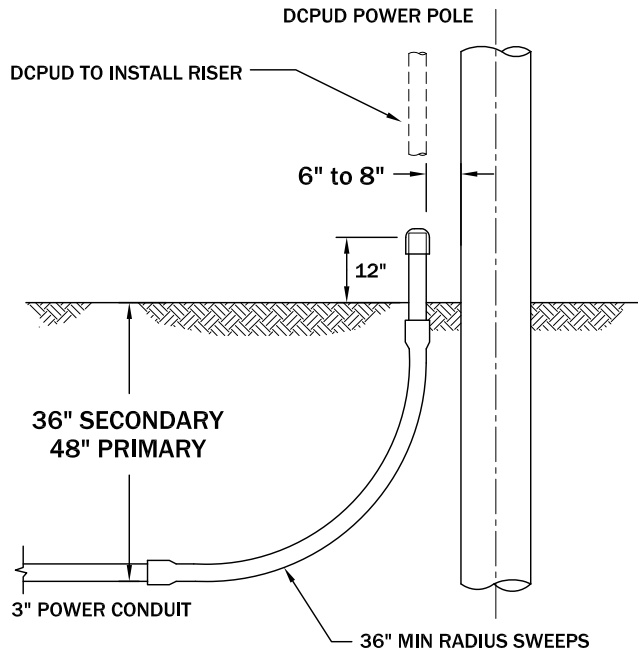
3-PH TRENCH & CONDUIT REQUIREMENTS

APPROVED:

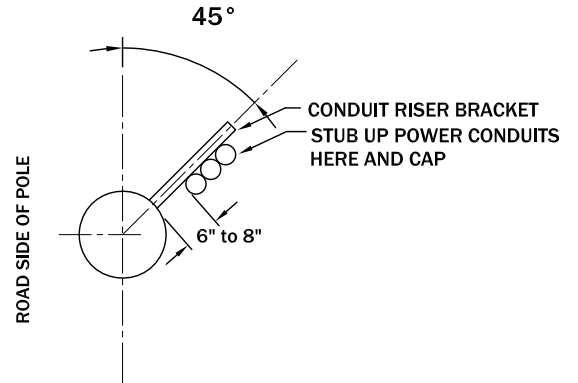
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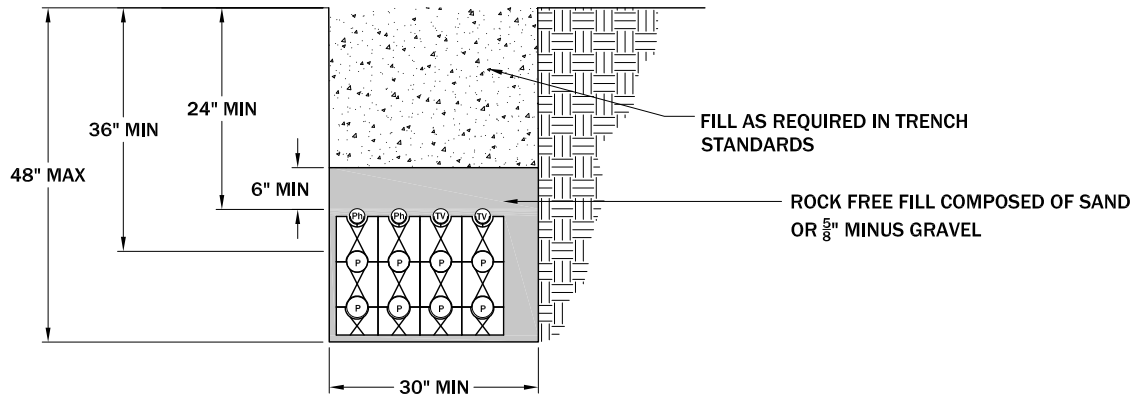
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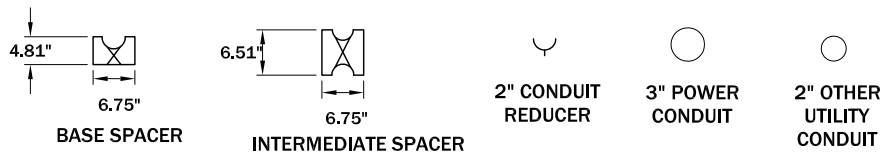
If no bracket exists at pole, stub conduit up to within 8" (but no closer than 6") of pole at a preferred quadrant location.



CONDUIT STUB UP AT POLE



MULTI CONDUIT CROSS SECTION



- THE USE OF CONDUIT SPACERS MAY BE REQUIRED FOR MULTI CIRCUIT TRENCHES
- CONCRETE DENSITY FILL (CDF) MAY BE REQUIRED BY DISTRIBUTION ENGINEERING

MULTI CIRCUIT TRENCH GUIDELINES



DOUGLAS COUNTY PUD

THREE PHASE CONSTRUCTION STANDARDS

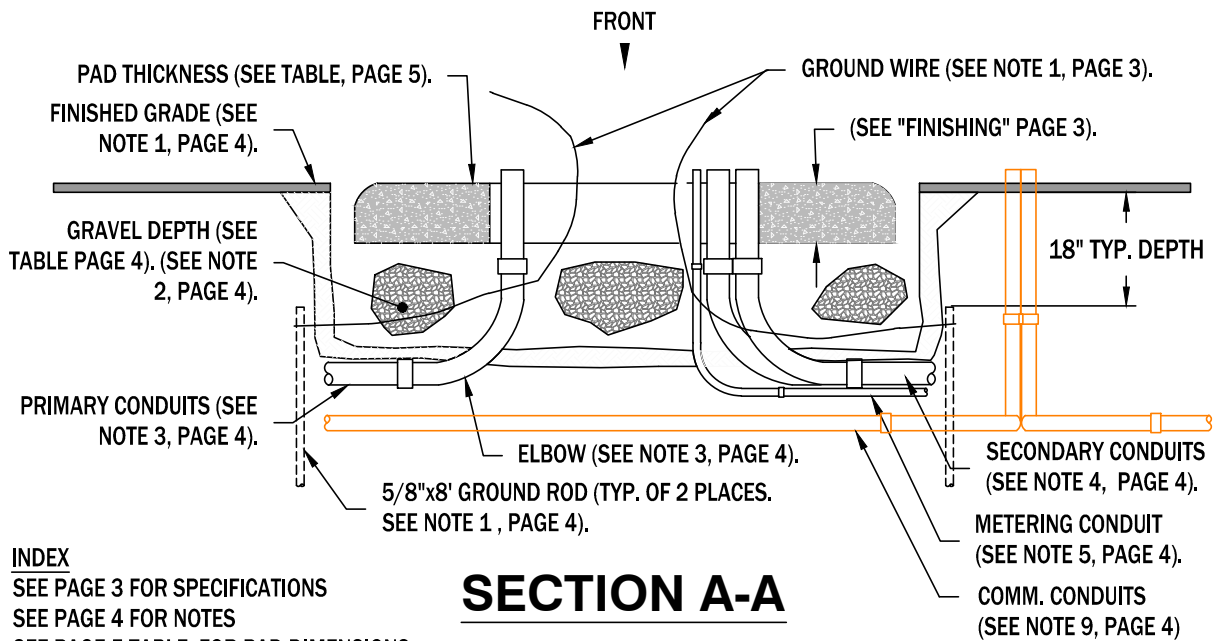
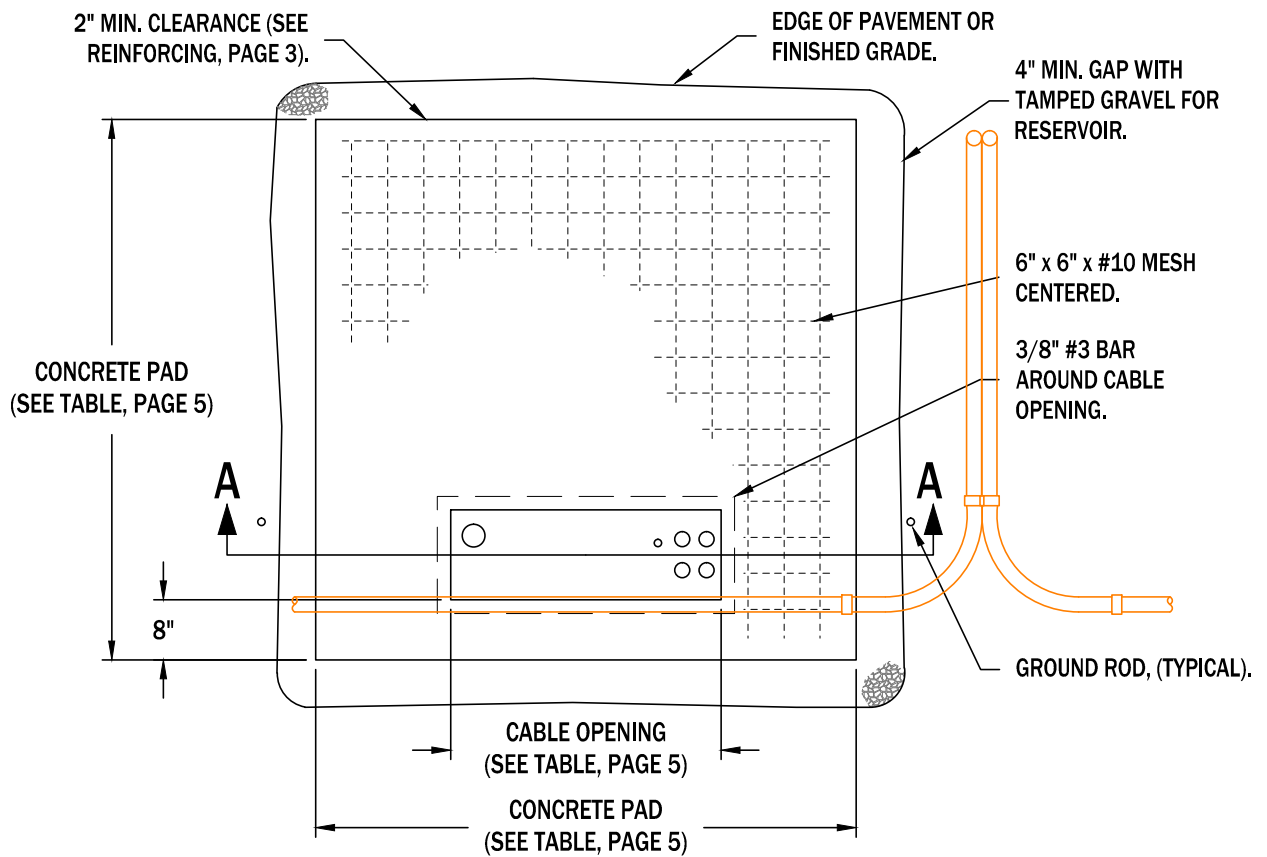
3-PH TRENCH & CONDUIT REQUIREMENTS

APPROVED:

REV DATE: 02/17/17

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CI3-001



INDEX
 SEE PAGE 3 FOR SPECIFICATIONS
 SEE PAGE 4 FOR NOTES
 SEE PAGE 5 TABLE FOR PAD DIMENSIONS



**DOUGLAS
 COUNTY
 PUD**

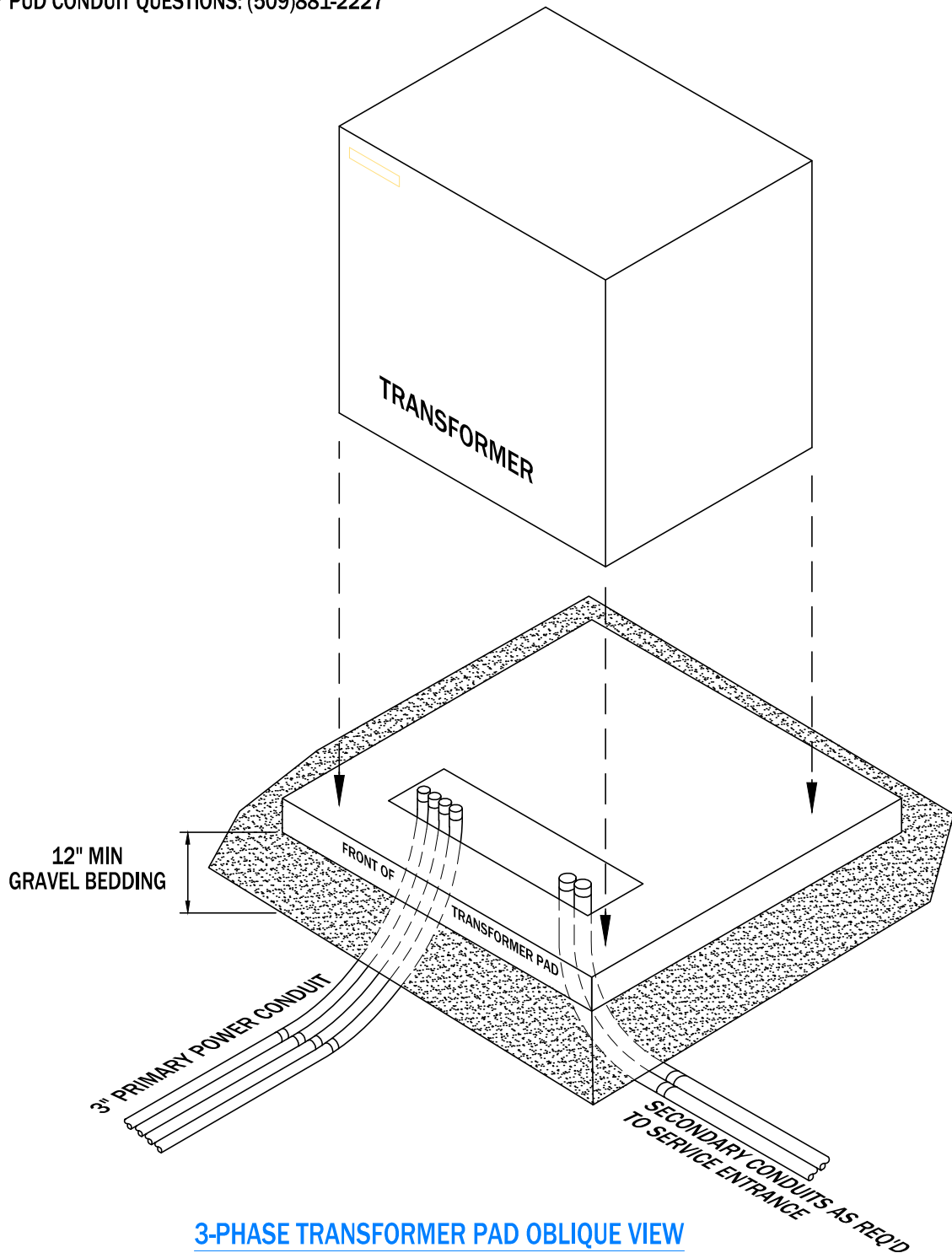
THREE PHASE CONSTRUCTION STANDARDS

APPROVED:
 REV DATE: 02/01/16

PAGE 1 of 5
 CI3-002

NOTES:

- DOUGLAS COUNTY PUD WILL SUPPLY AND INSTALL ALL GROUNDING MATERIALS.
- DOUGLAS COUNTY PUD DITCH INSPECTION: (509)881-2366
- DOUGLAS COUNTY PUD CONDUIT QUESTIONS: (509)881-2227



3-PHASE TRANSFORMER PAD OBLIQUE VIEW



**DOUGLAS
COUNTY
PUD**

THREE PHASE CONSTRUCTION STANDARDS

3-PHASE CONCRETE TRANSFORMER PAD

APPROVED:

REV DATE: 07/06/15

PAGE 2 of 5

CI3-002

SPECIFICATIONS FOR CONSTRUCTION OF CONCRETE TRANSFORMER PADS

CONSTRUCTION AND DIMENSIONS - Construction shall be in accordance with directions given on page 1 and dimensions shall conform to those specified on page 5. The pad shall be constructed level and plumb.

READY-MIX-CONCRETE

1. Ready mix concrete is preferred to field mix concrete. When ordering ready mix concrete, specify as follows: Concrete shall develop a minimum compressive strength, after 28 days, of 3,000 p.s.i., and shall be made using a minimum of 5 1/2 - 94 lb. bags of cement per cubic yard. The total slump shall not exceed 4 inches when determined by A.S.T.M. C-143. Concrete shall also conform to A.S.T.M. C-94 as revised to date.
2. All cement shall be Type II Portland Cement and shall conform to A.S.T.M. C-150. Fine and coarse aggregate shall be clean and free of organic matter or other harmful substances. All coarse aggregate shall not be larger than 1".

FIELD MIX CONCRETE - Field mix concrete shall be 1:2:4 proportions and shall be made using a maximum of 6 gallons of water per cubic yard of mix. Avoid using more water as this will reduce the strength of the concrete.

REINFORCING

1. All pads are to be reinforced with one layer of 6" X 6" X #10 welded wire fabric (mesh), and 3/8" deformed reinforcing bar. The layer of mesh shall be centered as shown on the plan view. The reinforcement must be protected from moisture by at least 2" of concrete from outer surfaces of the pad. The mesh shall also be cut to finish such that no portion shall be closer than 2" from any outer surface of the pad.
2. All reinforcing steel shall be new and shall conform to A.S.T.M. specification designation A-615, Grade 40.

FINISHING - All pads shall have edges rounded and smooth. Top of pad shall be sealed with Concrete Sealer to prohibit moisture entry.

INSPECTION - Inspection of pad MAY be required. Contact Distribution Engineering for this determination.



**DOUGLAS
COUNTY
PUD**

THREE PHASE CONSTRUCTION STANDARDS

3-PHASE CONCRETE TRANSFORMER PAD

APPROVED:

REV DATE: 07/06/15

PAGE 3 of 5

C13-002

NOTES FOR CONSTRUCTION OF CONCRETE TRANSFORMER PADS

1. Finished grade at pad location shall slope away from any nearby buildings. Location of the pad shall conform to the latest edition of the following: State of Washington Department of Labor and Industries Electrical Division Rules and Regulations for Installing Electric Wires and Equipment and Administrative Rules (WAC 296-44); National Electric Safety Code (ANSI C2); National Electric Code.
2. 5/8" - Top Course Aggregate shall be set in 6" layers and well tamped to form a stable bed and reservoir area beneath pad. Surrounding earth shall be undisturbed or restored to 95 percent compaction.
3. The primary conduit/s shall be installed as specified by the District due to quantity, size and direction from pad. Stub conduits a minimum of 5'-0" beyond the side, and minimum of 2" above the pad. Sweeps shall be schedule 40 PVC with minimum radius of 36". Ends shall be protected from entry of debris until final connections are made.
4. Secondary conduit/s shall be supplied and installed by contractor as shown on pages 1 & 2. These conduits shall be grouped as close to the secondary side of the opening as possible in order to avoid conflict with primary conduit. Secondary conduit must rise in the right side of the cable opening.
5. Meter location and metering conduit installation shall be verified by Distribution Engineering prior to construction. Metering conduit shall be 1" galvanized steel or sch. 80 PVC, and typically not more than 10' from transformer.
6. The concrete pad shall conform to the specifications as set forth on page 3 of this standard.
7. Pad dimensions shall conform to those set forth in the Table on page 5 of this standard. Verify pad type with Distribution Engineering prior to construction.
8. Keep secondary conduit/s contained to the right and primary conduit/s to the left of cable opening as viewed when facing the front of the pad. Refer to plan view for orientation.
9. 2" communication conduit. Communication conduit shall be stubbed to the right of the transformer location as viewed from the road.



**DOUGLAS
COUNTY
PUD**

THREE PHASE CONSTRUCTION STANDARDS

3-PHASE CONCRETE TRANSFORMER PAD

APPROVED:

REV DATE: 01/10/2018

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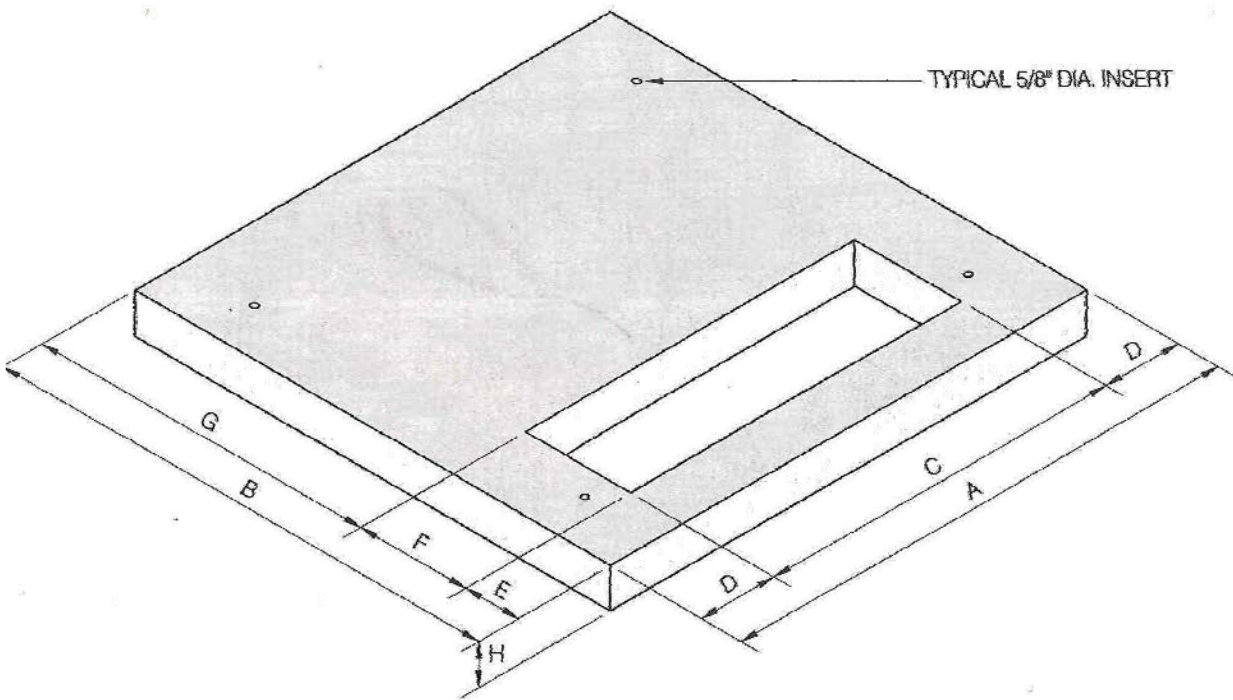
C13-002

TABLE FOR CONSTRUCTION OF CONCRETE TRANSFORMER PADS

TRANSFORMER SIZE	PAD TYPE	A	B	C	D	E	F	G	H	GRAVEL DEPTH
45-150 KVA	1	72"	72"	36"	18"	8"	12"	52"	6"	12"
225-500 KVA	2	84"	84"	42"	21"	8"	15"	61"	8"	12"
750-1500 KVA	3	90"	90"	48"	21"	8"	18"	64"	8"	18"
2000-3000 KVA	4	114"	96"	60"	27"	8"	18"	70"	12"	18"

For information only. All dimensions must be verified by Distribution Engineering before construction.

Given dimensions are centered about front of pad as shown on PLAN VIEW page 1.



DOUGLAS
COUNTY
PUD

THREE PHASE CONSTRUCTION STANDARDS

3-PHASE CONCRETE TRANSFORMER PAD

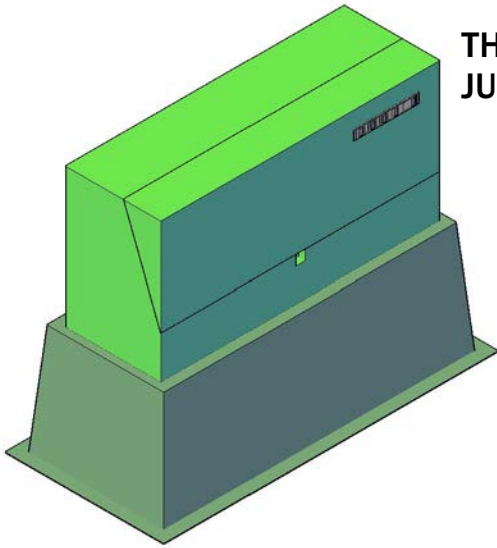
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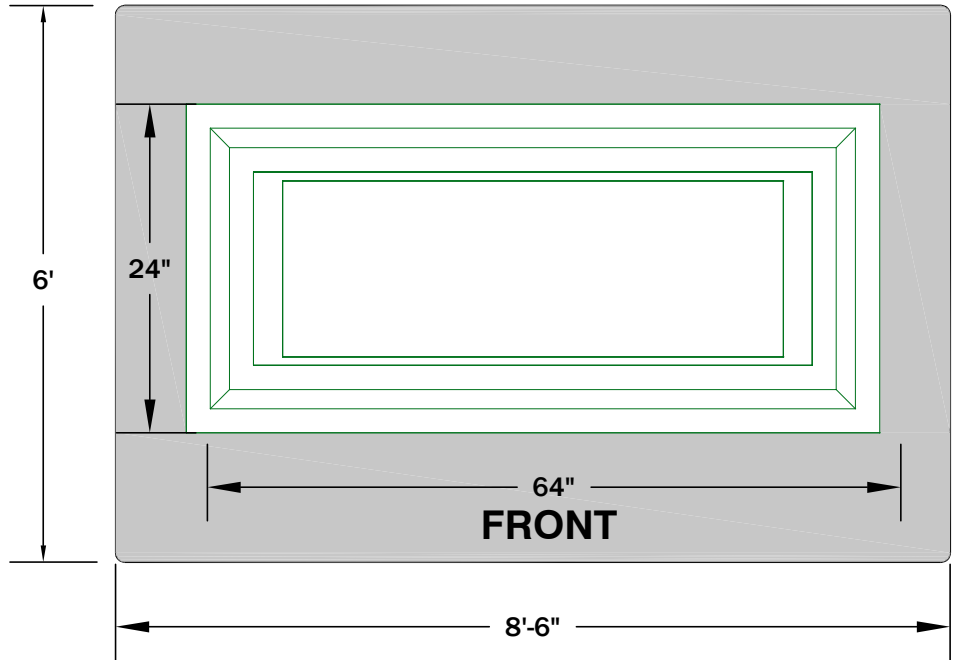
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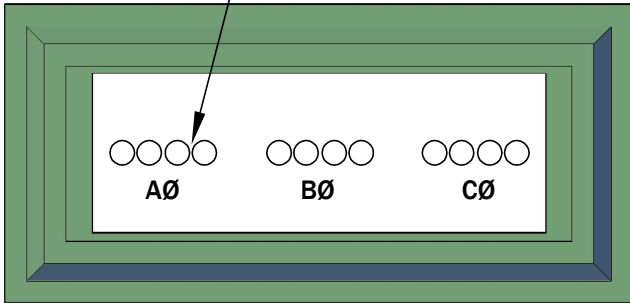
**THREE PHASE
JUNCTION CABINET**



PLAN VIEW - EXCAVATION AREA



STUB CONDUITS UP
AS SHOWN

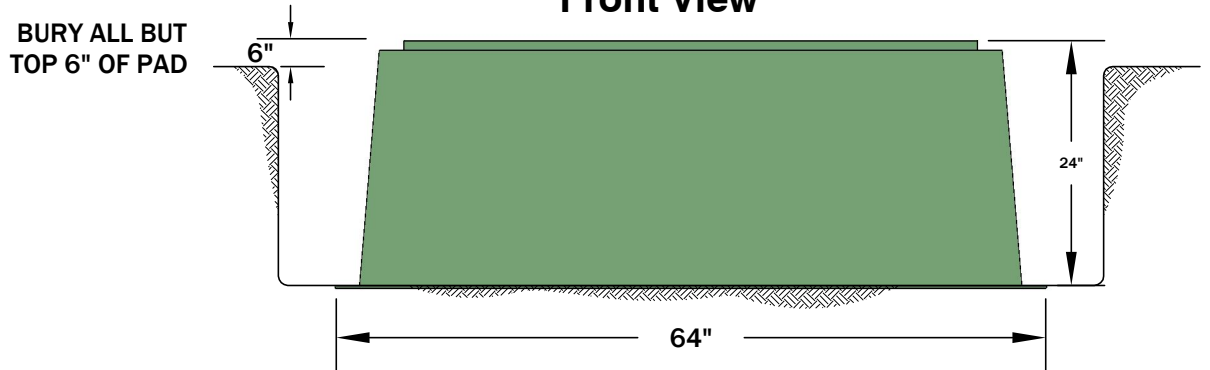


Top View

GENERAL NOTES

- Excavation & conduit installations must be inspected by a Douglas County PUD field representative.
- Pad area is to be select backfill and firmly tamped.
- Cap all conduit stubs.
- Douglas County PUD will supply and install all grounding material.

Front View



**DOUGLAS
COUNTY
PUD**

DEVELOPMENT CONSTRUCTION STANDARDS

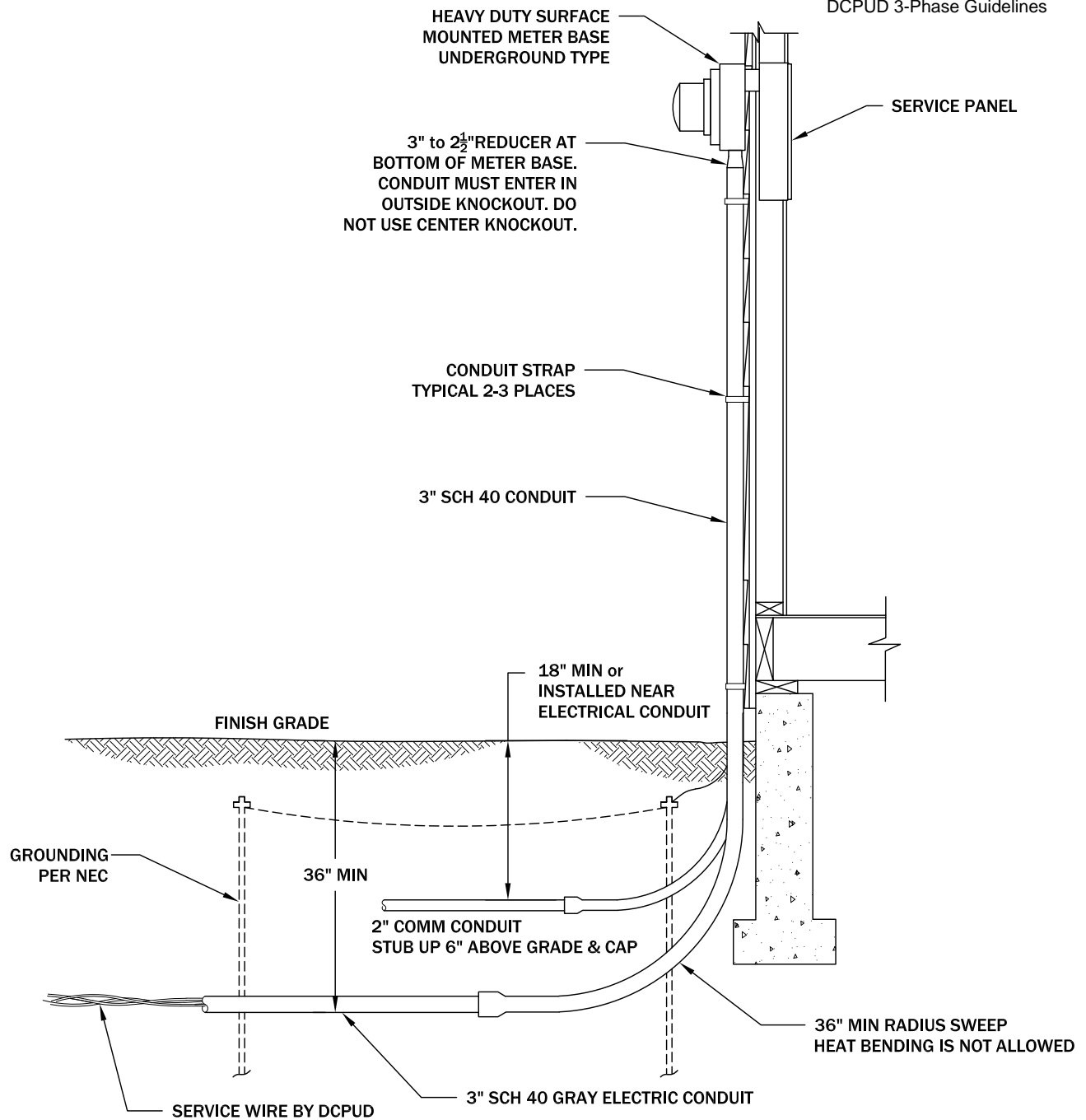
3PH JUNCTION BOX PAD EXCAVATION/CONDUIT INSTALLATION

APPROVED:

REV DATE 06/15/15

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CI3-003



GENERAL NOTES

- All equipment furnished and installed by customer or customer's electrician unless otherwise noted.
- The meter base must be inspected by the Washington State Department of Labor & Industries Electrical Inspector and approved before service conductors can be installed. Permit and inspection sticker must be displayed.
- Meter base and conduit must be installed on an outside wall. Recessed (flush mount) meter bases are NOT allowed.
- Consult an electrician or Washington State Department of Labor & Industries Electrical Inspector for current NEC guidelines for service entrance, meter base and grounding codes.



DOUGLAS
COUNTY
PUD

THREE PHASE CONSTRUCTION STANDARDS

200 Amp OR LESS UNDERGROUND THREE PHASE SERVICE

APPROVED:

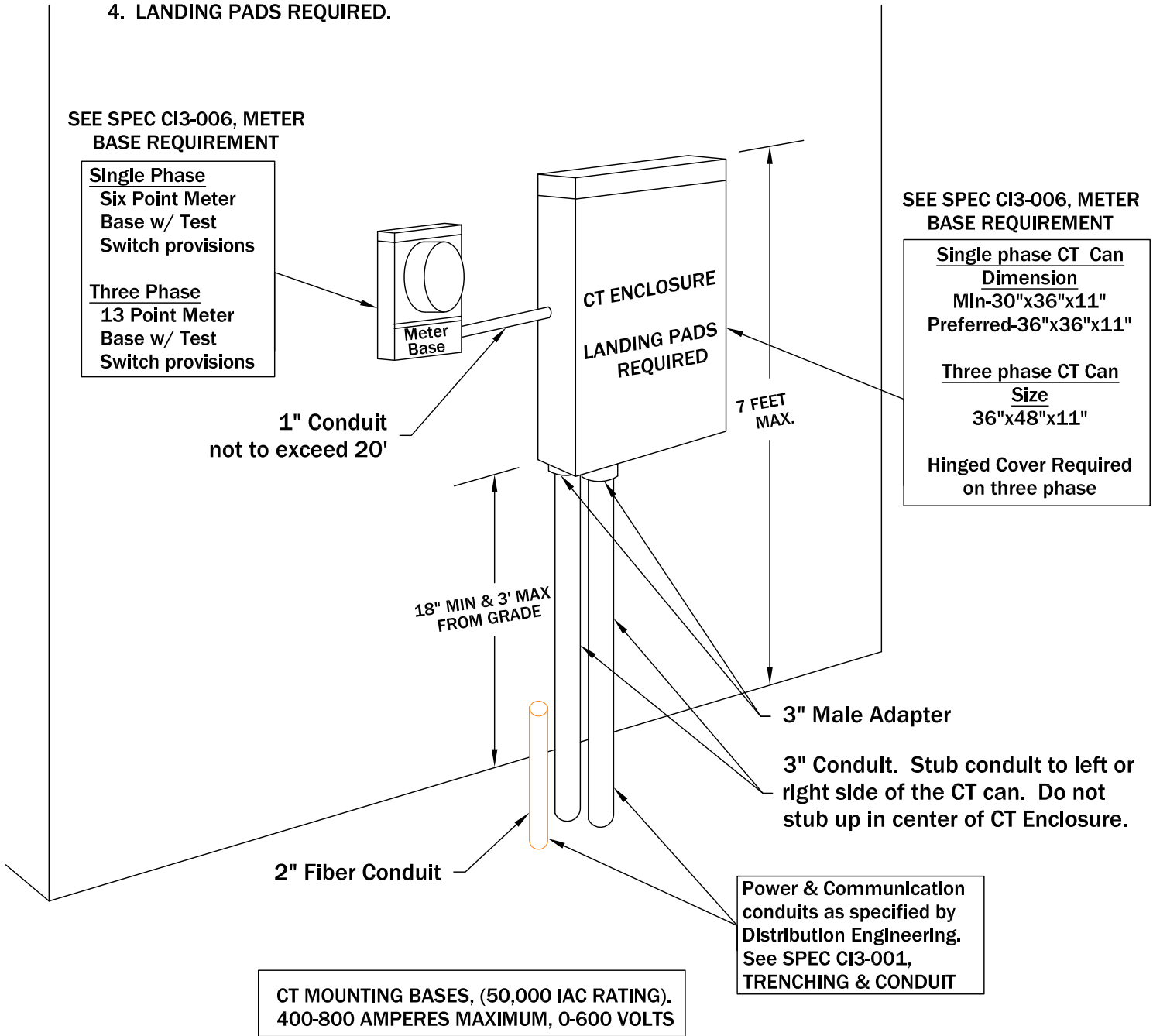
REV DATE 04/24/19

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CIS-008

GENERAL NOTES:

1. ALL MATERIAL SUPPLIED AND INSTALLED BY CUSTOMER.
2. NO FITTINGS ALLOWED IN CONDUIT FROM CT ENCLOSURE TO METER BASE.
3. GROUND RODS SHALL BE INSTALLED AT EACH METER LOCATION PER NEC
4. LANDING PADS REQUIRED.



DOUGLAS
COUNTY
PUD

THREE PHASE CONSTRUCTION STANDARDS

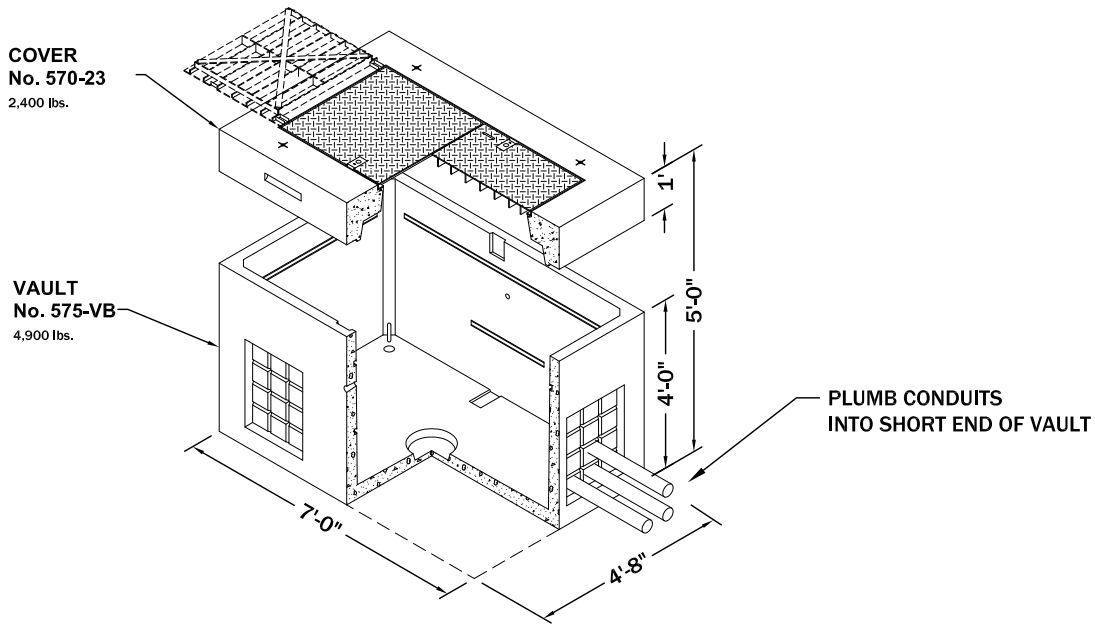
TYPICAL CT METERING ARRANGEMENT

APPROVED:

REV DATE: 02/21/20

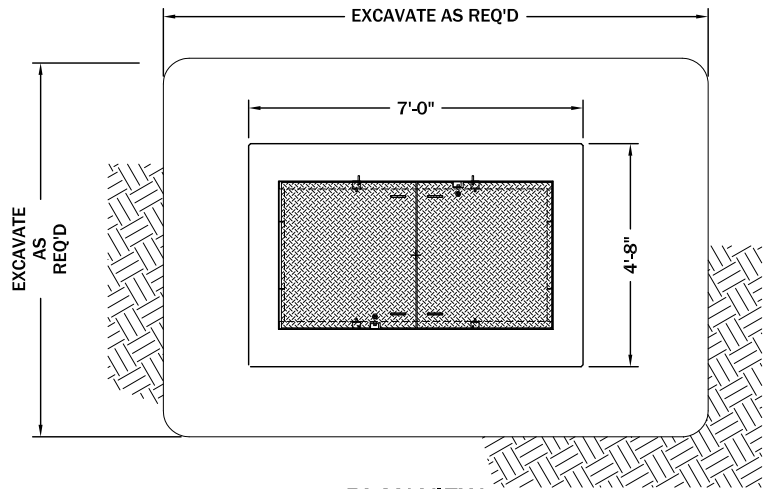
PAGE 1 of 1

CI3-004

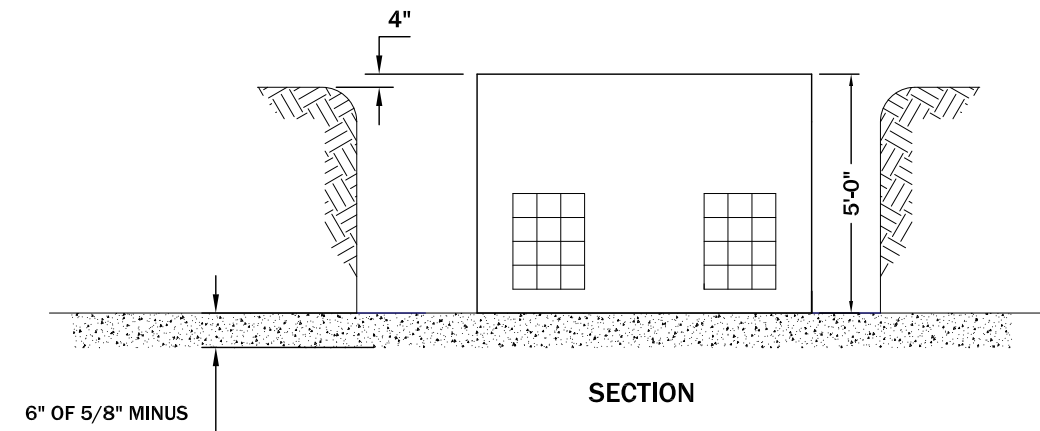


VAULT INSTALLATION NOTES:

1. SET AND LEVEL THE HANDHOLE AND COVER SO THAT THE TOP IS 4" ABOVE FINAL GRADE. FOR INSTALLATION IN SIDEWALKS, ADJUST COVER TO FINAL GRADE AND GROUT IN PLACE.
2. PROVIDE MINIMUM 6" OF 5/8" MINUS LEVEL BASE BEFORE VAULT INSTALLATION.
3. DOUGLAS COUNTY PUD WILL SUPPLY AND INSTALL ALL GROUNDING MATERIALS.



PLAN VIEW



SECTION



**DOUGLAS
COUNTY
PUD**

THREE PHASE CONSTRUCTION STANDARDS

SECONDARY VAULT/ENCLOSURE

APPROVED:

REV DATE:

02/02/16

PAGE 1 of 2

CI3-005



PAD-MOUNTED TERMINATION ENCLOSURES

TYPE LPTE/LPLE

Three-Phase, NEMA 3R (rain-proof), 600 Volt Rated

- Aluminum mechanical bar connector eliminates compression tools, lugs and bolt assemblies.
- Aluminum enclosure is lightweight, low maintenance and has excellent corrosion resistance.
- All-welded construction: Welds and seams are ground smooth.
- Manufactured to meet or exceed ANSI C57-12.28 for pad-mount equipment enclosure integrity.
- Removable swinging doors - Doors have stainless steel lift off hinges with stainless steel three-point locking handles and recessed stainless steel penta-head bolts for security.
- Finish is Munsell green, oven cured powder coat.
- All mounting hardware is 18-8 stainless steel.
- **Any pad mount enclosure can be made with a lift-off (removable) top. In order to designate this use "LPLE" instead of "LPTE"**

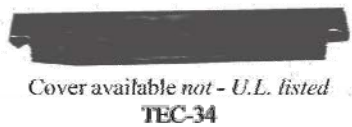
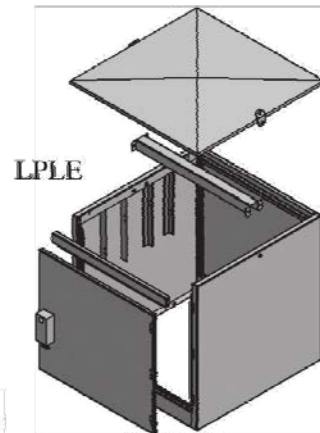
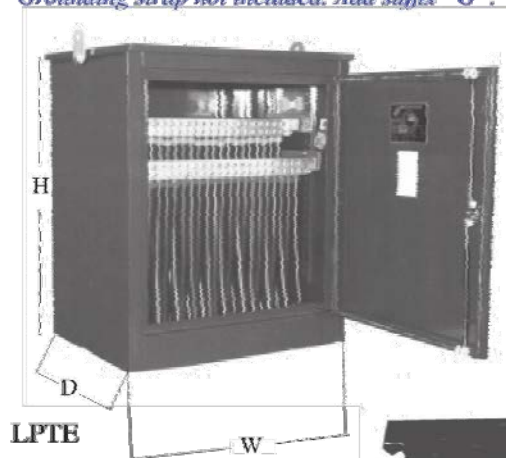


ANSI C119.4
14KL

Catalog Number	Cond. Range AWG	No. of Cond. Per Phase	W	D	H	U.L. Listed Amp Rating	
			Dimensions - Inches			Copper	Aluminum
LPTE26-500	500-10	26	36.00	30.00	44.00	4560	3720
LPTE22-750	750-2	22	36.00	30.00	44.00	5225	4235
LPTE20-1000	1000-1/0	20	36.00	30.00	44.00	4905	4005
LPTE14-750	750-2	14	25.00	24.00	44.00	3325	2695
LPTE24-750	750-2	24	48.00	54.00	44.00	4560	3720
LPTE30-750	750-2	30	48.00	30.00	44.00	4905	4005
LPTE30-1000	1000-1/0	30	54.00	52.00	44.00	5225	4235

Notes:

- Consult factory for special applications or conductor sizes.
- Add suffix "C" to the end of the catalog number to include 4-phase covers.
- Grounding strap not included. Add suffix "G".



**DOUGLAS
COUNTY
PUD**

THREE PHASE CONSTRUCTION STANDARDS

SECONDARY VAULT/ENCLOSURE

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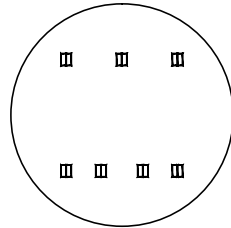
REV DATE: 03/07/16

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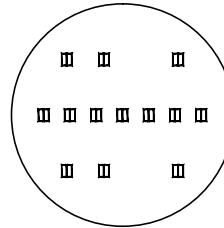
CI3-005

METER SOCKET CLIP ARRANGEMENTS

	VOLTAGE	SELF CONTAINED				WITH CURRENT TRANSFORMER/S		
		NO. WIRES	MAX. AMPS	NO. CLIPS	SCKT.	NO. CT'S.	NO. CLIPS	SCKT.
THREE PHASE	208/120	4	200	7	D	3	13	E
	120/240	4	200	7	D	3	13	E
	240/480	4	200	7	D	3	13	E
	480/277	4	200	7	D	3	13	E



D



E

GENERAL NOTES

The meter base/socket you purchase and install shall meet the following general requirements:

- Be Underwriters Laboratories (UL) approved.
- Meet the standards of EUSERC.
- Be rated for exterior use and be rain-tight according to NEMA-3R.
- Have all unused openings tightly sealed from the inside of the socket.
- Be plumb and securely fastened to the supporting structure.
- Have a cover that is securely attached to the meter base/socket case.
- Meter base shall NOT be enclosed or recessed.

NOTE: Meter base/socket shall not be used as a junction box.

CUSTOMER RESPONSIBILITIES - SUPPLY & INSTALL:

- Meter base.
- Current Transformer (CT) Enclosure (can).
- 1" grey schedule 40 electrical conduit from meter base to CT enclosure - not to exceed 20'.
 1. Bushings are required at both ends of the conduit run.
 2. Ends of conduit must be taped or capped and sealed to keep dirt and water out.
 3. Conduit connections must be glued and fully seated.
- CT mounting base (see page 2 of 3).
- Bonding and grounding of CT enclosure per NEC requirements.

DOUGLAS COUNTY PUD RESPONSIBILITIES:

- Supply current transformers.
- Wiring of current transformers.
- Supply and install meter.



**DOUGLAS
COUNTY
PUD**

THREE PHASE CONSTRUCTION STANDARDS

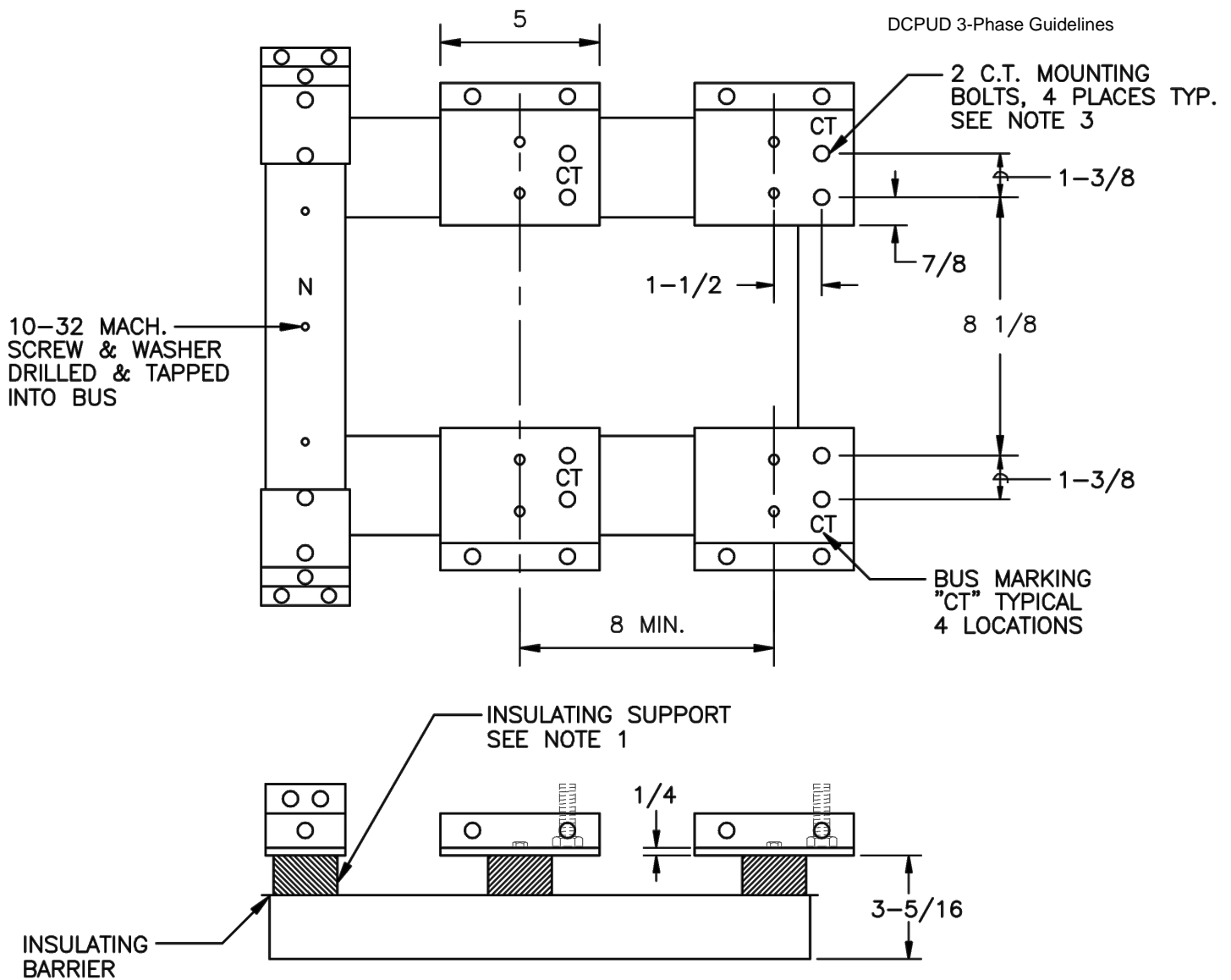
METER REQUIREMENTS – 3 PHASE

APPROVED:

REV DATE: 07/13/15

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CI3-006



NOTES

1. Mounting base accepts bar type current transformers only.
2. Two $\frac{1}{2}$ inch steel bolts shall be provided for each current transformer mounting position. Each bolt shall be secured in place and furnished with a spring washer and a nut. The spring washer may be either a cone-type (Belleville) or a split ring washer and a flat washer. All parts shall be plated to prevent corrosion.
 NOTE: When Belleville washers are used, the manufacturer shall provide a label with the required torque setting. This label shall be in a readily visible location within the compartment that the washers are being utilized in and shall not be installed on the meter or filler panels.
3. Terminations for service conductors shall be ONE position min., aluminum-bodied mechanical lugs with a range accepting on No. 4 AWG through 600 KCMIL conductor or two No. 1 AWG through 250KCMIL conductors.



**DOUGLAS
COUNTY
PUD**

THREE PHASE CONSTRUCTION STANDARDS

METER REQUIREMENTS – 3 PHASE

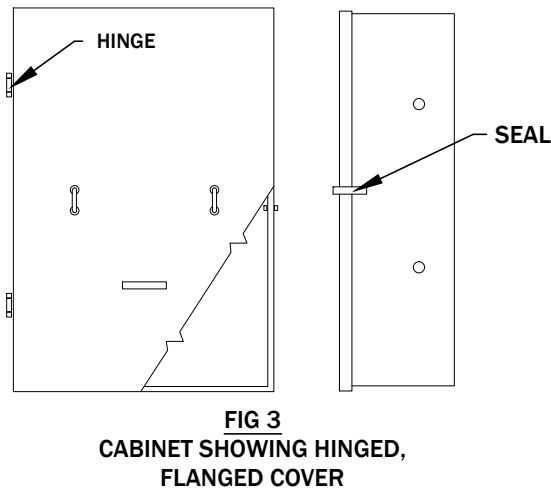
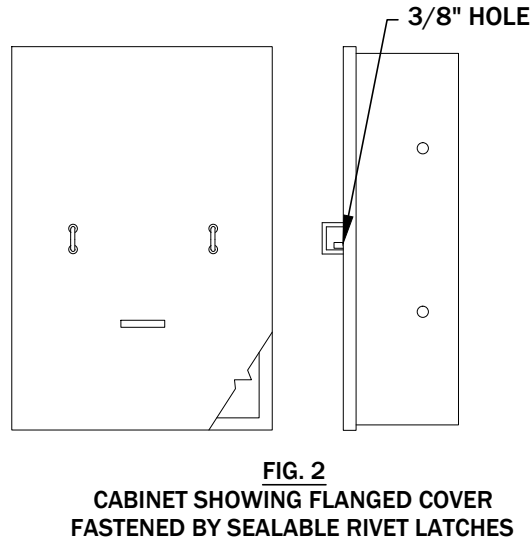
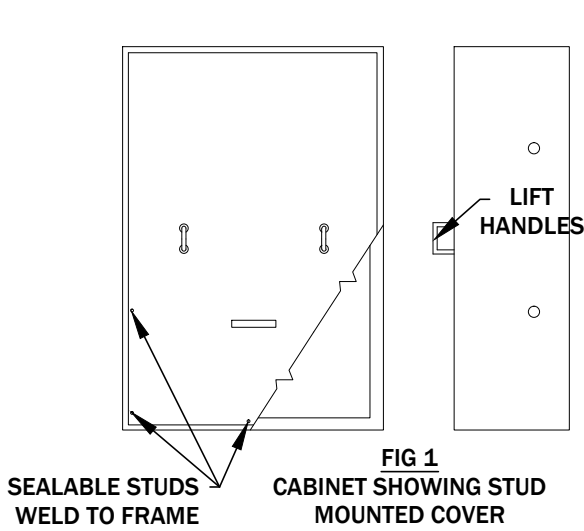
APPROVED:

REV DATE: 07/13/15

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CI3-006

CT ENCLOSURES



TYPE OF SERVICE	CABINET SIZE
3 WIRE	36x36x11
4 WIRE	36x48x11

GENERAL NOTES

1. Cover shall be sealable.
2. CT enclosure shall be connected to the meter socket or meter enclosure with conduit and bonded by approved methods (see SPEC C13-004, CT Metering Arrangement).
3. Cabinet shall be weather tight.
4. Grounding lug for minimum no. 8 wire shall be provided internally for use by utility.
5. 800 amps. maximum 0-600 volts.
6. Landing pad must be 50,000amp fault current rated.
7. Three phase cabinet shall be hinged.



**DOUGLAS
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PUD**

THREE PHASE CONSTRUCTION STANDARDS

METER REQUIREMENTS – 3 PHASE

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