

CITY OF LACEY, WASHINGTON

LIFT STATION 34 & 37 REHABILITATION

LACEY CONTRACT # 2023-05

MAY 2023

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LS 37

GENERAL

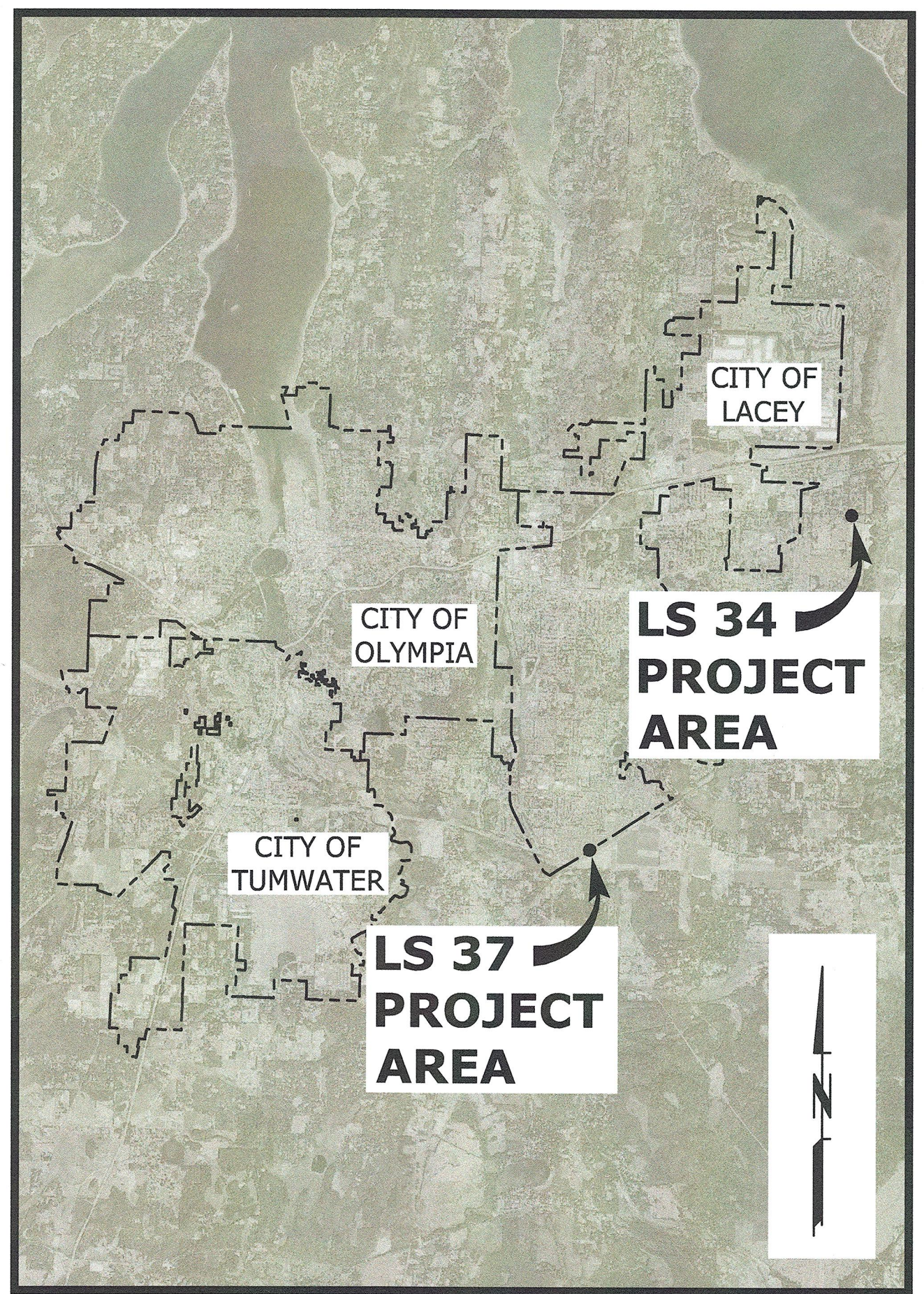
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CIVIL

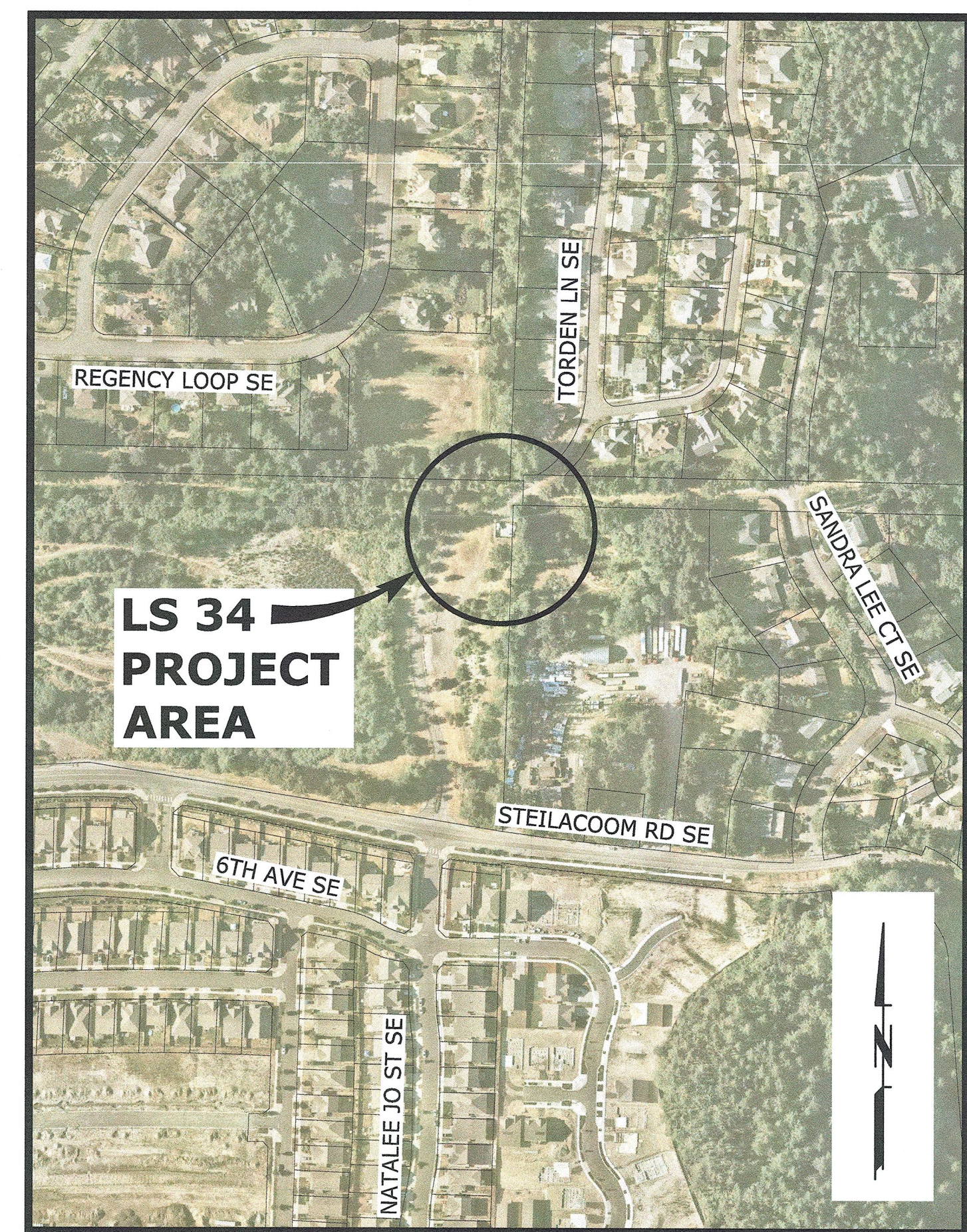
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ELECTRICAL

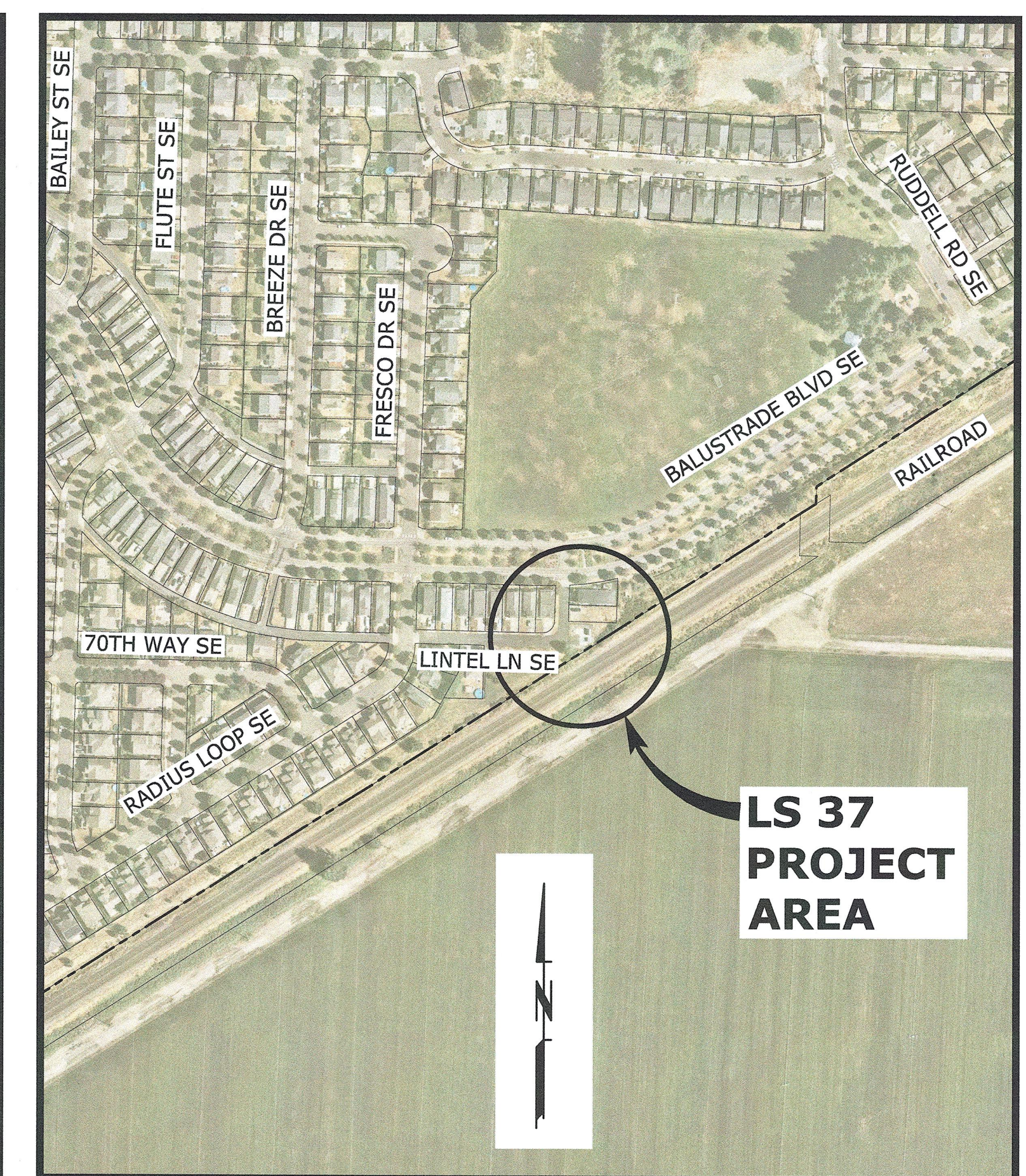
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VICINITY MAP
SCALE: 1"=10,000'



LS 34 AREA MAP
SCALE: 1"=250'



LS 37 AREA MAP
SCALE: 1"=250'

CITY OF LACEY OFFICIALS

MAYOR:
ANDY RYDER

INTERIM CITY MANAGER:
RICK WALK

DEPUTY MAYOR:
MALCOLM MILLER

CITY ATTORNEY:
DAVE SCHNEIDER

COUNCIL MEMBERS:
LENNY GREENSTEIN
MICHAEL STEADMAN
CAROLYN COX
ED KUNKEL
ROBIN VAZQUEZ

CITY ENGINEER:
AUBREY COLLIER, P.E., S.E.

DIRECTOR OF PUBLIC WORKS:
SCOTT EGGER, P.E.

Scott Egger 5/5/23
For DIRECTOR OF PUBLIC WORKS DATE



Know what's below.
Call before you dig.

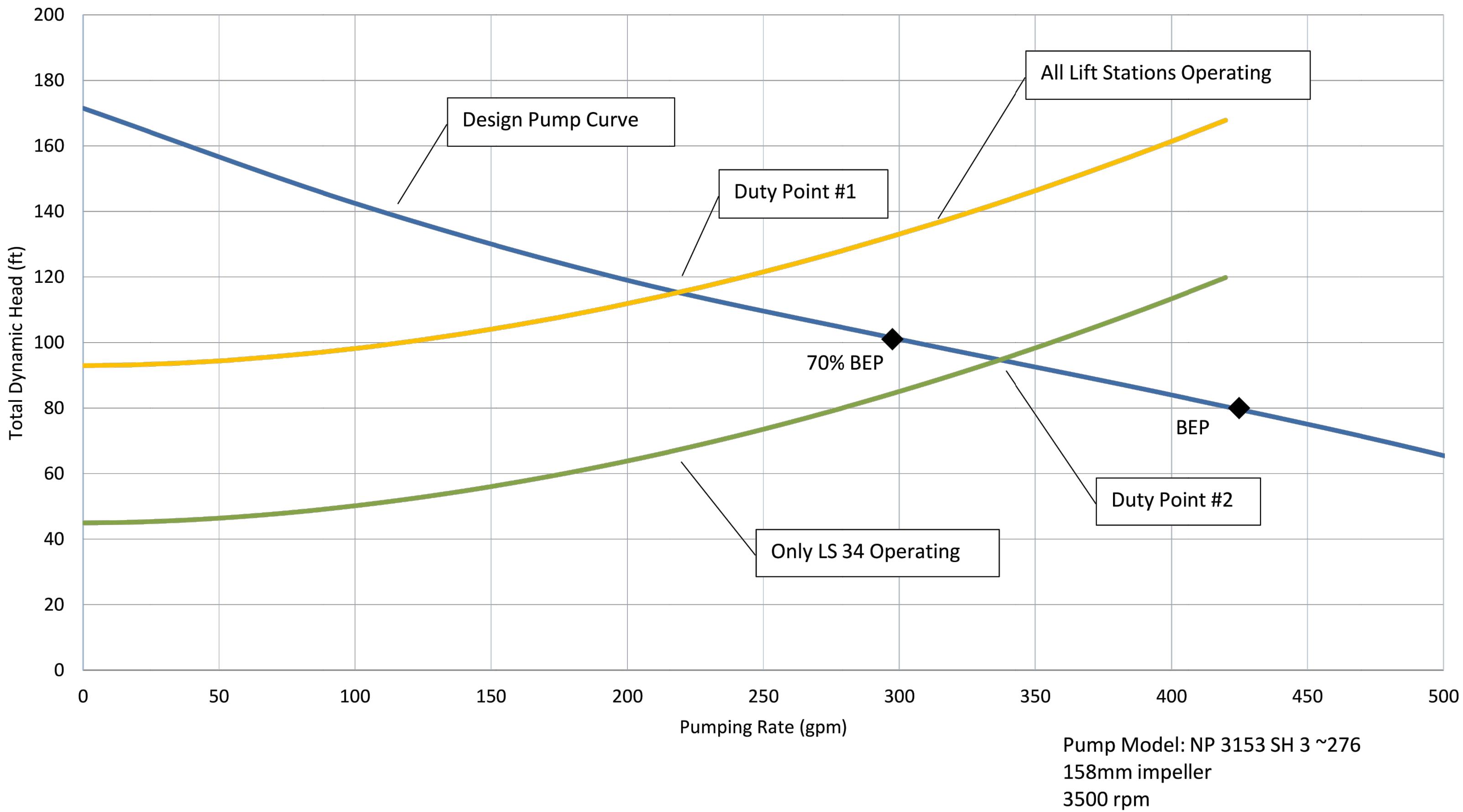


K:\TAC_Projects\22\3380.01-06 - Lacey LS Consultant Projects\CAD\Sheets\LS 34\22-3380-WA-LS34-G.dwg G-1 5/11/2023 1:32 PM KENT.HARJALA 23.0s (LMS Tech)

K:\TAC_Projects\22\3380.01-06 - Lacey LS Consultant Projects\CAD\Sheets\LS 34\22-3380-WA-LS34-G.dwg G-3 5/1/2023 2:48 PM DEREK.CLOUD 24.1s (LMS Tech)

SYSTEM HEAD-CAPACITY CURVES:

Lift Station 34 System & Pump Curves



DESIGN DATA SUMMARY TABLE:

DESIGN DATA SUMMARY TABLE	
PUMP STATION	
LOCATION	800 TORDEN LANE SE
PUMP STATION TYPE	DUPLEX SUBMERSIBLE
PUMP TYPE	(2) CONSTANT SPEED, NON-CLOG
DESIGN PEAK HOURLY INFLUENT FLOW (GPM)	255
PUMP CAPACITY (GPM, PER PUMP) AT 100% OF RATED SPEED	220 GPM AT 116' TDH (ALL LIFT STATIONS OPERATING) 330 GPM AT 93' TDH (ONLY LS34 OPERATING)
MAXIMUM PUMP STARTS PER HOUR, PER PUMP	6
MOTOR HORSEPOWER, HP	17 HP
WET WELL LEVEL CONTROL TYPE	ULTRASONIC
WET WELL OPERATING VOLUME, PUMPS OFF TO LEAD PUMP ON (GAL)	940
OVERFLOW POINT/OVERFLOW DISCHARGE ELEVATION (FT)	UPSTREAM MH IN TORDEN LANE, ELEV. ~216.5
AUXILIARY POWER TYPE	STANDBY DIESEL GENERATOR
AUXILIARY POWER LOCATON	ONSITE
AUXILIARY POWER OUTPUT	75 KW
AUXILIARY POWER TRANSFER SWITCH	AUTOMATIC
ALARM TELEMETRY TYPE	CELLULAR AND RADIO
EPA RELIABILITY CLASS	1

FORCE MAIN					
LENGTH, FT	SIZE, IN	MATERIAL	SHARED?	FULL-PIPE?	C-VALUE
40	6	DIP	NO	YES	115
1,290	6	C900 CL200 PVC	NO	YES	125
2,780	6	C900 CL200 PVC	YES	YES	125
1,275	6	C900 CL200 PVC	YES	NO	N/A

NO.	DATE	BY	REVISION

NOTICE

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

TMH
DESIGNED
JSD
DRAWN
SSA
CHECKED

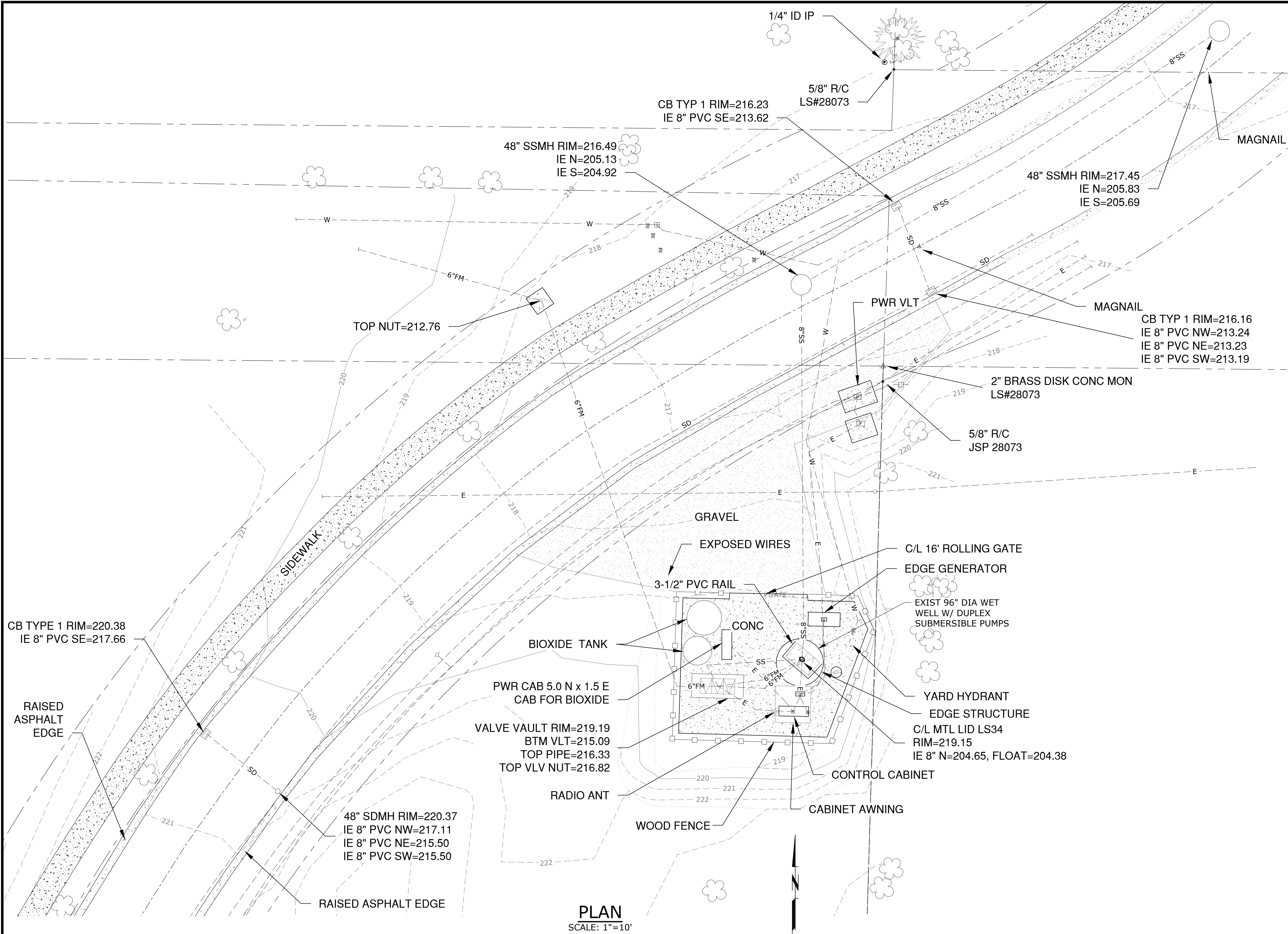


CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 34 SYSTEM-HEAD CAPACITY CURVES
AND DESIGN DATA SUMMARY TABLE

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

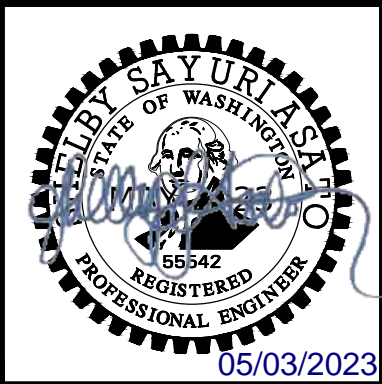
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NOTICE
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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DESIGNED
JSD/DKH
DRAWN
SSA
CHECKED

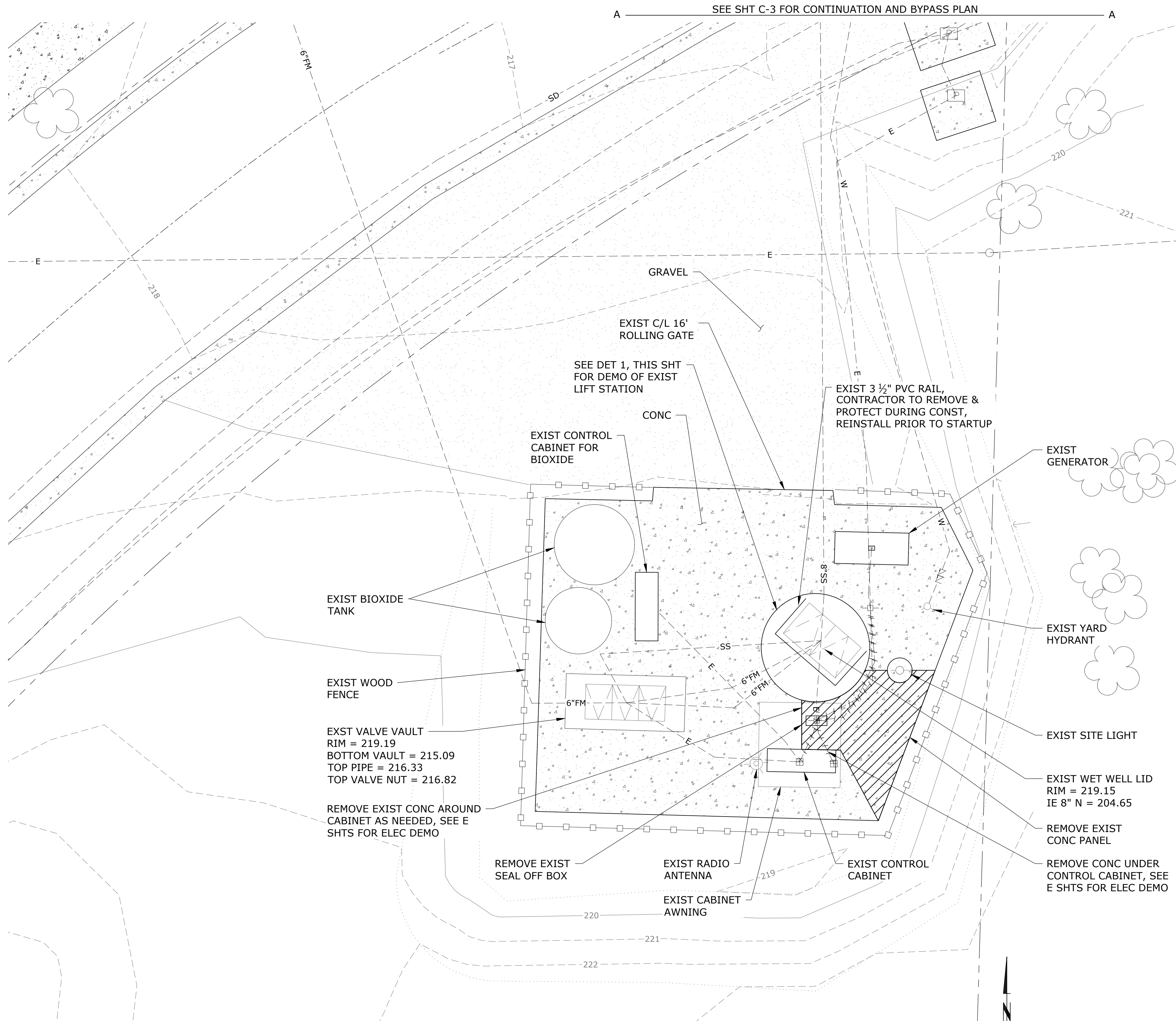


CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

PROJECT NO.: 22-3380.03				SCALE: AS SHOWN	DATE: MAY 2023
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SHEET
G-4
4 of 28

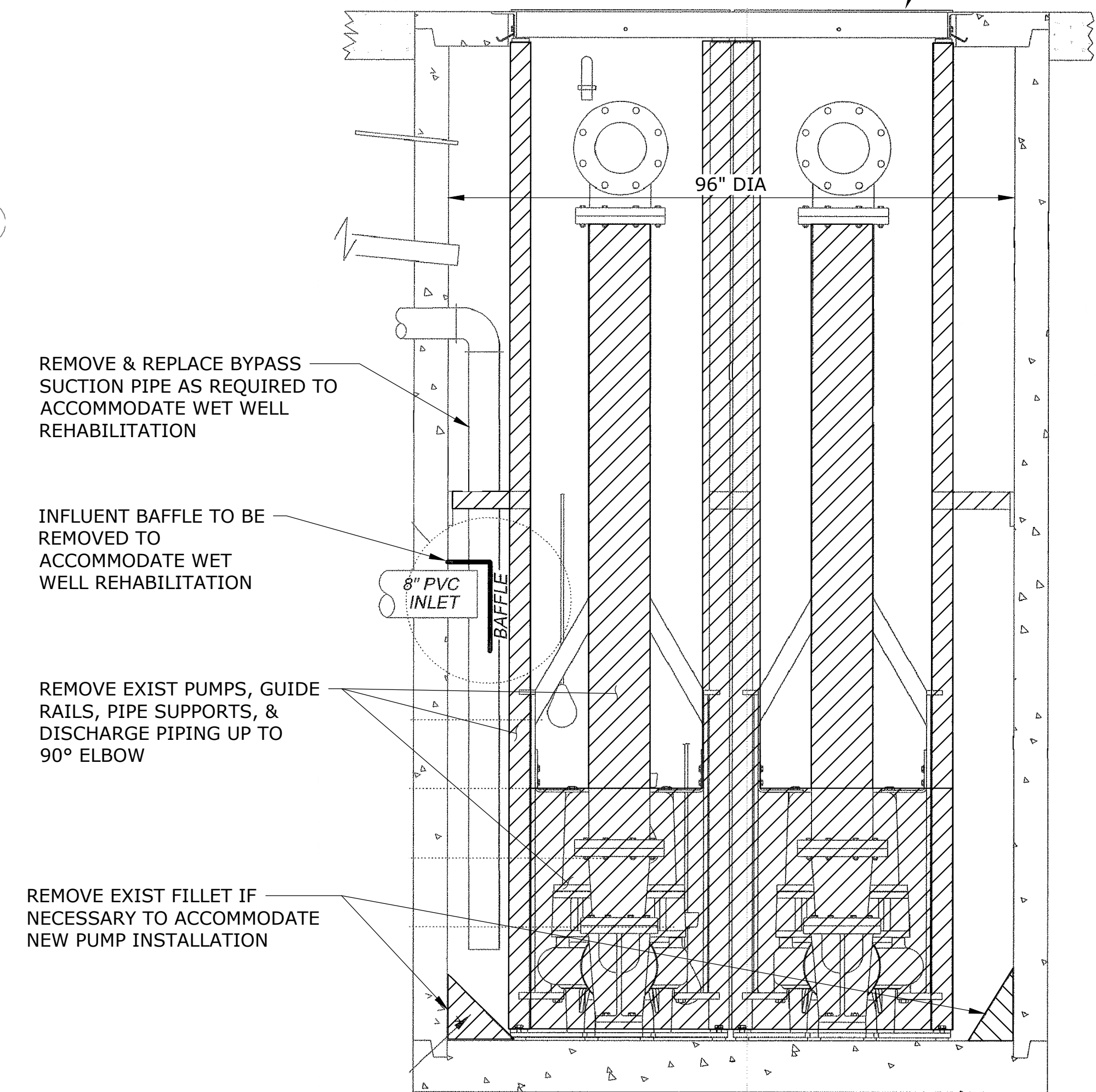
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- NOTES:
1. DEMOLITION WORK REQUIRES DETAILED PLANNING OF CONSTRUCTION SEQUENCING, SPECIAL COORDINATION AND COMPREHENSIVE PROGRAMMING, COMBINED WITH OTHER SPECIAL WORK ACTIVITIES. CONTRACTOR SHALL PREPARE AND SUBMIT DETAILED WORK SEQUENCE PLAN TO THE ENGINEER FOR REVIEW BEFORE CONSTRUCTION ACTIVITIES BEGIN.
 2. THE EXISTING PUMP STATION FACILITIES SHALL BE REMOVED FROM SERVICE AND DEMOLISHED ACCORDING TO THESE CONTRACT DRAWINGS AND SPECIFICATIONS.
 3. CONTRACTOR SHALL PROTECT IN PLACE EXISTING CONTROL CABINET
 4. REMOVE EXISTING EMBEDDED ANCHORS 2" MINIMUM INTO STRUCTURE, FILL W/ NON-SHRINK GROUT.
 5. ANY LIFT STATION ELEMENTS NOT IDENTIFIED FOR DEMOLITION SHALL BE PROTECTED FOR RE-USE.

LEGEND

REMOVE  EXIST LID & HATCHES TO REMAIN IN PLACE

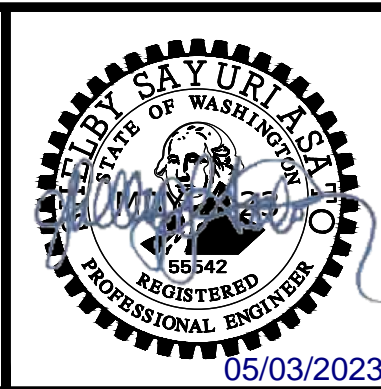


EXISTING LIFT STATION DEMOLITION 1
SCALE: NTS

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NOTICE
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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JSD/DKH
DRAWN
SSA
CHECKED



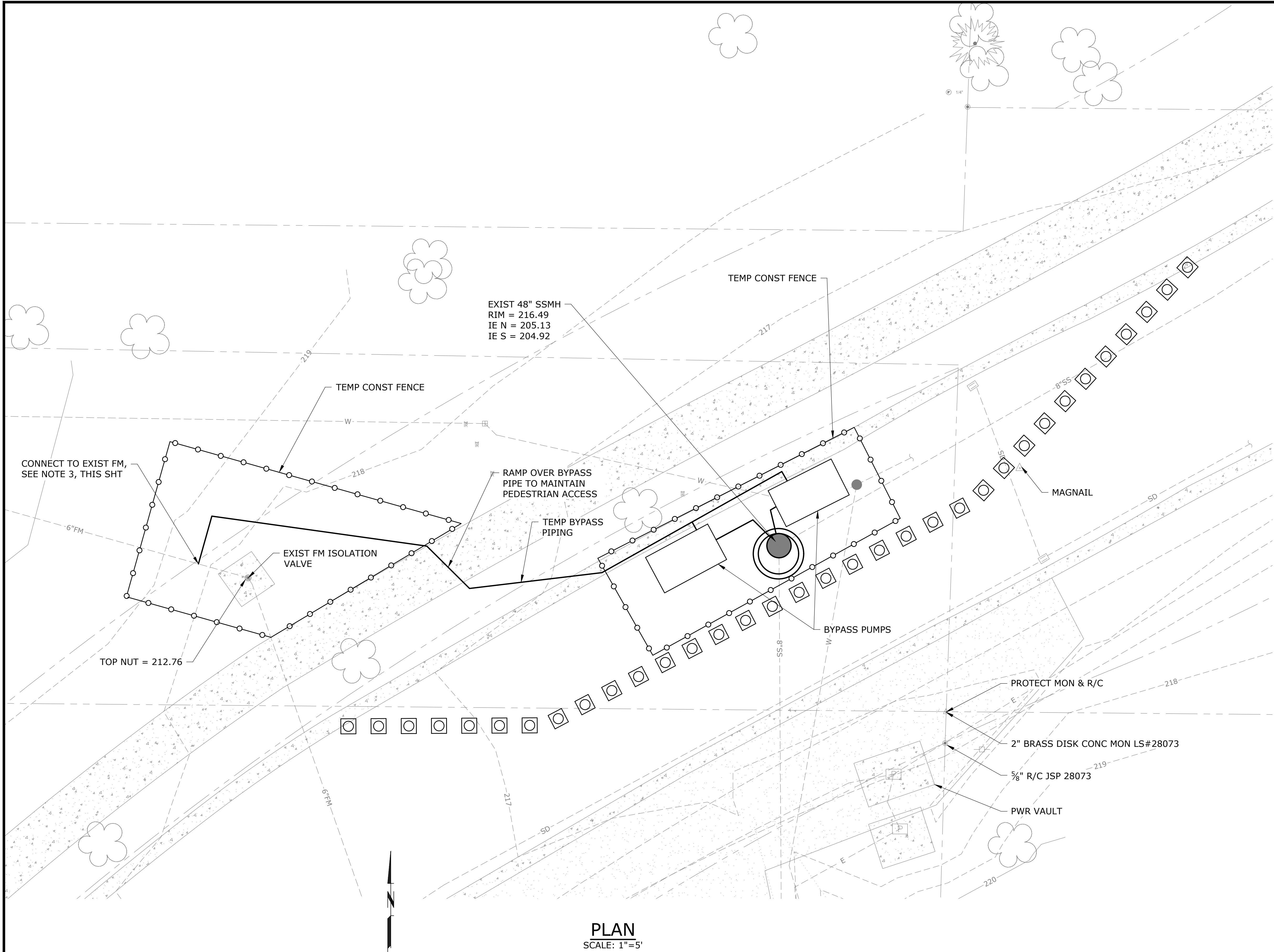
**CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION**

LS 34 DEMOLITION PLAN

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET
C-1
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- NOTES:
1. DEMOLITION WORK REQUIRES DETAILED PLANNING OF CONSTRUCTION SEQUENCING, SPECIAL COORDINATION AND COMPREHENSIVE PROGRAMMING, COMBINED WITH OTHER SPECIAL WORK ACTIVITIES. CONTRACTOR SHALL PREPARE AND SUBMIT DETAILED WORK SEQUENCE PLAN TO THE ENGINEER FOR REVIEW BEFORE CONSTRUCTION ACTIVITIES BEGIN.
 2. THE EXISTING PUMP STATION FACILITIES SHALL BE REMOVED FROM SERVICE AND DEMOLISHED ACCORDING TO THESE CONTRACT DRAWINGS AND SPECIFICATIONS.
 3. EXISTING SSFM IS 6" PVC. CONTRACTOR SHALL PERFORM HOT TAP USING 6"x4" STAINLESS STEEL TAPPING SADDLE, ROMAC STYLE SSTIII OR APPROVED EQUAL. UPON COMPLETION OF LIFT STATION IMPROVEMENTS, TAPPING SADDLE AND GATE VALVE SHALL REMAIN. CLOSE GATE VALVE, DRIP TIGHT, AND INSTALL MJ PLUG OR BLIND FLANGE ON BACK SIDE OF VALVE WHEN BYPASS COMPLETE. LINE PRESSURE MAY BE AS HIGH AS 50 PSI AT OR NEAR BYPASS CONNECTION POINT.
 4. BYPASS AND TRAFFIC CONTROL PLANS SHOWN ON THIS SHEET ARE CONCEPTUAL IN NATURE. CONTRACTOR SHALL SUBMIT BYPASS PLAN INCLUDING PROPOSED TRAFFIC CONTROL MEASURES FOR APPROVAL PRIOR TO CONDUCTING BYPASS.
 5. PEDESTRIAN THRU-ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING BYPASSING.
 6. PROVIDE TEMPORARY TRAFFIC CONTROL SIGNAGE AND MATERIALS PER WSDOT PLAN K-20.20-01.

LEGEND

CHANNELIZATION DEVICES



PLAN
SCALE: 1"=5'

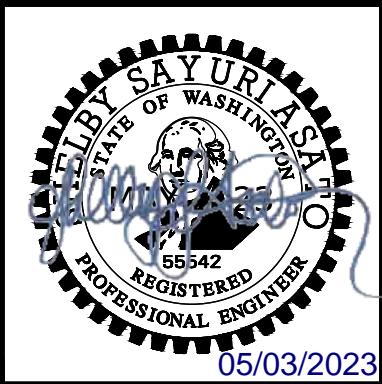
NO.	DATE	BY	REVISION

NOTICE

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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

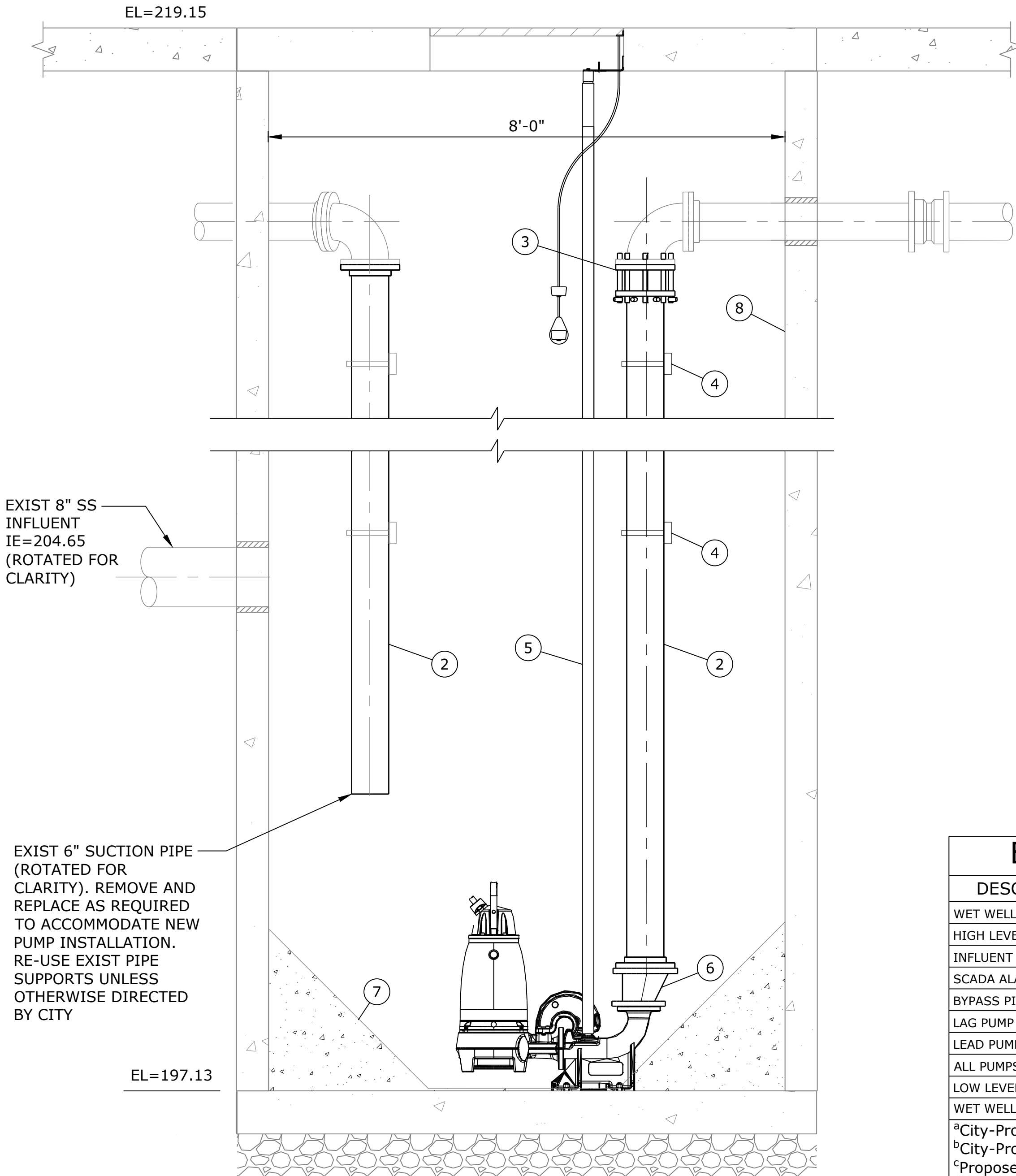
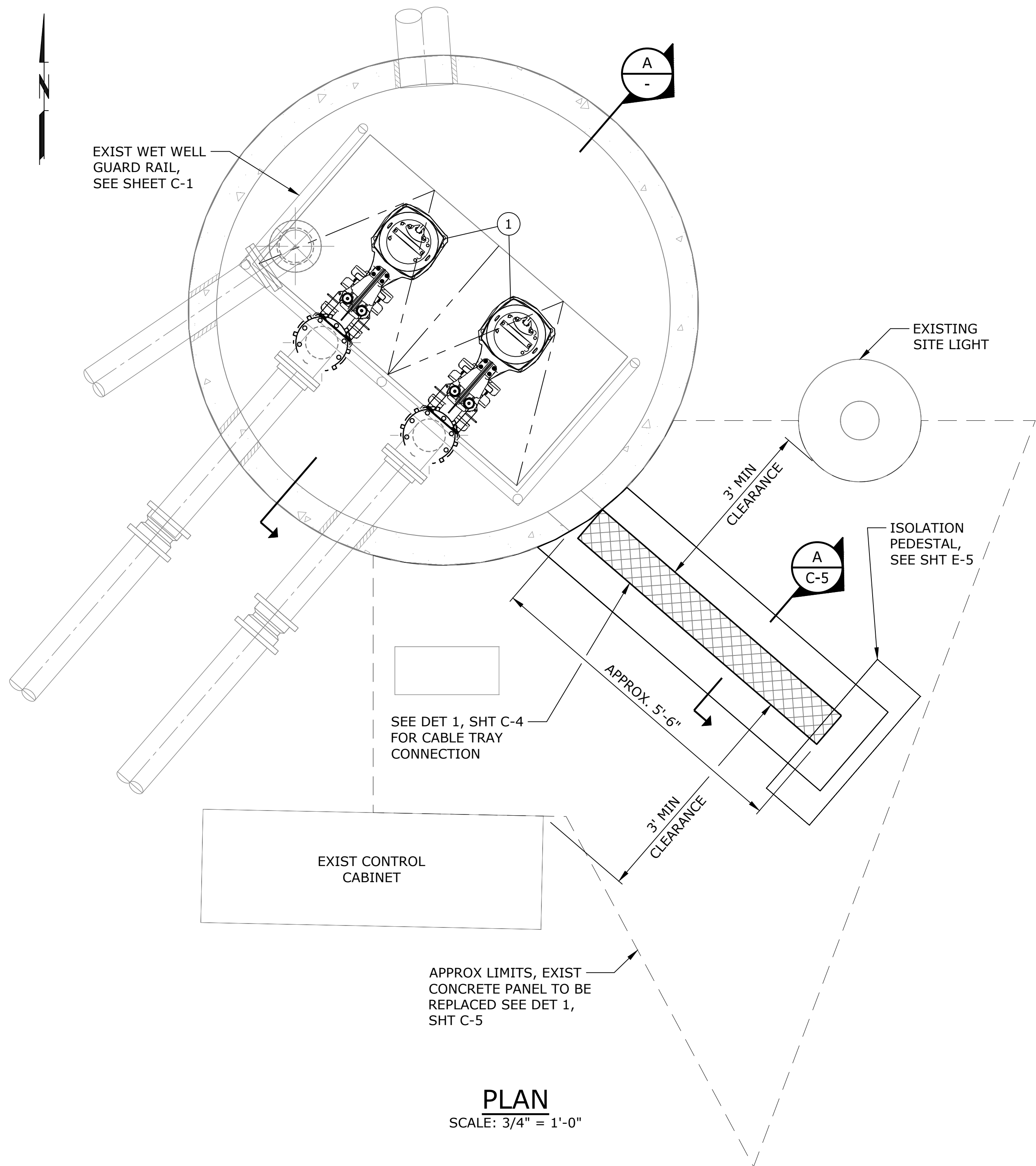
PROJECT NO.: 22-3380.03				SCALE: AS SHOWN	DATE: MAY 2023
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SHEET

C-2

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NOTES:

1. ALL HARDWARE AND FASTENERS SHALL BE 316 STAINLESS STEEL.
2. ALL DUCTILE IRON MECHANICAL JOINT FITTINGS, PIPE AND VALVES SHALL BE CLASS 52 EPOXY LINED AND COATED PER CITY STANDARD SECTION 7-17.2 WITH RESTRAINED JOINTS.
3. CONTRACTOR SHALL COORDINATE WET WELL LAYOUT, PUMP SPACING AND MOUNTING DETAILS TO ALLOW SMOOTH PUMP REMOVAL AND INSTALLATION.
4. CITY SHALL APPROVE WET WELL STRUCTURE WALL CUT/CORE LAYOUT FOR CONDUITS PRIOR TO INSTALLATION. PENETRATIONS SHALL NOT IMPACT EXISTING WET WELL TOP SLAB.
5. APPLY RUST INHIBITOR SUITABLE FOR WASTEWATER CONDITIONS TO ALL EXPOSED METAL SURFACES IN WALL PENETRATIONS PRIOR TO INSTALLING CABLE TRAY.

MATERIAL LIST

- 1 SUBMERSIBLE WASTEWATER PUMP (TYP OF 2), SEE SPEC SECTION 43 21 39
- 2 6" DI SPL, FLG OR PE AS SHOWN, LTF
- 3 6" RFCA
- 4 PIPE SUPPORT BRACKET, SEE DET 2, SHT C-4. PIPE SUPPORT SHALL NOT BE LOWER THAN THE CROWN OF THE INFLUENT PIPE.
- 5 2" DIA SST TYPE 316 GUIDE RAIL, TYP OF 4, INSTALL AS REQ'D BY MFR
- 6 6"x4" DI ECCENTRIC REDUCER, FLG
- 7 REPAIR INTERIOR WET WELL FILLET IF DAMAGED OR REMOVED TO ACCOMMODATE PUMP INSTALLATION PER PUMP MFR RECOMMENDATIONS; SLOPE FILLET AT MIN 45°
- 8 COAT WET WELL WITH RAVEN 405 AND PRIMER PER MANUFACTURER RECOMMENDATIONS

EXISTING WET WELL LEVELS

DESCRIPTION	ELEVATION (FT)	WET WELL LEVEL (FT)
WET WELL RIM ^a	219.15	22.00
HIGH LEVEL FLOAT ^b	202.26	5.10
INFLUENT SEWER ^a	204.65	7.50
SCADA ALARM ^c	202.00	4.90
BYPASS PIPE ^c	201.50	4.40
LAG PUMP ON ^c	201.50	4.40
LEAD PUMP ON ^c	201.25	4.10
ALL PUMPS OFF ^c	198.75	1.60
LOW LEVEL ALARM ^c	198.50	1.40
WET WELL BOTTOM ^b	197.13	0.00

^aCity-Provided Survey (Existing)

^bCity-Provided As-Built Data Spreadsheet (Existing)

^cProposed

NO.	DATE	BY	REVISION

NOTICE
0 1/2 1
IF THIS BAR DOES
NOT MEASURE 1"
THEN DRAWING IS
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JLC
DRAWN
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**CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION**

**PLAN AND SECTION
LS 34 LIFT STATION**

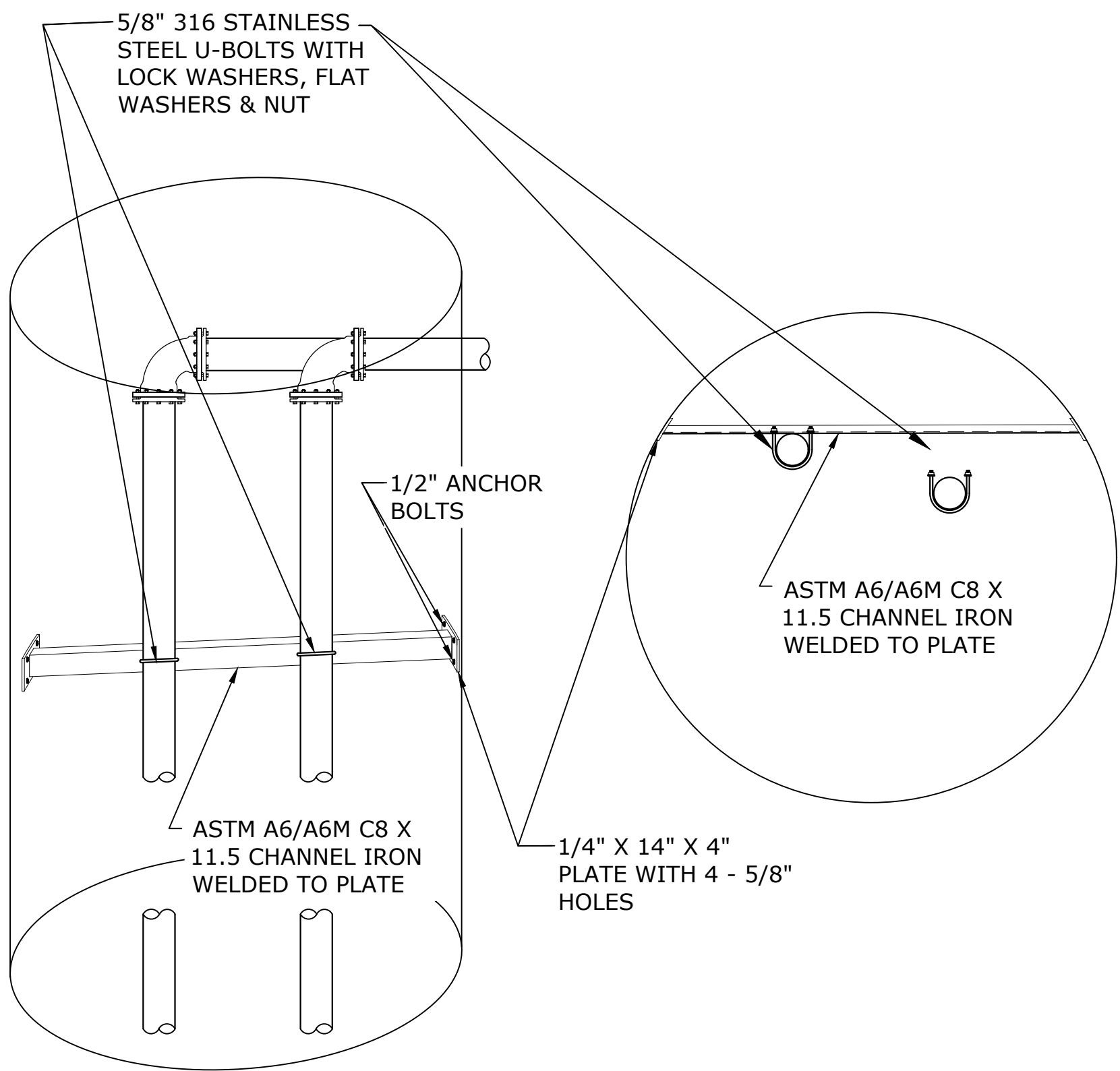
PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

C-3

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NOTES:

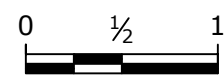
1. CHANNEL IRON SUPPORT AND BRACKETS SHALL BE COATED WITH 3M SCOTCHKOTE 134 FUSION BONDED EPOXY.
2. 316 STAINLESS STEEL SUPPORT OF SAME DIMENSIONS SHOWN MAY BE SUBSTITUTED FOR EPOXY COATING IF DESIRED.
3. ALL BOLTS, ANCHORS AND FASTENERS SHALL BE 316 STAINLESS STEEL.
4. THERE SHALL BE ONE PIPE SUPPORT BAR INSTALLED FOR EACH 10' OF VERTICAL DISCHARGE PIPE. NO SUPPORTS SHALL BE INSTALLED BELOW THE LAG PUMP LEVEL.

TYPICAL LIFT STATION
PUMP PIPE SUPPORT

SCALE: NTS

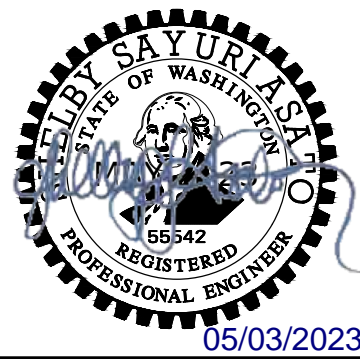
2
C-3
C-8

NOTICE



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JSD/DKH
DRAWN
SSA
CHECKED



CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

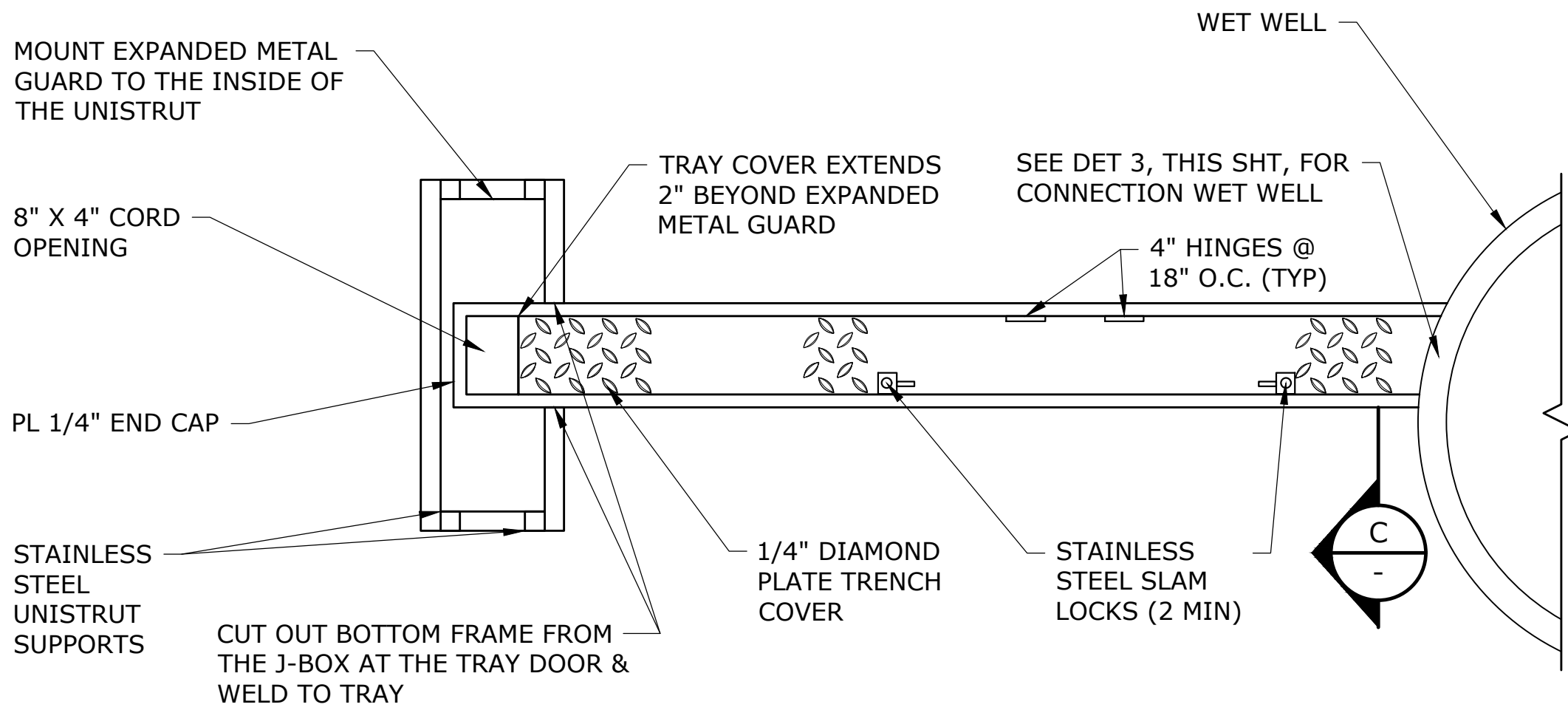
LIFT STATION DETAILS - 1

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

C-4

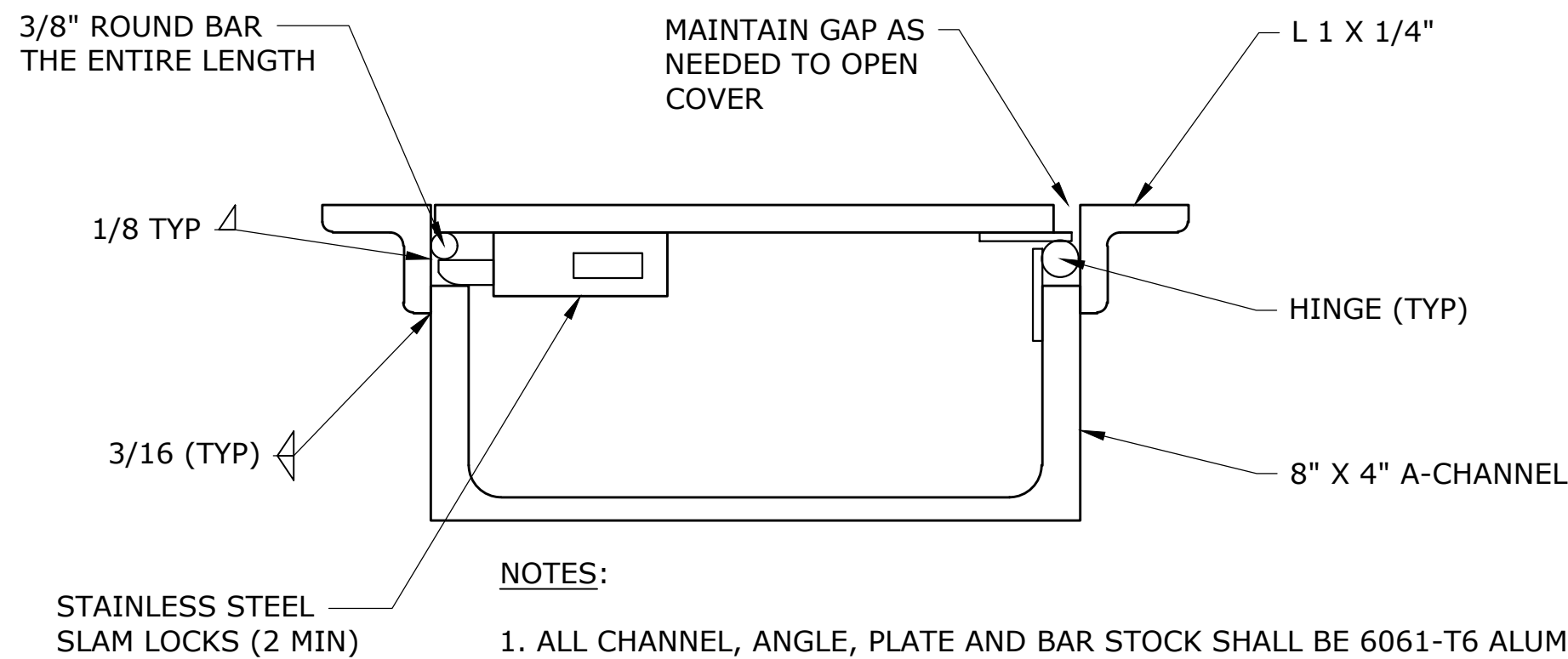
8 of 28



CABLE TRAY INSTALLATION
PLAN VIEW

SCALE: NTS

1
C-3



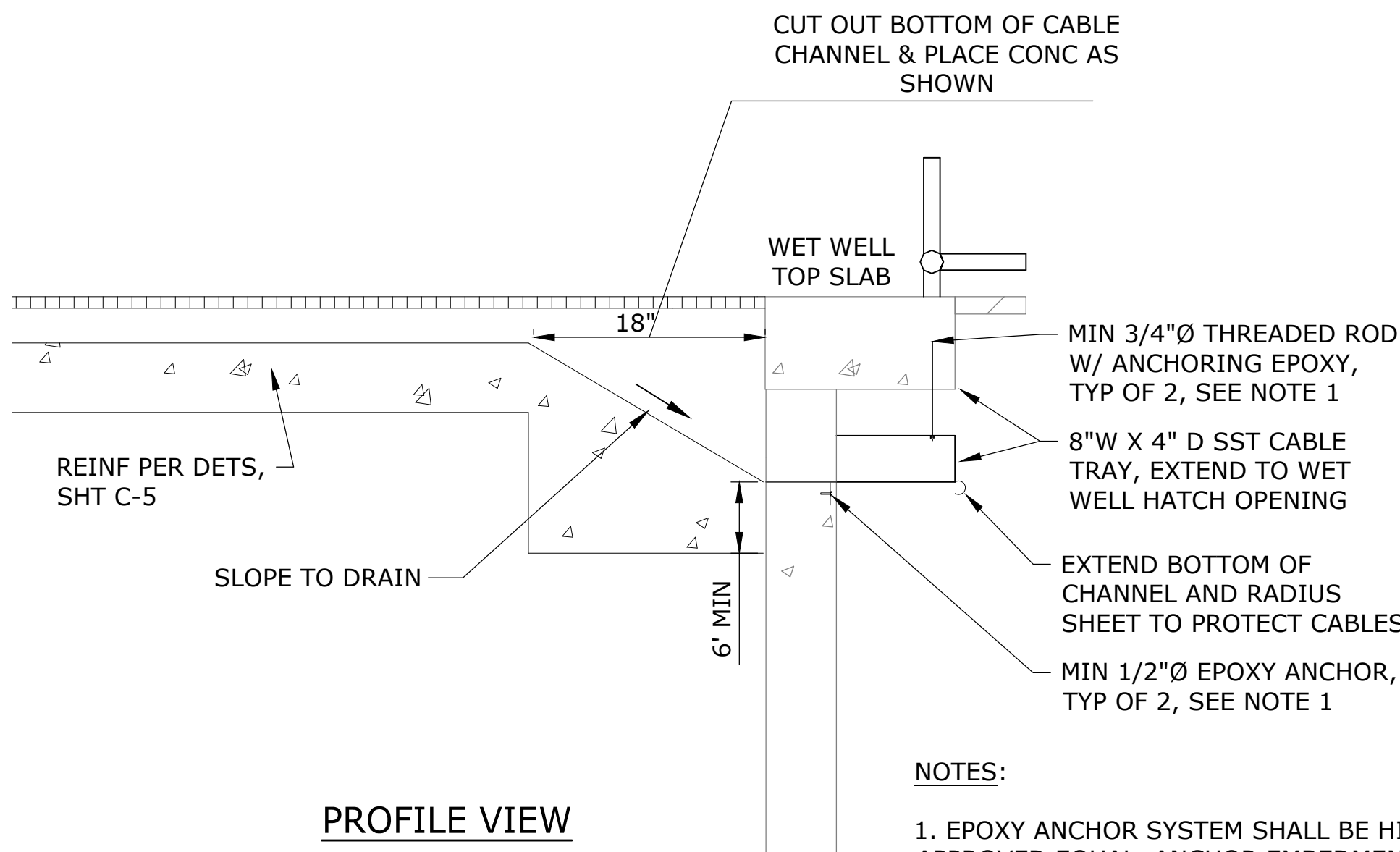
NOTES:

1. ALL CHANNEL, ANGLE, PLATE AND BAR STOCK SHALL BE 6061-T6 ALUMINUM.
2. ALL HINGES, HARDWARE AND ACCESSORIES SHALL BE 316 STAINLESS STEEL.

CABLE TRAY
SECTION 'C' VIEW

SCALE: NTS

C
-



PROFILE VIEW

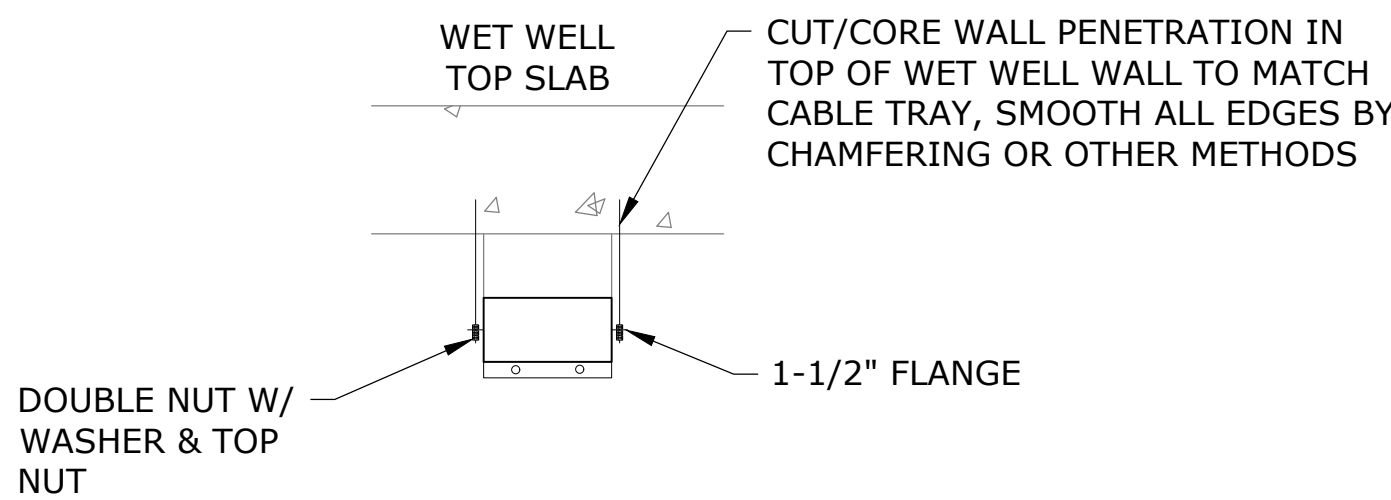
NOTES:

1. EPOXY ANCHOR SYSTEM SHALL BE HILTI HIT-RE 500 V3 OR APPROVED EQUAL, ANCHOR EMBEDMENT SHALL BE PER ACI 318.

CABLE TRAY WET WELL CONNECTION

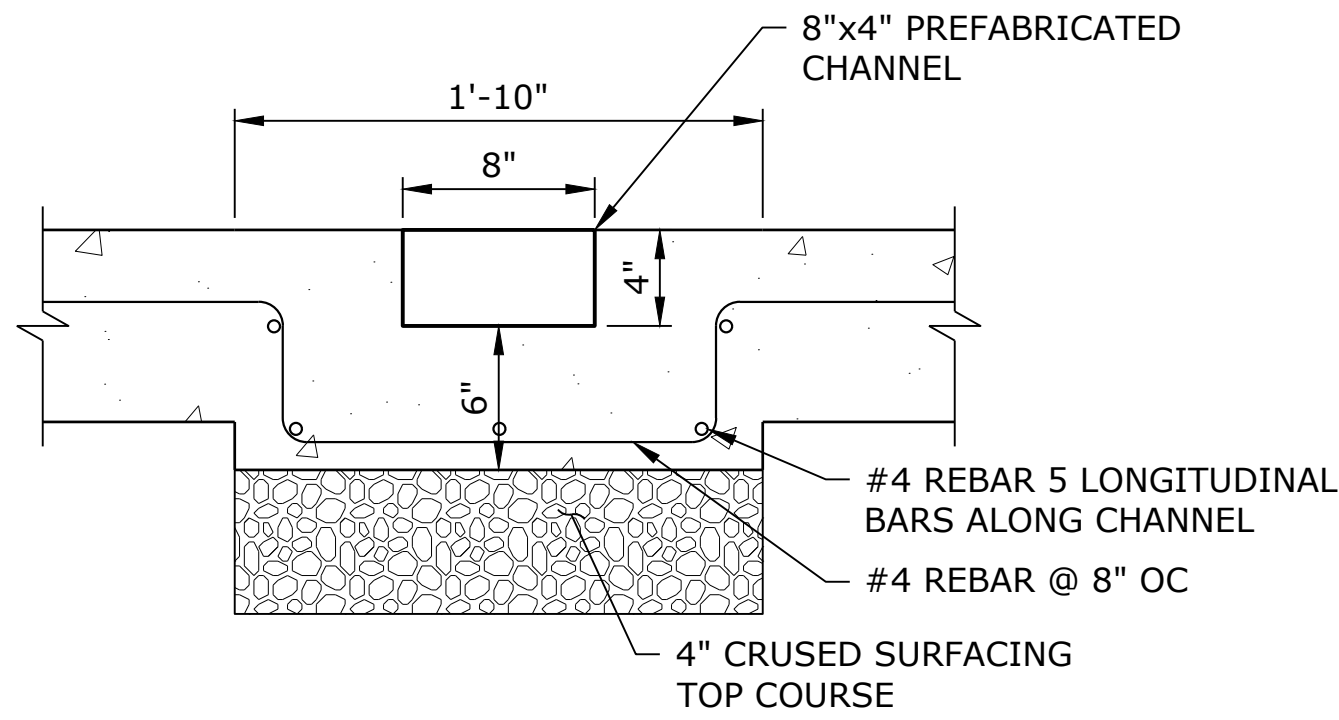
SCALE: 1" = 1'-0"

3
C-8



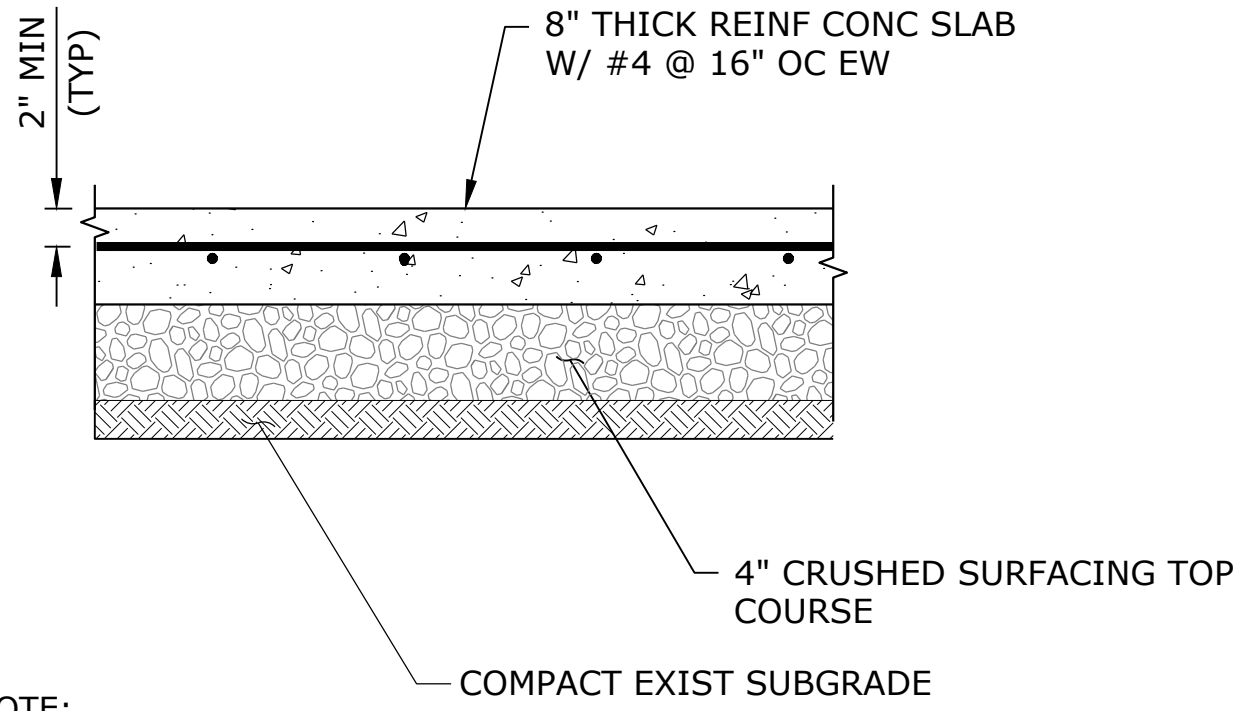
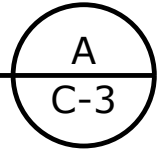
CABLE TRAY END SECTION

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SECTION

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

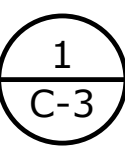


NOTE:

1. CONCRETE SHALL BE COMMERCIAL CONCRETE CLASS 3000 OR BETTER, REINFORCING STEEL ASTM A615 GRADE 60.

CONCRETE SURFACING

SCALE: NTS



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NOTICE

0 1/2 1

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JLC
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CHECKED



CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LIFT STATION DETAILS - 2			
PROJECT NO.:	22-3380.03	SCALE:	AS SHOWN
DATE:	MAY 2023		


SHEET


C-5


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CONTROL DRAWING SYMBOLS


- 

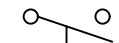
CONTACT – NORMALLY OPEN
- 


CONTACT – NORMALLY CLOSED
- 


CONTACT –NORMALLY OPEN TIMING CLOSED
- 


CONTACT –NORMALLY CLOSED TIMING OPEN
- 


CONTACT –NORMALLY OPEN TIMING OPEN
- 


CONTACT –NORMALLY CLOSED TIMING CLOSED
- 

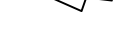
FLOAT SWITCH – NORMALLY OPEN
- 


FLOAT SWITCH – NORMALLY CLOSED
- 


TEMPERATURE SWITCH – NORMALLY OPEN
- 

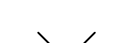
TEMPERATURE SWITCH – NORMALLY CLOSED
- 


LIMIT SWITCH – NORMALLY OPEN
- 


LIMIT SWITCH – NORMALLY CLOSED
- 

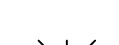
LIMIT SWITCH – NORMALLY OPEN HELD CLOSED
- 

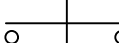
LIMIT SWITCH – NORMALLY CLOSED HELD OPEN
- 


PUSHBUTTON – NORMALLY OPEN
- 


PUSHBUTTON – NORMALLY CLOSED
- 


2 POSITION SELECTOR SWITCH
- 


3 POSITION SELECTOR SWITCH (HOA)
- 

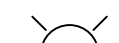
2 POLE 3 POSITION SELECTOR SWITCH
- 

CIRCUIT BREAKER – SINGLE POLE
- 

FUSE
- 

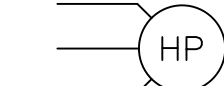
COIL – CONTROL RELAY
- 


PILOT LIGHT – PUSH-TO-TEST BLUE
- 


PILOT LIGHT – PUSH-TO-TEST RED
- 


PILOT LIGHT – STANDARD – COLOR INDICATED


CONTROL DRAWING SYMBOLS


- 


MOTOR, 3 PHASE
- 


THERMAL OVERLOAD
- 


MAGNETIC STARTER
- 


REDUCED VOLTAGE STARTER (SOFT START)
- 


TRANSFORMER
- 


HEATER
- 


CONNECTION
- 


NO CONNECTION
- 

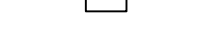
FIELD WIRE
- 

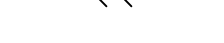
SHIELDED WIRE
- 


GROUND (CHASSIS)
- 

GROUND (EARTH)
- 

FIELD TERMINAL (PUMP CONTROL PANEL BACKPLATE)
- 


TERMINAL
- 

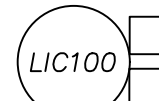
CONNECTOR
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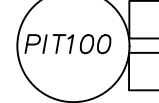
ELAPSED TIME METER
- 

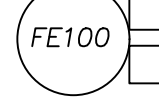
COUNTER


INSTRUMENTATION SYMBOLS

- 

LE100 – LEVEL ELEMENT (TRANSDUCER)
- 

LIC100 – LEVEL INDICATE CONTROLLER (WET WELL LEVEL)
- 

PIT100 – PRESSURE INDICATE TRANSMITTER (FORCE MAIN PRESSURE)
- 

FE100 – FLOW ELEMENT (FLOW METER ELEMENT)
- 

FIT100 – FLOW INDICATE TRANSMITTER (FLOW METER TRANSMITTER)

WIRING NOTES

- 208 VOLT SUPPLY MAIN CONTROL CABINET WIRING SHALL BE BLACK/RED/ORANGE TINNED MTW/TEW. PHASE ROTATION SHALL BE FORWARD A. B. C.
- ALL NEUTRAL MAIN CONTROL CABINET WIRING SHALL BE WHITE TINNED MTW/TEW. ALL WIRES CONNECTED TO BREAKERS IN THE BREAKER PANEL SHALL BE BLACK 12 AWG TINNED MTW/TEW.
- ANY 120 VAC WIRE THAT IS NOT CONNECTED DIRECTLY TO A BREAKER IS A CONTROL WIRE, ALL MAIN CONTROL CABINET CONTROL WIRES SHALL BE RED 14 AWG TINNED MTW/TEW.
- ALL MAIN CONTROL CABINET 12 VDC+ WIRES SHALL BE ORANGE 16 AWG TINNED MTW/TEW. ALL MAIN CONTROL CABINET 12 VDC– WIRES SHALL BE YELLOW 16 AWG TINNED MTW/TEW.
- ALL MAIN CONTROL CABINET 24 VDC+ WIRES SHALL BE DARK BLUE 16 AWG TINNED MTW/TEW. ALL MAIN CONTROL CABINET 24 VDC– WIRES SHALL BE WHITE WITH A BLUE STRIPE 16 AWG TINNED MTW/TEW.
- ALL INTRINSICALLY SAFE WIRES SHALL BE PURPLE.
- ALL ANALOG SINGALS SHALL BE 18 AWG SHIELDED TWISTED PAIR CONDUCTORS BETWEEN SOURCE AND DEVICE CONNECT THE SHIELD DRAIN ON THE PUMP CONTROL PANEL END.
- BRANCH CIRCUITS, CONTROL CIRCUITS AND PUMP MOTOR FIELD WIRING SHALL BE THE SAME SIZE AND COLOR AS THE CONTROL PANEL WIRING IT IS CONNECTED TO. ALL FIELD WIRING SHALL BE THHN/THWN.
- WIRE NUTS AND BUTT SPLICES SHALL NOT BE USED IN ANY CIRCUIT OTHER THAN LIGHTING CIRCUITS.
- ALL VOLTAGES WITHIN THE MAIN CONTROL CABINET ARE CONSIDERED LOCAL. NO FOREIGN VOLTAGES EXIST.

WIRE MARKINGS

- ALL WIRES SHALL BE LABELED WITH THE SAME DESCRIPTION ON BOTH ENDS.
- WIRES LABEL SHALL HAVE THE SAME DESCRIPTION AS THE CITY OF LACEY’S ORIGINAL DRAWING.
- WIRE LABELS SHALL BE PRINTED HEAT SHRINK TYPE WIRE MARKING SLEEVES.
- WIRE LABEL TEXT SHALL BE ORIENTED IN THE SAME DIRECTION. HORIZONTAL WIRE TO READ FROM LEFT TO RIGHT AND VERTICAL WIRES TO READ FROM TOP TO BOTTOM.
- COLOR CODE ALL SECONDARY SERVICE FEEDER AND BRANCH CIRCUIT CONDUCTORS.

TERMINAL BLOCK MARKINGS

- TERMINAL BLOCK MARKING AND WIRE LABELING SHALL HAVE THE SAME DESCRIPTION.
- TERMINALS BLOCKS LABELING SHALL BE MACHINE PRINTED.
- TERMINAL BLOCK TEXT SHALL BE ORIENTED IN THE SAME DIRECTION AS THE WIRE. BLOCKS TO READ FROM LEFT TO RIGHT AND FROM TOP TO BOTTOM.

CONDUIT MARKINGS

- CONDUITS WITH INTRINSICALLY SAFE CONDUCTORS SHALL BE LABELED.

CONTROL SYSTEMS MANUFACTURE’S NOTE

- SUBMITTAL DRAWINGS SHALL BE SUBMITTED IN AN UNPROTECTED AUTOCAD FORMAT.
- SUBMITTAL DRAWINGS SHALL CONTAIN EVERY DETAIL CONTAINED IN THE CITY OF LACEY’S ORIGINAL DRAWING. EVERY COMPONENT AND SYMBOL SHALL BE REPRESENTED.
- SUBMITTAL DRAWINGS SHALL HAVE A LAYOUT KEY WITH EVERY COMPONENT OF THE CITY OF LACEY’S ORIGINAL DRAWING IDENTIFIED.
- SUBMITTAL DRAWINGS SHALL USE THE SAME COMPONENT NAMES AS THE LAYOUT KEY IN CITY OF LACEY’S ORIGINAL DRAWING.
- FACILITY INTEGRATOR SHALL COMPLETE THE APPROVED MATERIAL CHECK LIST AND SHALL VERIFY ALL PARTS LISTED.

DRAWING LIST

- E–1

E–2

E–3

E–4

E–5

E–6

E–7
- WIRING SYMBOLS AND REQUIREMENTS

ELECTRICAL SITE PLAN

MAIN CONTROL CABINET MODIFICATIONS

ONE–LINE & ELECTRICAL CONNECTION DETAILS

ISOLATION PEDESTAL CONSTRUCTION DETAILS

LOAD TABLES, CONDUIT SCHEDULE, AND APPROVED MATERIALS LIST (BOM)

PHENOLIC LEGENDS AND VINYL LABELS

Industrial Systems INC

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AK #1018436
PROJECT# 21.82.01

NOTICE



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RSC

DRAWN

MEW

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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 34 WIRING SYMBOLS
AND REQUIREMENTS

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

E-1

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KEY NOTES

- 1

EXISTING UNDERGROUND SERVICE TO UTILITY TRANSFORMER. SEE C-1 FOR CONTINUATION.
- 2

EXISTING HANDHOLE WITH SEAL-OFFS FOR PUMPS AND HIGH LEVEL FLOAT TO BE REMOVED. CONDUITS TO BE REMOVED FROM WETWELL BACK TO CONTROL PANEL. SEE DETAIL 3/E-3.
- 3

EXISTING MAIN CONTROL CABINET TO REMAIN. SEE SHEET E-3 FOR ELEVATION VIEW AND DETAILS OF MODIFICATIONS.
- 4

CONCRETE PANEL TO BE DEMO'D FOR INSTALL OF NEW CONDUITS, ISOLATION PANEL, AND CABLE TRAY. SEE SHEET C-1.
- 5

CONCRETE AT CONTROL CABINET TO BE DEMO'D FOR REMOVAL OF EXISTING CONDUITS TO WETWELL AND INSTALLATION OF NEW CONDUITS TO ISOLATION PEDESTAL.
- 6

EXISTING PUMPS AND CABLING TO BE REMOVED. SEE SHEET C-1.
- 7

EXISTING HIGH LEVEL FLOAT SWITCH AND CONDUIT TO BE DEMO'D.
- 8

EXISTING LEVEL TRANSDUCER TO BE DEMO'D. CONDUIT TO BE REMOVED TO EXISTING COUPLING AND CAPPED. SEE SHEET E-3. CUT CABLE AS NEEDED.
- 9

EXISTING HANDHOLE WITH SEAL-OFF FOR LEVEL TRANSMITTER. ABANDONED IN PLACE.
- 10

PATCH PENETRATIONS AT WETWELL AFTER CONDUIT REMOVAL.
- 11

EXISTING LEVEL TRANSDUCER CONDUIT AND CABLE TO BE CUT BELOW GRADE AND ABANDONED IN PLACE.
- 12

ISOLATION PEDESTAL WITH PUMP DISCONNECT PLUGS AND RECEPTACLES. SEE SHEET E-5.
- 13

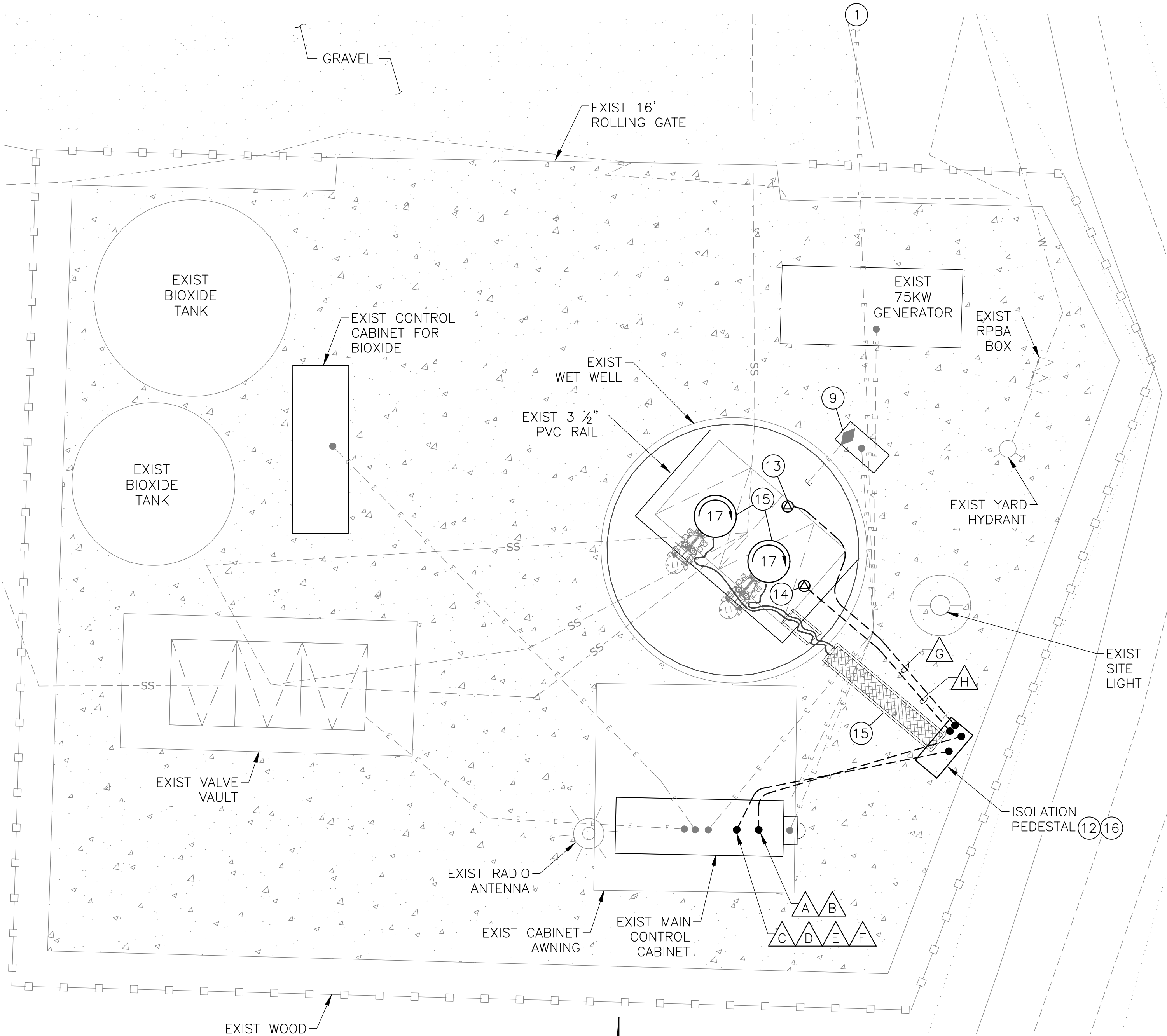
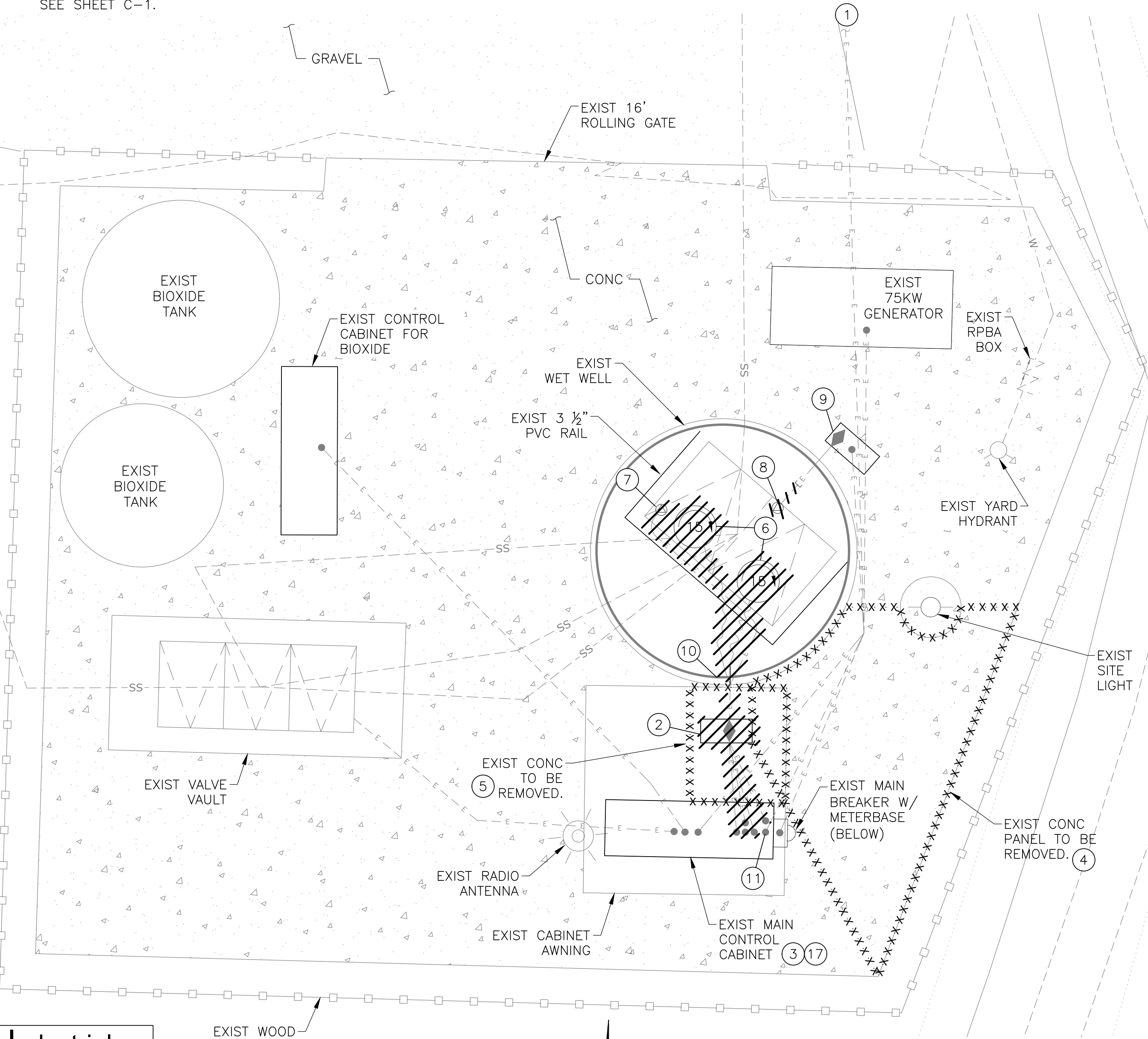
LEVEL TRANSDUCER, SEE SHEET E-5. INSTALL LINK SEAL FOR CONDUIT AT WALL PENETRATION. RE-CALIBRATE LEVEL CONTROLLER FOR NEW SENSOR HEIGHT AND ADJUST SETPOINTS PER OWNERS DIRECTION.
- 14

HIGH LEVEL (HIGH BALL) FLOAT. SEE SHEET E-5. INSTALL LINK SEAL FOR CONDUIT AT WALL PENETRATION.

GENERAL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY POWER INCLUDING BUT NOT LIMITED TO ANY REQUIREMENTS FOR BYPASS PUMPING AND ANY CONSTRUCTION NEEDS. COORDINATE WITH PUGET SOUND ENERGY AS NEEDED.
- △

CONDUIT PENETRATIONS. SEE CONDUIT SCHEDULE SHEET E-6.



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AK #1018436
PROJECT# 21.82.01

DEMOPLAN
SCALE: 3/8"=1'

PLAN
SCALE: 3/8"=1'

NO.	DATE	BY	REVISION

NOTICE
0 1/2 1
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CHECKED



CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 34 ELECTRICAL
SITE PLAN

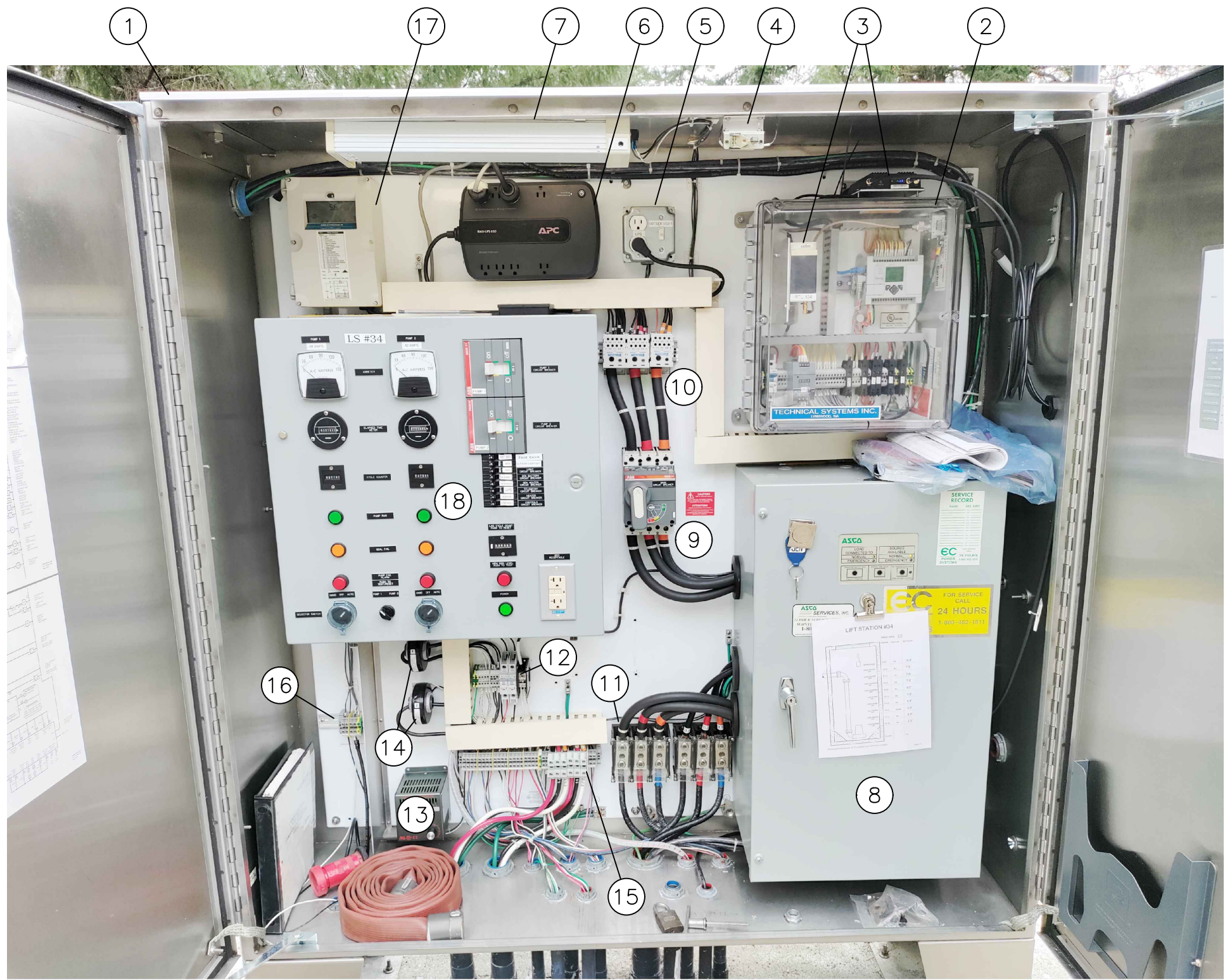
PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

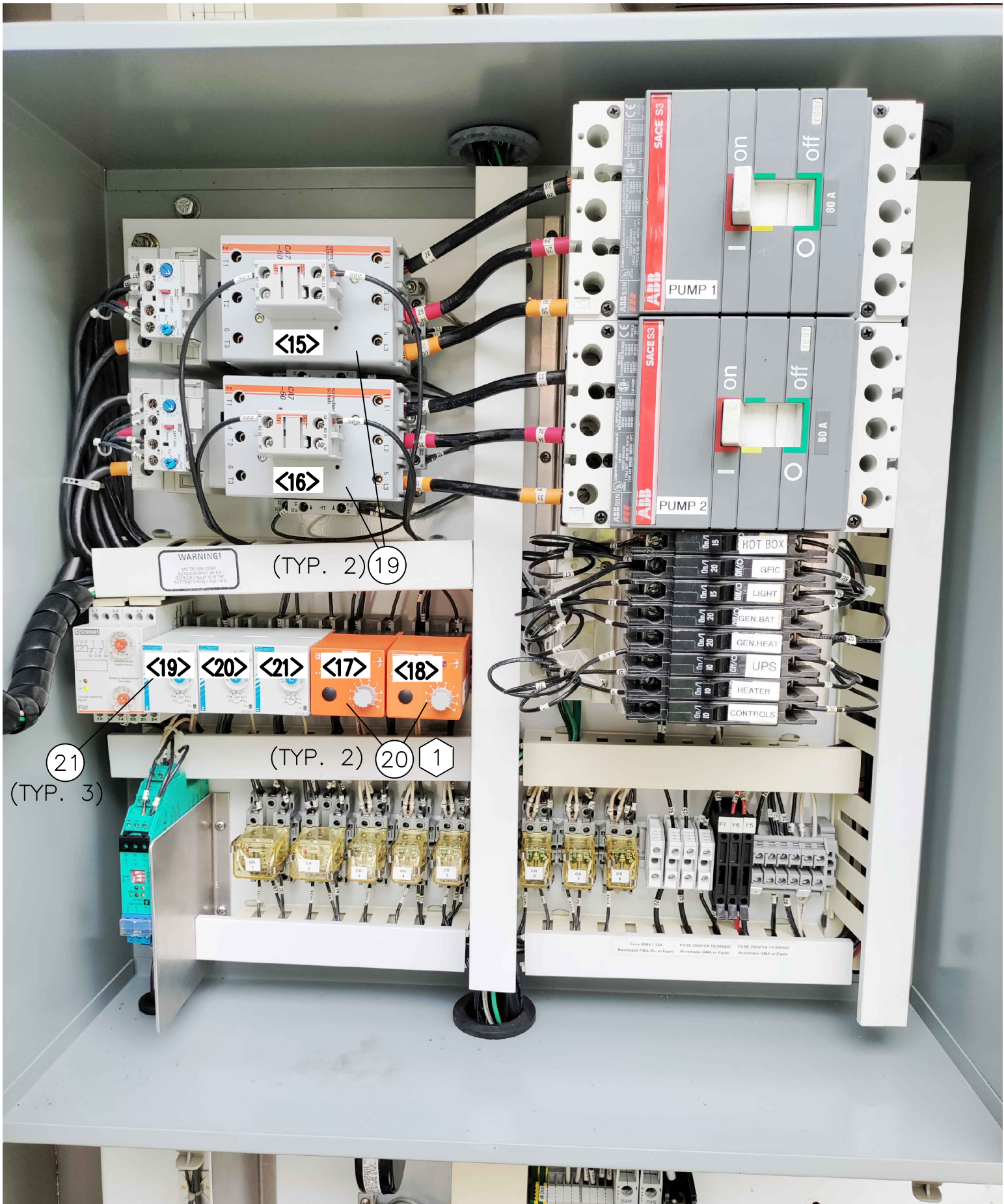
E-2

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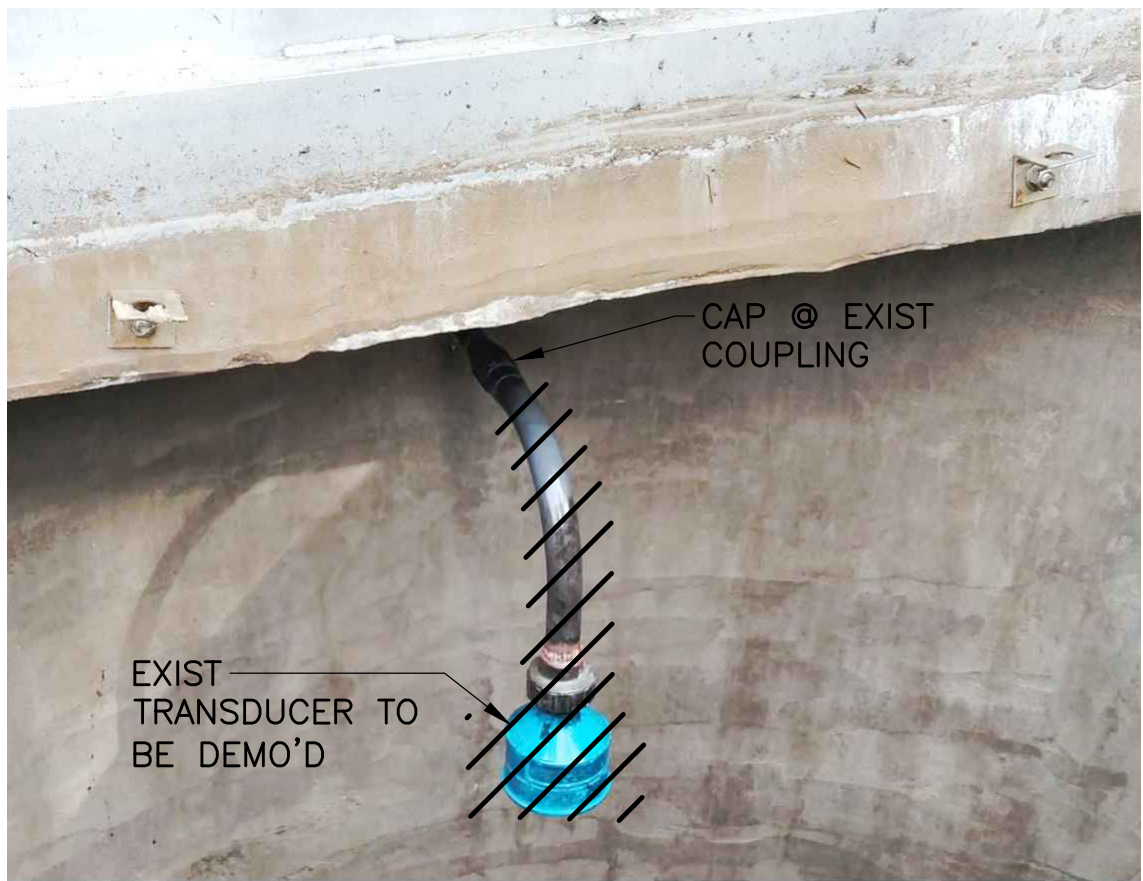
MAIN CONTROL CABINET INTERIOR DETAIL 1
SCALE: NTS



PUMP CONTROL PANEL INTERIOR DETAIL 2
SCALE: NTS



MAIN CONTROL CABINET ELEV. DETAILS 3
SCALE: NTS



LEVEL TRANSMITTER DEMO DETAIL 4
SCALE: NTS

KEY NOTES

- EXISTING 72Wx72Hx24D MAIN CABINET ENCLOSURE WITH 12" FEET STANDS.
- EXISTING TELEMETRY PANEL.
- EXISTING CELL AND RADIO MODEMS.
- EXISTING INTRUSION SWITCH.
- EXISTING POLE LIGHT SWITCH AND UPS RECEPTACLE.
- EXISTING UPS.
- EXISTING INTERIOR LIGHT.
- EXISTING TRANSFER SWITCH
- EXISTING 200A DISCONNECT SWITCH.
- EXISTING POWER DISTRIBUTION BLOCK FOR 480V PANEL POWER DISTRIBUTION.
- EXISTING POWER DISTRIBUTION BLOCKS FOR NORMAL AND EMERGENCY ATS CONNECTIONS.
- EXISTING BIOXIDE EQUIPMENT CIRCUIT BREAKERS
- EXISTING CABINET UNIT HEATER.
- EXISTING CURRENT TRANSFORMERS.
- EXISTING FIELD TERMINAL BLOCKS.
- EXISTING HIGH LEVEL FLOAT AND LEVEL TRANSDUCER TERMINAL BLOCKS.
- EXISTING LEVEL ELECTRONICS.
- EXISTING PUMP CONTROL PANEL. SEE DETAIL 2 THIS SHEET FOR MODIFICATIONS.
- REPLACE EXISTING SPRECHER-SCHUH CONTACTOR CA7-60-00-120 (15HP RATED) WITH CA7-72-00-120 (20HP RATED) UNITS. RE-USE EXISTING CB'S, OVERLOADS, AND AUX. CONTACTS AND RE-CONNECT TO NEW CONTACTOR. ADJUST OVERLOADS AS NEEDED FOR NEW PUMPS.
- REPLACE EXISTING SEAL FAIL RELAY AND BASE WITH NEW FLYGT MINICAS II UNIT. SEE SHEET E-4 FOR WIRING INFORMATION. INSTALL NEW LABELS AS SHOWN.
- INSTALL NEW LABELS ON EXISTING TIME DELAY RELAYS AS SHOWN.
- REMOVE EXISTING HANDHOLE WITH (4) EXISTING CONDUITS AND SEAL-OFFS FOR PUMP POWER & CONTROL CIRCUITS AND (1) CONDUIT AND SEAL-OFF FOR HIGH LEVEL FLOAT CIRCUIT. REMOVE CONDUITS FROM WETWELL BACK TO CONTROL PANEL.
- EXISTING CONCRETE SLAB PANEL TO BE REMOVED. SEE SHEETS E-2 AND C-1.

SHEET LAYOUT KEY:

- # REFERENCE DRAWING E-6.
- 1 SEAL FAIL / OVER TEMP RELAY
- SEE LABEL SCHEDULE SHEET E-7.

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AK #1018436
PROJECT# 21.82.01

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RSC

DRAWN

MEW

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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 34 MAIN CONTROL CABINET
MODIFICATIONS

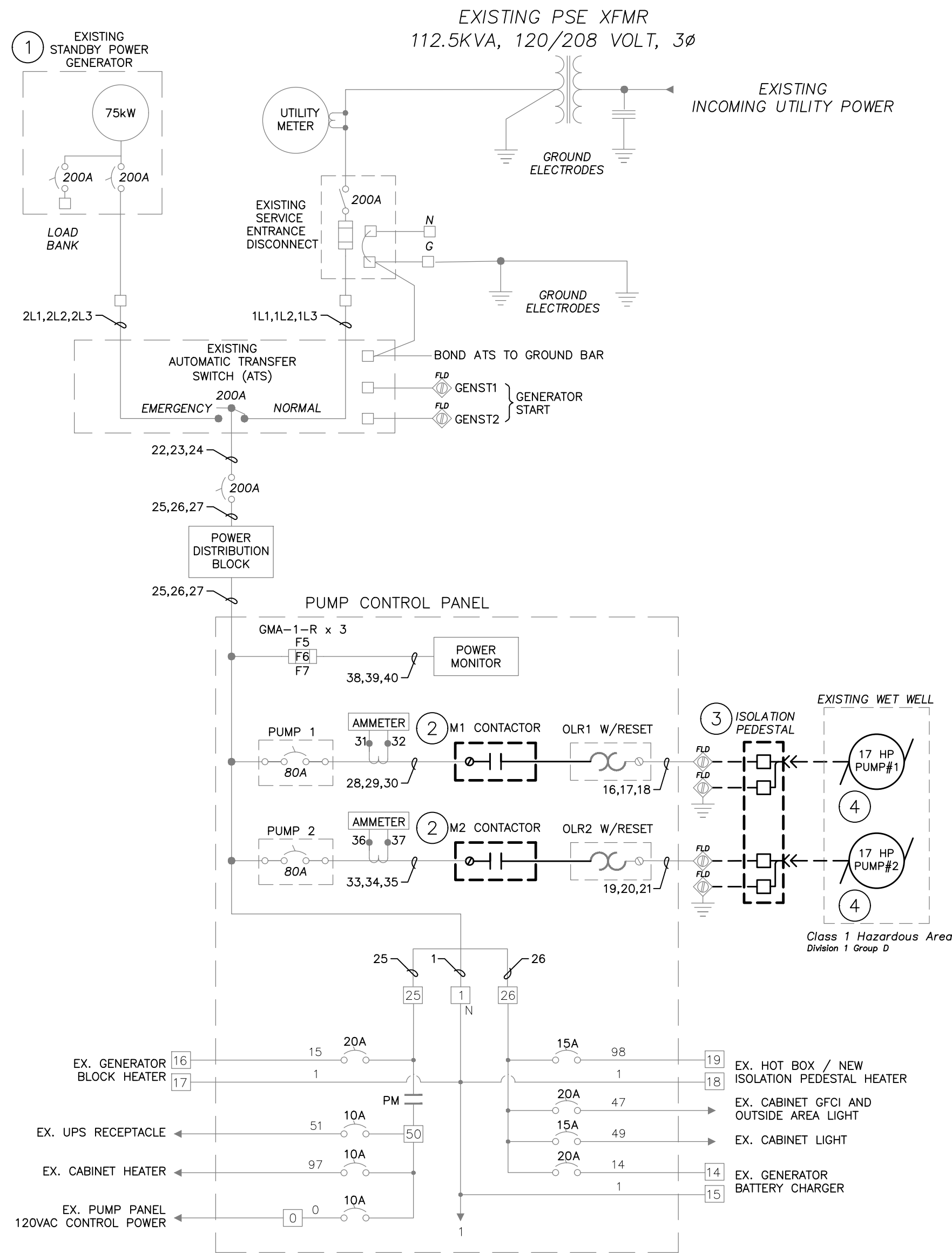
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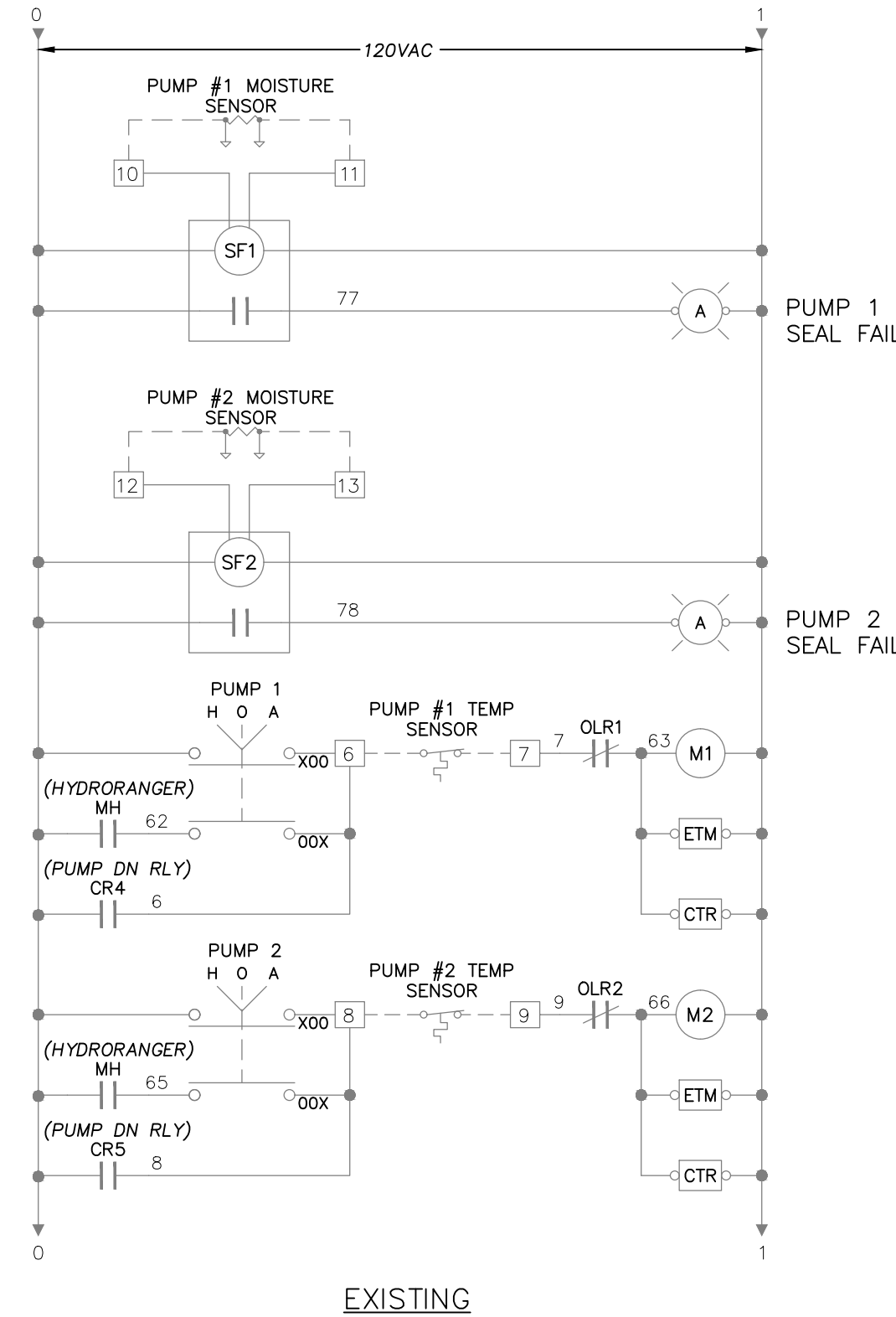
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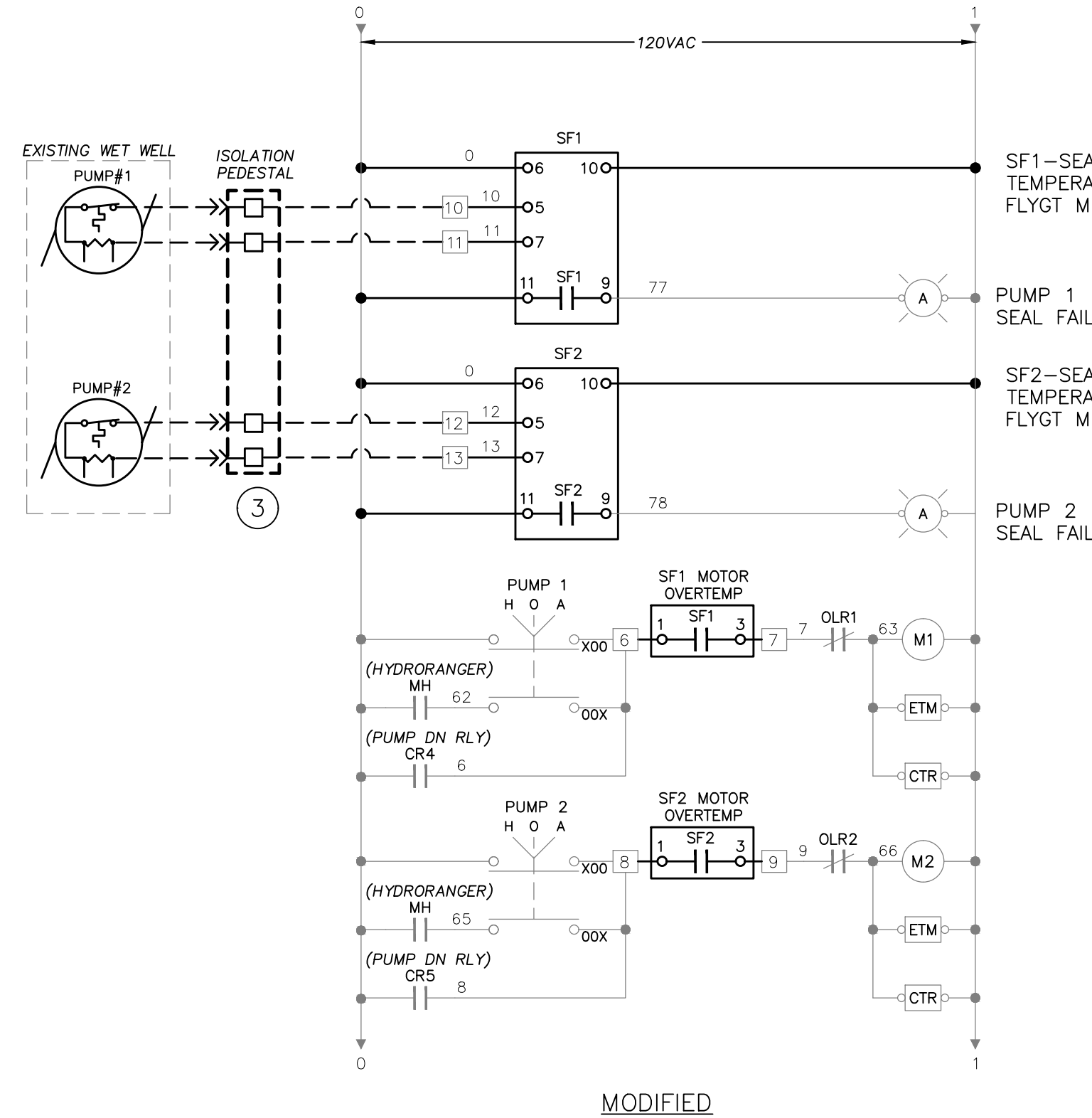
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ONE-LINE DIAGRAM

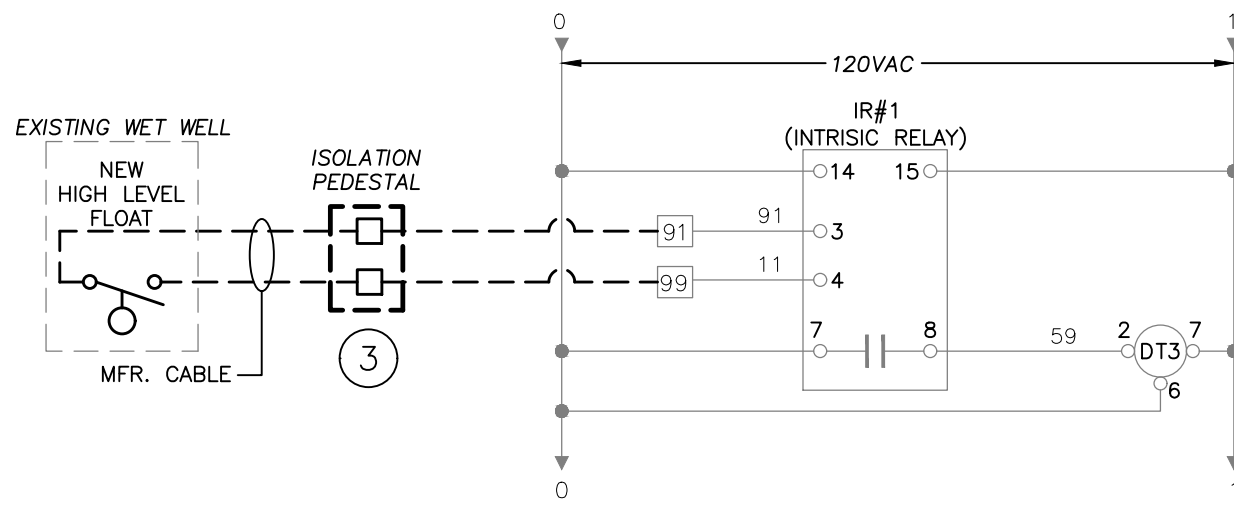
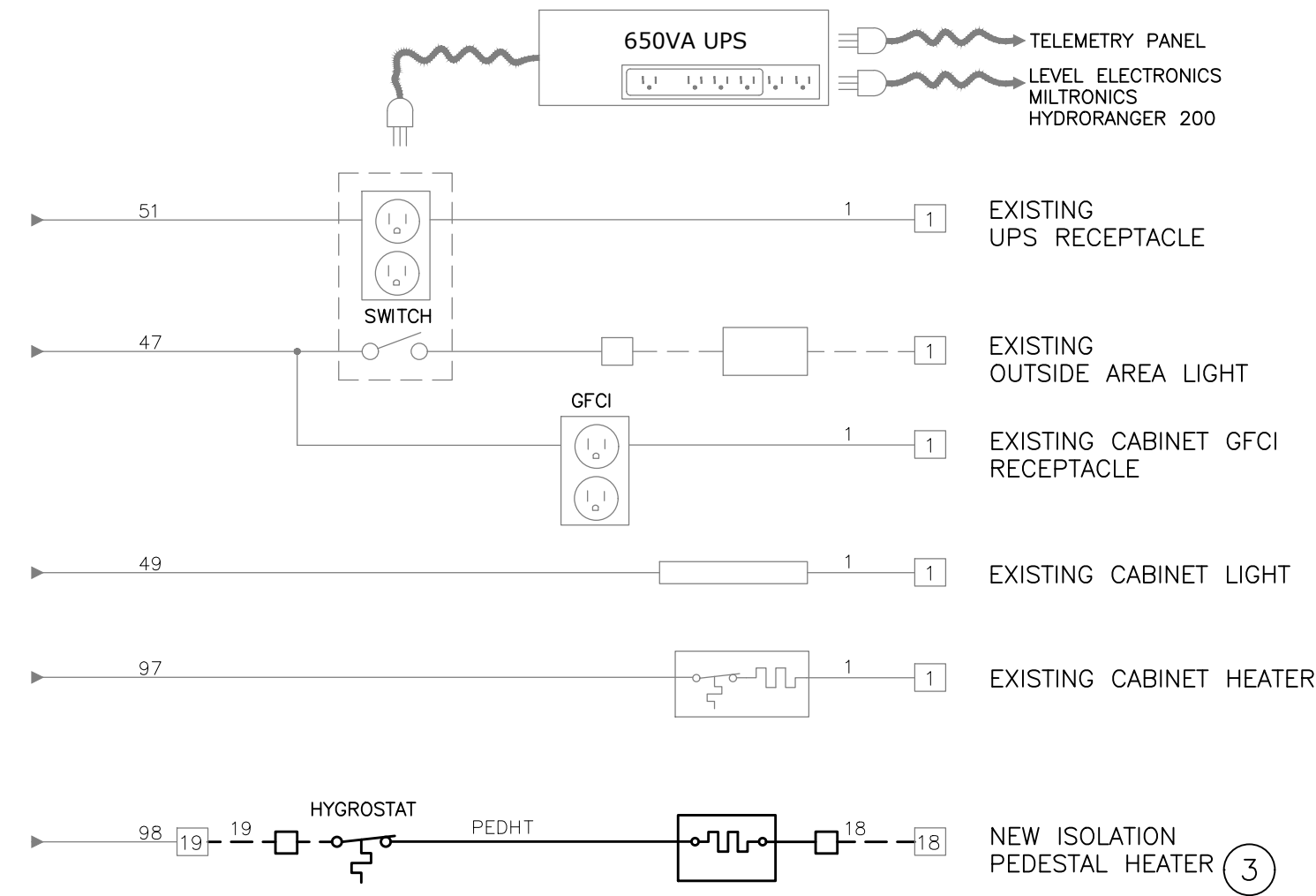


EXISTING

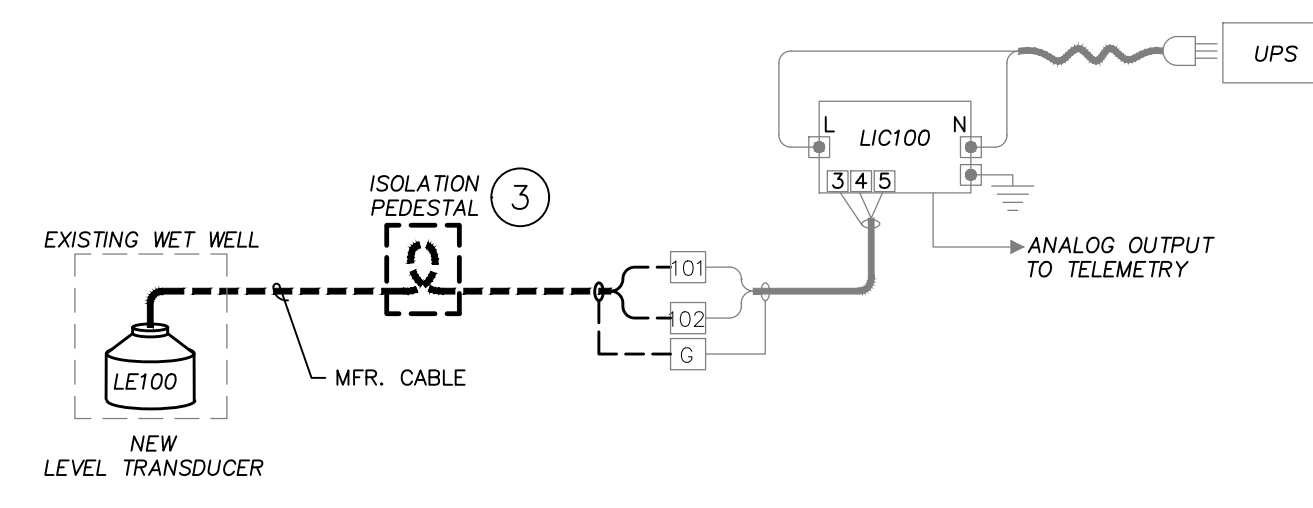


MODIFIED

SEAL FAIL AND OVERTEMP WIRING MODIFICATIONS



HIGH BALL WIRING DETAIL



LEVEL TRANSDUCER WIRING DETAIL

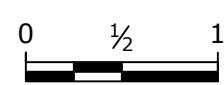
KEY NOTES

- EXISTING KATOLIGHT GENERATOR MODEL D75FPJ4 SERIAL NO. 64861 89420-0403.
- REPLACE EXISTING CONTACTOR (15HP RATED) WITH NEW (20HP RATED) UNIT. RE-CONNECT EXISTING WIRING TO CONTACTOR. SEE DETAIL 2 SHEET E-3 FOR ADDITIONAL INFORMATION.
- NEW ISOLATION PEDESTAL. SEE SHEET E-5.
- NEW 17HP PUMPS TO REPLACE EXISTING 15HP UNITS.

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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

ONE-LINE AND
ELECTRICAL CONNECTION DETAILS

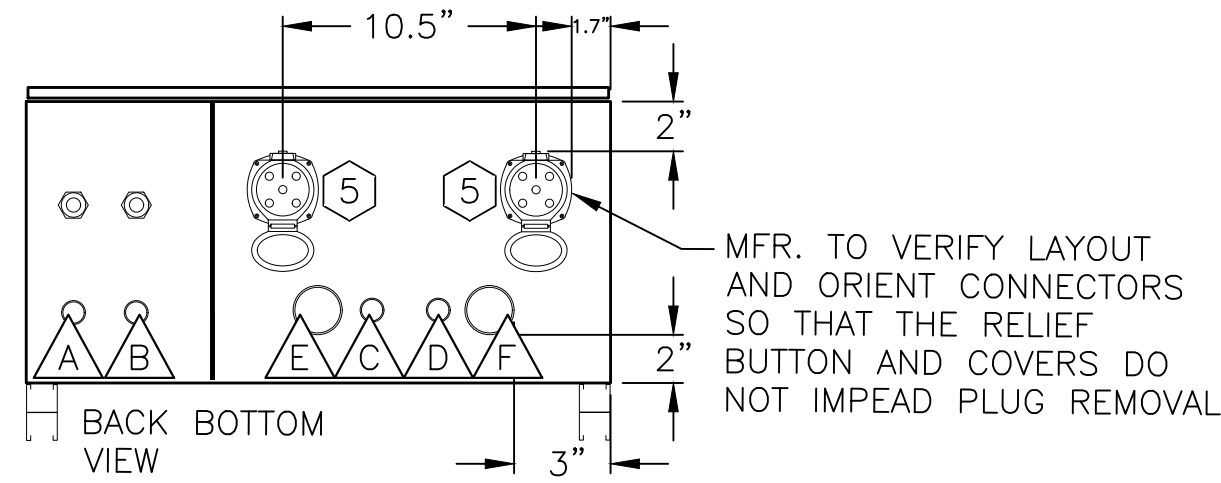
PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

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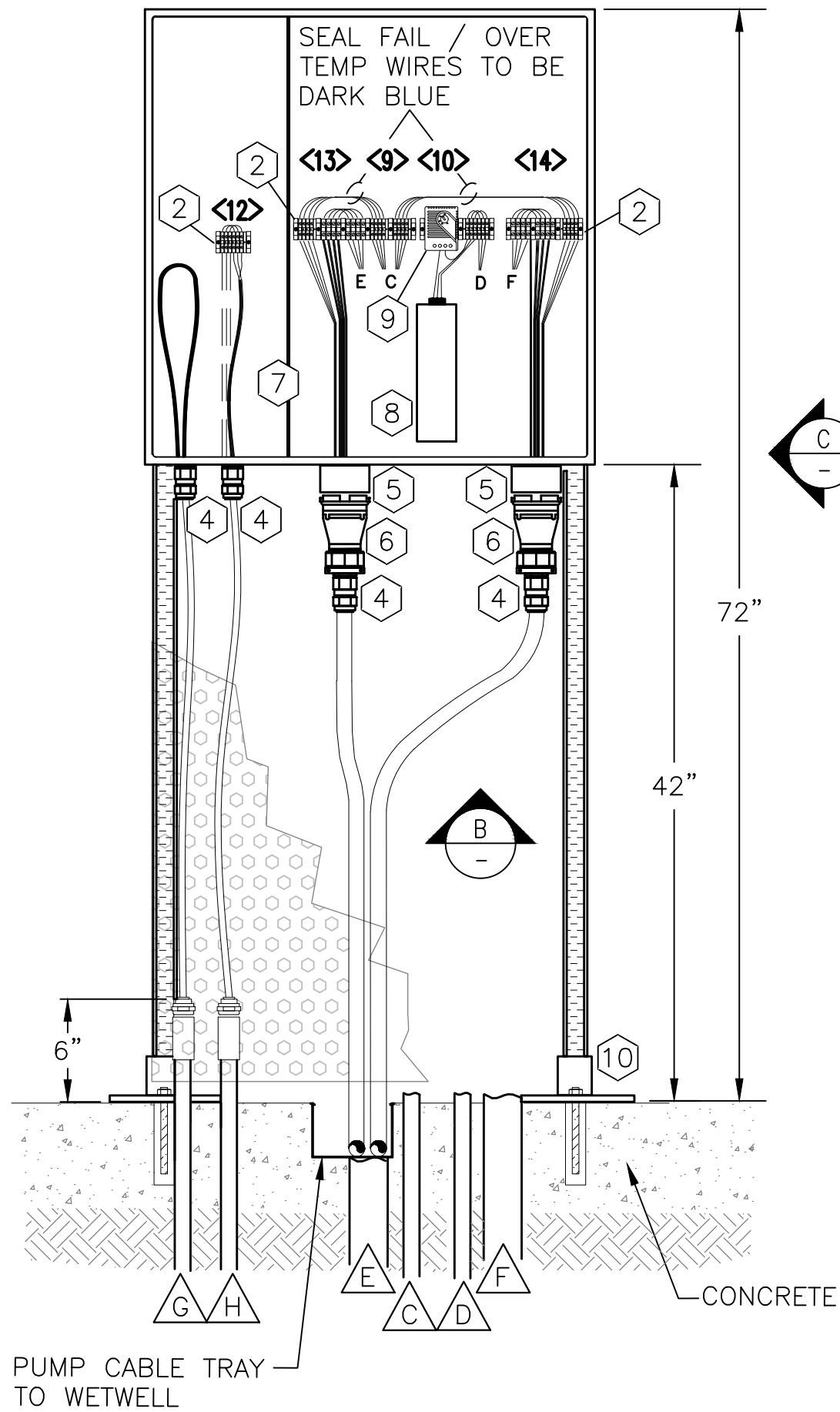
E-4

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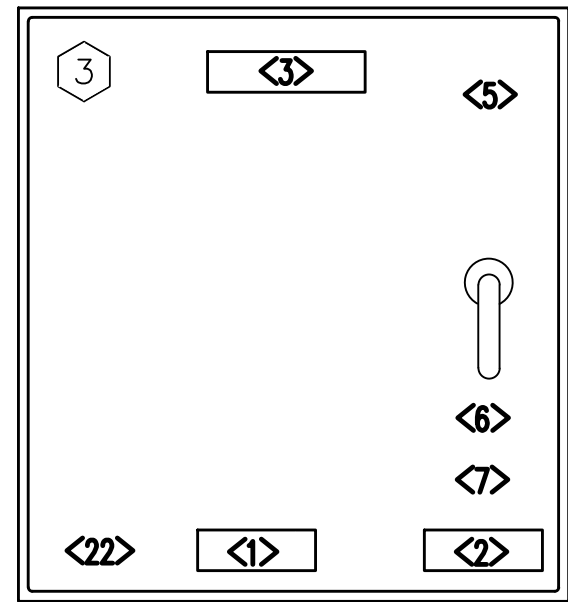
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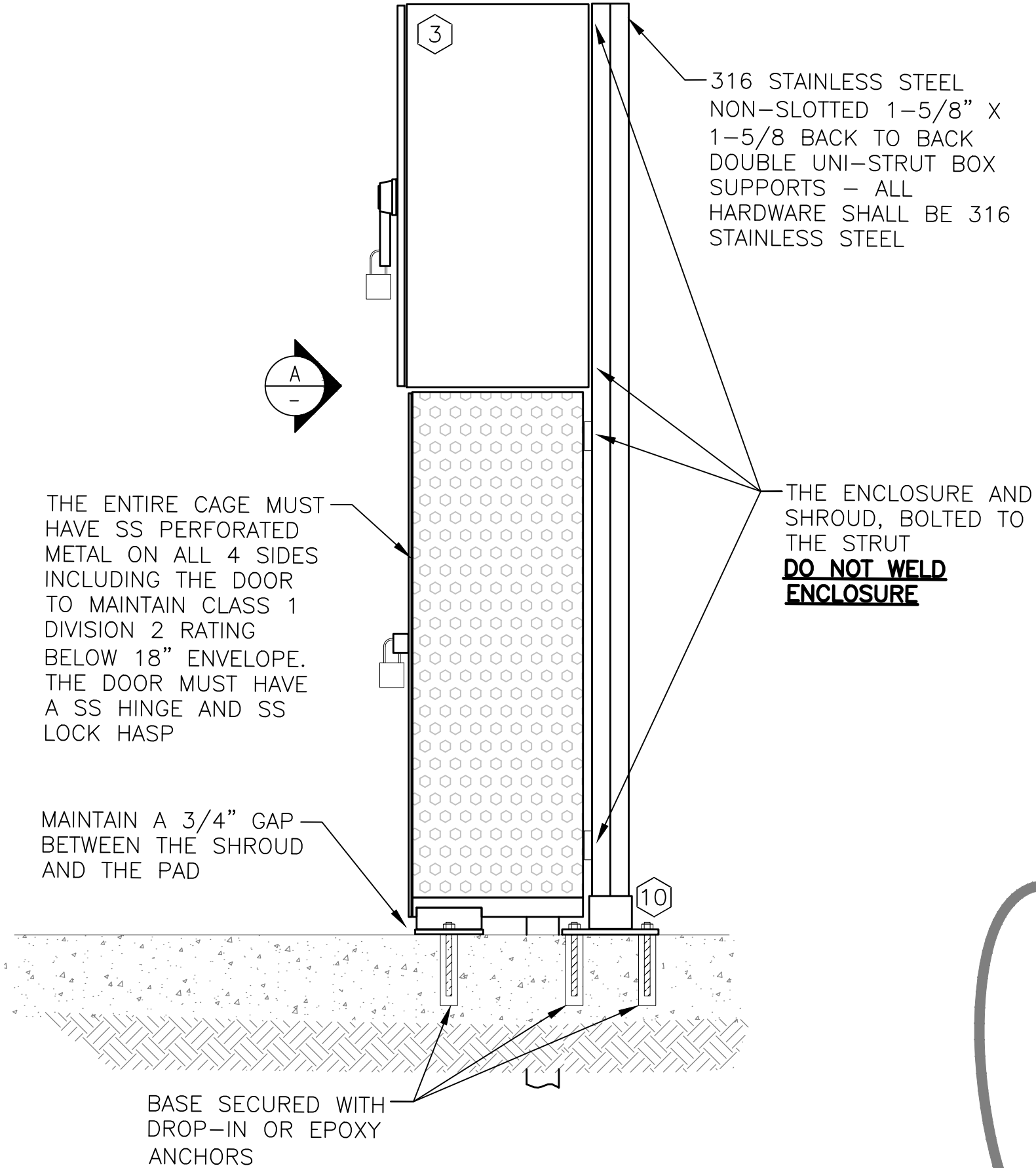
ENCLOSURE BOTTOM VIEW 'B'



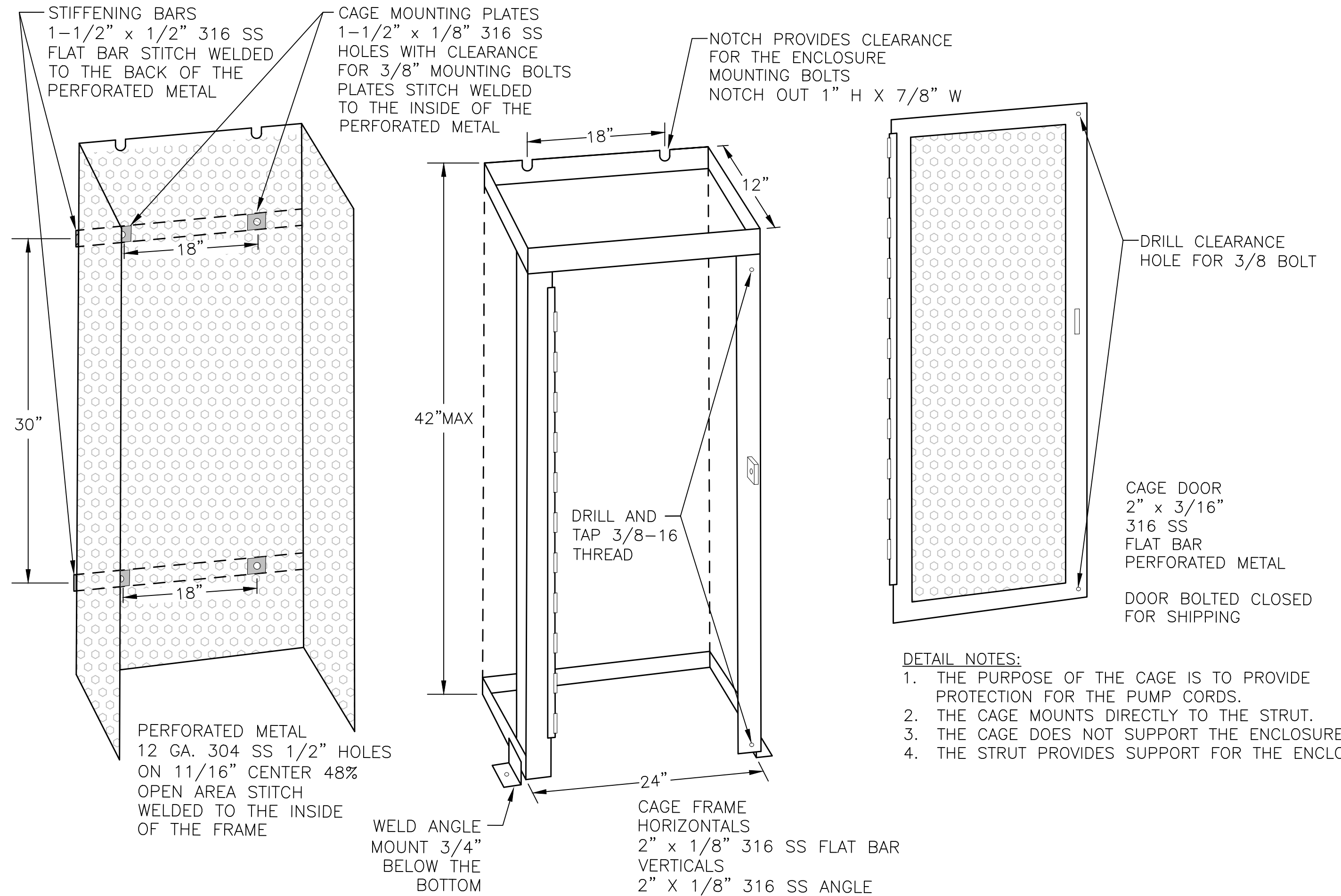
WETWELL ISOLATION PEDESTAL ELEVATION VIEW 'A'



ISOLATION PEDESTAL ENCLOSURE EXTERIOR

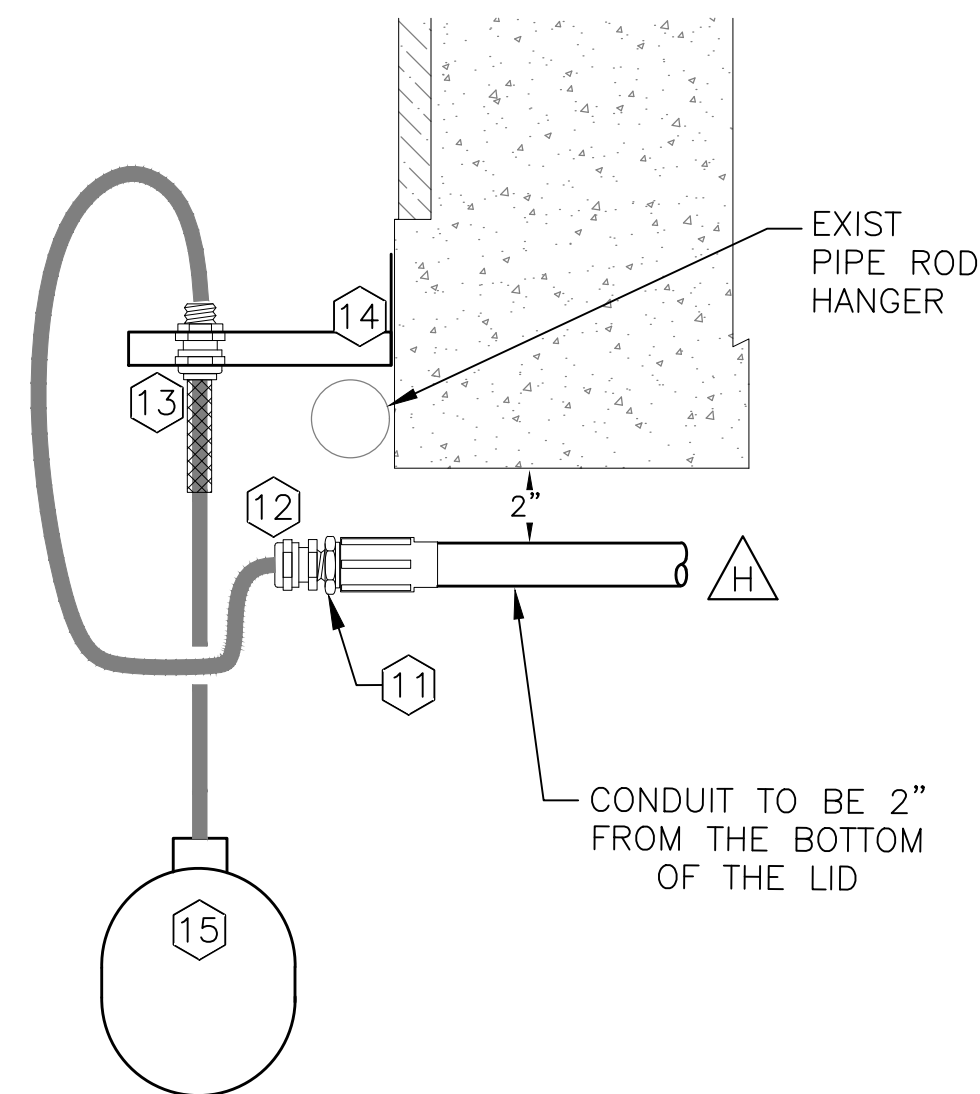


PEDESTAL FOOT MOUNTING SIDE VIEW 'C'

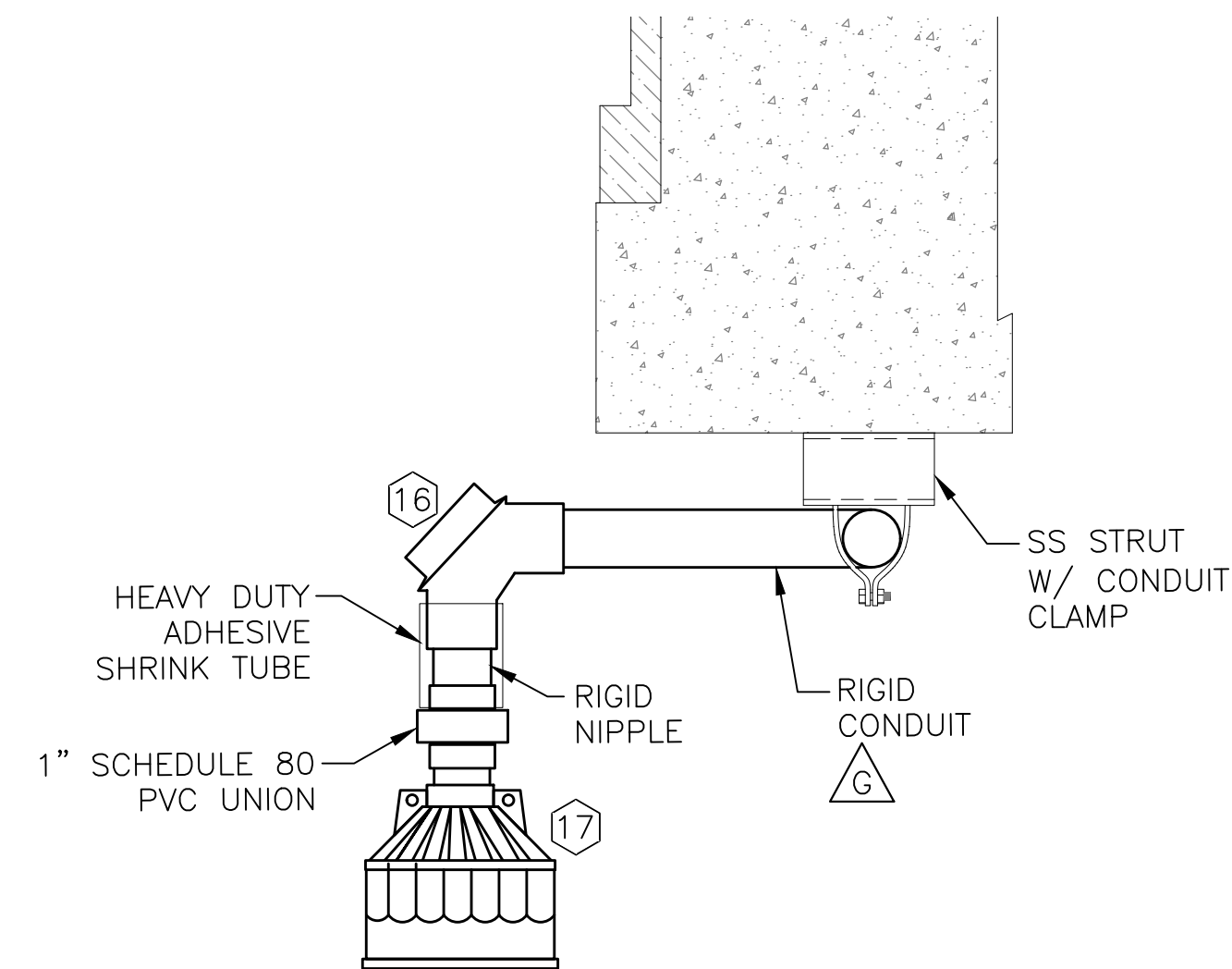


ISOLATION PEDESTAL CAGE

- DETAIL NOTES:
1. THE PURPOSE OF THE CAGE IS TO PROVIDE PROTECTION FOR THE PUMP CORDS.
 2. THE CAGE MOUNTS DIRECTLY TO THE STRUT.
 3. THE CAGE DOES NOT SUPPORT THE ENCLOSURE.
 4. THE STRUT PROVIDES SUPPORT FOR THE ENCLOSURE.



HIGH BALL INSTALLATION DETAIL



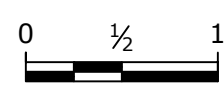
LEVEL TRANSDUCER INSTALLATION DETAIL

- SHEET LAYOUT KEY:
- | | |
|----|---------------------------------|
| # | REFERENCE SHEET E-6 |
| 2 | TERMINAL BLOCKS |
| 3 | ISOLATION PEDESTAL ENCLOSURE |
| 4 | CABLE SEAL |
| 5 | PUMP POWER RECEPTACLE |
| 6 | PUMP CORD CONNECTOR |
| 7 | ISOLATION PEDESTAL BARRIER |
| 8 | ISOLATION PEDESTAL HEATER |
| 9 | ISOLATION PEDESTAL HYGROSTAT |
| 10 | ISOLATION PEDESTAL POST BASE |
| 11 | 1" X 1/2" SS REDUCER BUSHING |
| 12 | SS CORD GRIP |
| 13 | SS CORD GRIP WITH STRAIN RELIEF |
| 14 | HIGH BALL MOUNTING BRACKET |
| 15 | HIGH BALL |
| 16 | PULLING "L" |
| 17 | LEVEL TRANSDUCER |
- △ CONDUIT PENETRATIONS. SEE CONDUIT SCHEDULE SHEET E-6.
- <>> SEE LABEL SCHEDULE SHEET E-7.

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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 34 ISOLATION PEDESTAL
CONSTRUCTION DETAILS

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

E-5

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LOAD SUMMARY				
Voltage		208	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 208 VAC
1	PUMP 1	14.77	17.00	41.0
1	PUMP 2	14.77	17.00	41.0
	NON MOTOR LOADS			
	EXISTING MISC. PANEL LOADS *	3.7		17.8
1**	GENERATOR BLOCK HEATER	1.5		
1**	CONTROL CABINET HEATER	0.2		
1**	LIGHTING (CABINET & OUTDOOR)	0.3		
1**	BIOX CABINET HEATER	0.2		
	* - AMP LOAD FOR PANEL IS 1-PHASE			
	** - LOADS INCLUDED IN PANEL LOAD			
	SUBTOTAL	33.24	34.0	99.8
	LARGEST MOTOR X 25%	3.69		10.3
	NON-MOTOR LOADS X 25%	1.60		4.5
	SPARE CAPACITY (10%)	3.60		10.0
	TOTAL			124.5

NOTE: EXISTING MISC. PANEL LOAD INCLUDES LOADS SHOWN, PLUS ALL MISC LOADS, INCLUDING PANEL CONTROLS, BIOXIDE CONTROLS, GENSET BATTERY CHARGER, UPS, AND HOT BOX CIRCUITS.

EXISTING SERVICE SIZE IS 200 AMPS. LOADING SHOWN FOR INFORMATIONAL PURPOSES OF ADDITION OF NEW PUMPS.

GENERATOR LOAD CHART				
LOAD REQUIREMENTS		PERFORMANCE REQUIREMENTS		
RUNNING KW	31.2	NOMINAL 208V, 60HZ, 3PH		
RUNNING KVA	33.4	MAX. VOLTAGE DIP %	20.0	
RUNNING P.F.	0.9	MAX. FREQUENCY DIP %	10.0	
MAX. START KW	54.7	IN STEP 2	MAX. VOLTAGE HARMONIC	
MAX. START KVA	113.9	IN STEP 2	DISTORTION %	10.0
		MIN. GENERATOR LOADED %	30.0	
		MAX. GENERATOR LOADED %	90.0	
EXISTING GENSET IS 75KW -		TOTAL KW REQUIRED	60.0	
		TOTAL AMPS REQUIRED	200.0	
GENERATOR SIZING BASED ON THE FOLLOWING STEP CONFIGURATION:				
STEP 1 - PANEL LOAD				
STEP 2 - PUMP 1				
STEP 3 - PUMP 2				

NOTE: GENERATOR IS EXISTING TO BE RE-USED. LOAD CHART FOR INFORMATIONAL PURPOSES.

CONSTRUCTION NOTE : CONDUIT INSTALLATION

1. ALL STRUT MOUNTING HARDWARE MUST BE STAINLESS STEEL.
2. MYERS HUB FITTING MUST BE USED ON ALL CONDUIT PENETRATIONS INTO ENCLOSURES.
3. ALL CONDUIT MUST BE PVC COATED GALVANIZED RIGID.
4. THE PROPER TOOLS MUST BE USED WHILE CUTTING, THREADING, BENDING AND TIGHTENING ANY PVC COATED CONDUIT.
5. THE PVC COATING MUST REMAIN INTACT; ONLY 1 INCH OF THE COATING MAY BE REMOVED AT THE END OF THE CONDUIT TO ALLOW FOR THREADING.
6. ANY CONDUIT WITH THE DAMAGED COATING MUST BE REPLACED.
7. THE COATING TOUCH-UP PAINT IS TO BE USED FOR COSMETIC BLEMISHES.
8. ALL THREADED CONNECTIONS MUST BE COPPER COATED AND TIGHTENED APPROPRIATELY.
9. ALL UNDERGROUND CONDUIT RUNS MUST BE INSPECTED BEFORE THEY CAN BE COVERED.
10. CORE AND INSTALL LINK SEAL ON ALL CONDUIT PENETRATIONS INTO BELOW GRADE STRUCTURES, I.E. VAULTS WET WELL.

Industrial Systems INC.

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Fax: (360) 952-8958
e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSI880K9
AK #1018436
PROJECT#: 21.82.01

NO.	DATE	BY	REVISION

NOTICE

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

RSC
DESIGNED
RSC
DRAWN
MEW
CHECKED



CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 34 LOAD TABLES,
CONDUIT SCHEDULE, AND
APPROVED MATERIALS LIST (BOM)

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

E-6

15 of 28

CONDUIT AND WIRE SCHEDULE						
CONDUIT USE	CONDUIT DESIGNATION	CONDUIT SIZE	CONDUIT TYPE	CONDUCTOR SIZE AND NUMBER OF CONDUCTORS	CONDUIT FROM	CONDUIT TO
HIGH BALL CKT	A	3/4"	PGRS	(2) #14, C (1) #14, G	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
LEVEL TRANSDUCER CKT	B	1"	PGRS	MFR CABLE	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
OVERTEMP & SEAL FAIL CKT	C	3/4"	PGRS	(4) #14, C (1) #14, G	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
ISOLATION PEDESTAL HEATER CKT	D	3/4"	PGRS	(1) #12, P (1) #12, N (1) #12, G	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
PUMP #1 POWER	E	1"	PGRS	(3) #6, P (1) #8, G	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
PUMP #2 POWER	F	1"	PGRS	(3) #6, P (1) #8, G	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
LEVEL TRANSDUCER	G	1"	PGRS	MFR CABLE	WET WELL	ISOLATION PEDESTAL
HIGH BALL	H	1"	PGRS	MFR CABLE	WET WELL	ISOLATION PEDESTAL

APPROVED MATERIAL LIST (BOM)				
ITEM	CITY OF LACEY DESCRIPTION	MANUFACTURER	PART #	SPECIAL CONSTRUCTION NOTES
1	SEAL FAIL / OVER TEMP RELAY FOR FLYGT PUMPS			*FACILITY INTEGRATOR AND INSTALLING CONTRACTOR SHALL USE LISTED PARTS AND INSTALL THEM USING THE SPECIAL CONSTRUCTION NOTES.
2	TERMINAL BLOCKS	MINICAS II		SEE DETAIL SHEET E-3
3	ISOLATION PEDESTAL ENCLOSURE	SPRECHER SCHUH	V7-W SERIES	SET ON MANUAL RESET.
4	CABLE SEAL			STEEL DIN RAIL (NO ALUMINUM). STOPS INSTALLED.
5	LIQUID POUR RESIN BARRIER			AMPERAGE RATING AS REQUIRED.
6	PUMP POWER RECEPTACLE			
7	DE-CONTACTOR TYPE	MELTRIC DSN SERIES	63-94163-972	SEE DETAIL SHEET E-5
8	PUMP CORD CONNECTOR			
9	DE-CONTACTOR TYPE	MELTRIC DSN SERIES	63-98163-972 W/ 515P0N12 HANDLE	PROVIDE WITH PILOT CONTACTS. SEE DETAIL SHEET E-5
10	ISOLATION PEDESTAL BARRIER	"CUSTOM"		PROVIDE WITH PILOT CONTACTS AND USE WITH 1-1/4" NPT POLY HANDLE. SEE DETAIL SHEET E-5. VERIFY HANDLE SIZE WITH PUMP MFR CABLE.
11	ISOLATION PEDESTAL HEATER	PFANNENBERG	17015005007	CONSTRUCTED OF ALUMINUM AND NEEDS TO RUN THE FULL HEIGHT OF THE PANEL AND EXTEND 6 INCHES TOWARDS THE DOOR FROM THE BACK PLATE.
12	ISOLATION PEDESTAL HYGROSTAT	STEGO	MFR012	
13	ISOLATION PEDESTAL POST BASE	B-LINE	B281SQ SS4	SEE DETAIL SHEET E-5
14	1" X 1/2" SS REDUCER BUSHING	UNISTRUT	P2073ASQSS	SEE DETAIL SHEET E-5
15	SS CORD GRIP	CROUSE - HINDS	RBSS531	SEE DETAIL SHEET E-5
16	SS CORD GRIP WITH STRAIN RELIEF	WOODHEAD	MAX - LOC 1300980070	SEE DETAIL SHEET E-5
17	HIGH LEVEL FLOAT (HIGH BALL) MOUNTING BRACKET	WOODHEAD	MAX - LOC 130097 - 034	SEE DETAIL SHEET E-5
18	HIGH LEVEL FLOAT (HIGH BALL)	ANCHOR SCIENTIFIC	W-MS	SEE DETAIL SHEET E-5
19	PVC COATED CAPPED ELL	ANCHOR SCIENTIFIC	ROTO-FLOAT N.O. TYPE "S" ** FOOT	SEE DETAIL SHEET E-5
20	LEVEL TRANSDUCER	OCAL	LBY35-G	APPLY COPPER COAT TO CAP THREADS. SEE DETAIL SHEET E-5
21		SIEMENS	XPS-15 7ML11180EA30	CABLE WILL LOOP THROUGH THE ISOLATION PEDESTAL AND HOME RUN TO LEVEL CONTROL. DO NOT REMOVE THE SHEATHING. SEAL CABLE GLAND DIRECTLY TO SHEATHING WITH RESIN. SEE DETAIL SHEET E-5

P:\Projects\21.82.01_MSA_Lacey_LS_#34\DWG\22-3380-WA-LS34-E-7.dwg E-7 5/2/2023 4:01 PM ROBERTC 23.1s (LMS Tech)

Industrial
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OR CCB #196597 WA #INDUS1880K9
AK #1018436
PROJECT# 21.82.01

NO.	DATE	BY	REVISION

NOTICE

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1/2

1

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CHECKED



CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 34
PHENOLIC LEGENDS AND VINYL LABELS

PROJECT NO.: 22-3380.03SCALE: AS SHOWNDATE: MAY 2023

SHEET



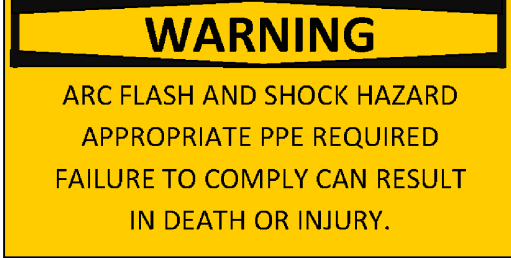
E-7

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Phenolic Legends

3/4" X 3" Black background with white 3/16" letters, text to include:	3/4" X 3" Black background with white 3/16" letters, text to include:	1-1/2" X 5" Black background with white 3/8" letters, text to include:	1-1/2" X 5" Black background with white 3/8" letters, text to include:
<1> PUMP 1	<2> PUMP 2	<3> ISOLATION PEDESTAL	<4> NOT USED

Vinyl Labels

Emedco part number SQS116 text to include:	Emedco part number SQS9 text to include:	Emedco part number SQ3784 text to include:	
<5> 	<6> 	<7> 	<8> NOT USED

White background with 18 point black font, text to include:

<9> SEAL FAIL 1	<10> SEAL FAIL 2	<11> NOT USED	<12> HIGH BALL	<13> PUMP 1	<14> PUMP 2	<15> M1	<16> M2
<17> SF1	<18> SF2	<19> DT1	<20> DT2	<21> DT3			

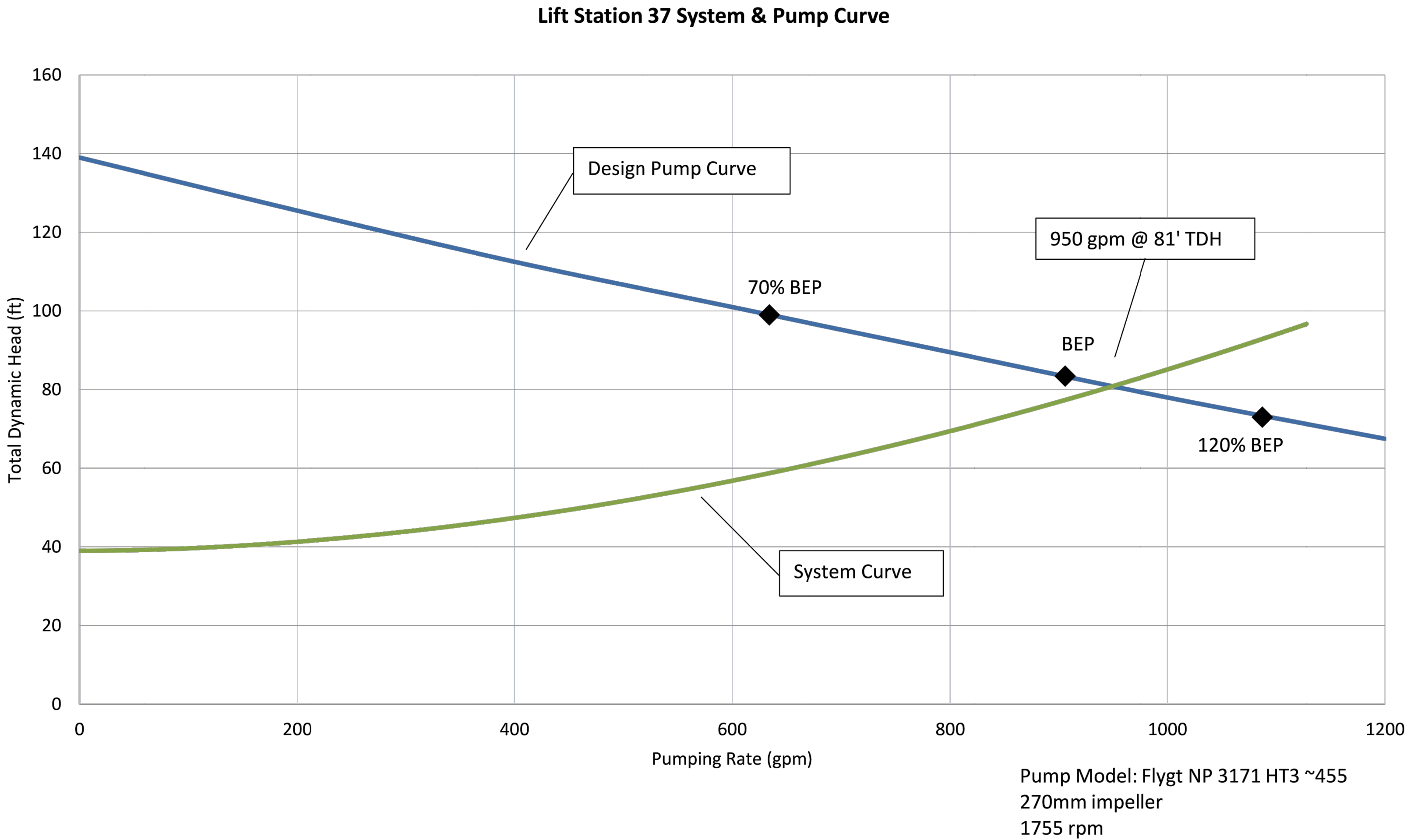
Red or yellow background with black 5/32" letters, text to include:

<22> WARNING: To prevent ignition of flammables or combustible atmospheres, disconnect power before servicing. This panel provides intrinsically safe circuit extensions for use in CLASS 1 GROUP D HAZARDOUS LOCATIONS when connected per (Control System Manufacturer) drawing package (number).		
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This document is supported by UL 898A, WAC 296 – 46B, 2014 NEC, NFPA 90, PSE and the Local Jurisdiction having Authority.
It is the contractor's responsibility to comply with all current codes.

K:\TAC_Projects\22\3380.01-06 - Lacey LS Consultant Projects\CAD\Sheets\LS 37\22-3380-WA-LS37-G.dwg G-5 5/1/2023 3:39 PM DEREK.CLOUD 24.1s (LMS Tech)

SYSTEM HEAD-CAPACITY CURVES:



DESIGN DATA SUMMARY TABLE:

DESIGN DATA SUMMARY TABLE	
PUMP STATION	
LOCATION	5601 LINTEL LN SE
PUMP STATION TYPE	DUPLEX SUBMERSIBLE
PUMP TYPE	(2) CONSTANT SPEED, NON-CLOG
DESIGN PEAK HOURLY INFLUENT FLOW (GPM)	850
PUMP CAPACITY (GPM, PER PUMP) AT 100% OF RATED SPEED	950 at 81' TDH
MAXIMUM PUMP STARTS PER HOUR, PER PUMP	6
MOTOR HORSEPOWER, HP	34
WET WELL LEVEL CONTROL TYPE	ULTRASONIC
WET WELL OPERATING VOLUME, PUMPS OFF TO LEAD PUMP ON (GAL)	2360
OVERFLOW POINT/OVERFLOW DISCHARGE ELEVATION (FT)	MH OUTSIDE SITE FENCING, EL 190.83
AUXILIARY POWER TYPE	STANDBY DIESEL GENERATOR
AUXILIARY POWER LOCATON	ONSITE
AUXILIARY POWER OUTPUT	125 KW
AUXILIARY POWER TRANSFER SWITCH	AUTOMATIC
ALARM TELEMETRY TYPE	CELLULAR AND RADIO
EPA RELIABILITY CLASS	1

FORCE MAIN					
LENGTH, FT	SIZE, IN	MATERIAL	SHARED?	FULL-PIPE?	C-VALUE
25	6	DIP	NO	YES	120
10	10	DIP	NO	YES	120
5,940	10	C900 CL200 PVC	NO	YES	125
720	10	C900 CL200 PVC	NO	NO	N/A
535	12	HDPE IPS SDR 11	NO	NO	N/A

NO.	DATE	BY	REVISION

NOTICE

0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

TMH
DESIGNED
JSD/DKH
DRAWN
SSA
CHECKED

BRIAN M. CASEL
STATE OF WASHINGTON
MAY 3 2023
46632
REGISTERED
PROFESSIONAL ENGINEER
May 3, 2023

 **consor**


CITY OF LACEY

**CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION**

**LS 37 SYSTEM-HEAD CAPACITY CURVES
AND DESIGN DATA SUMMARY TABLE**

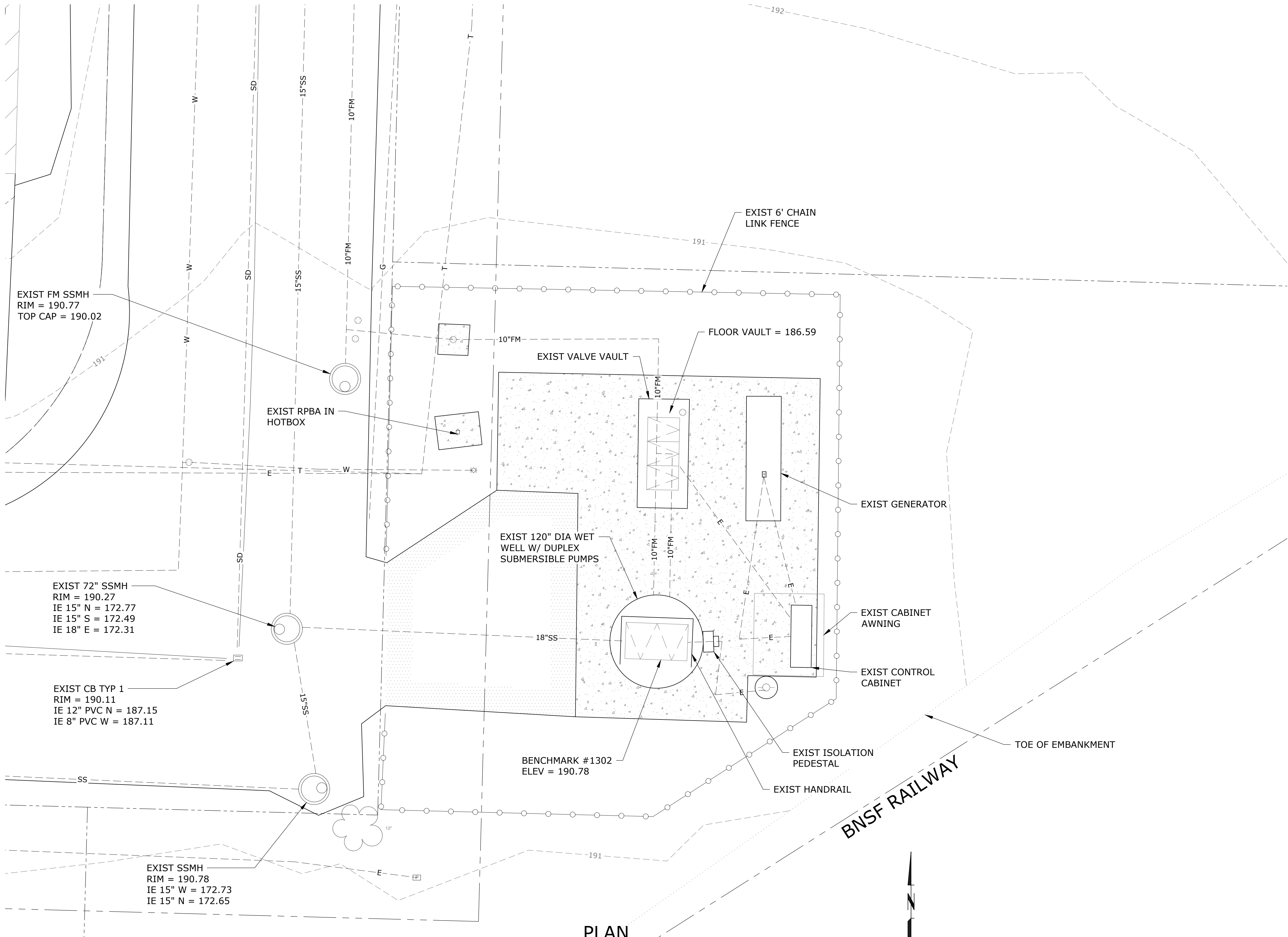
PROJECT NO.:	22-3380.03	SCALE:	AS SHOWN	DATE:	MAY 2023
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SHEET

G-5

17 of 28

K:\TAC_Projects\22\3380.01-06 - Lacey LS Consultant Projects\CAD\Sheets\LS 37\22-3380-WA-LS37-G-6.dwg G-6 5/1/2023 3:45 PM DEREK.CLOUD 24.1s (LMS Tech)



PLAN
SCALE: 1"=5'

NO.	DATE	BY	REVISION

NOTICE

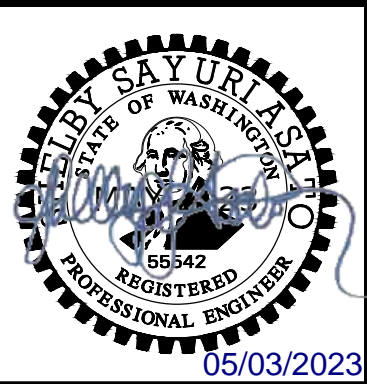
0 1/2 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

TMH DESIGNED

JLC DRAWN

SSA CHECKED



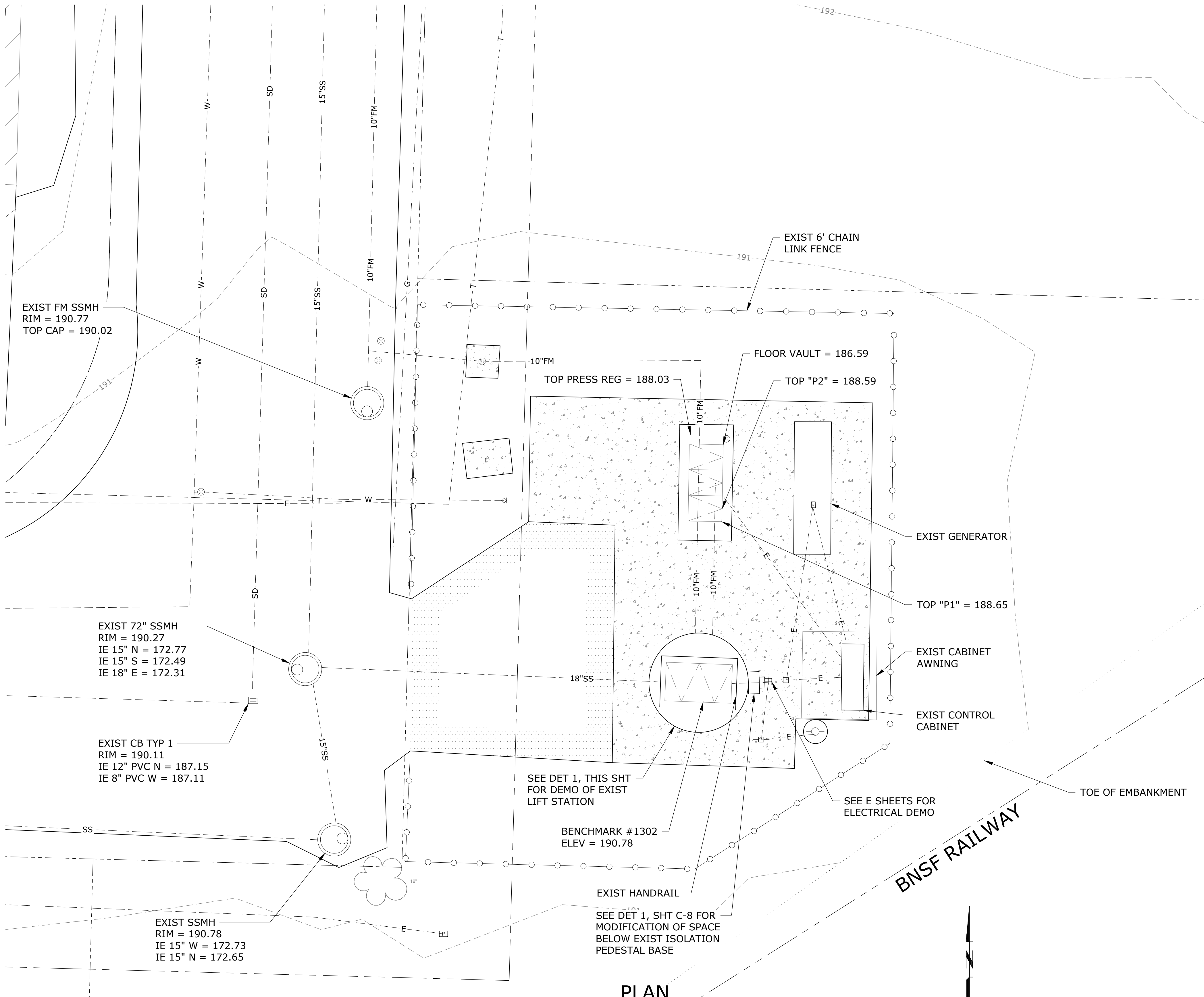
CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 37 EXISTING SITE AND UTILITIES

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET
G-6
18 of 28

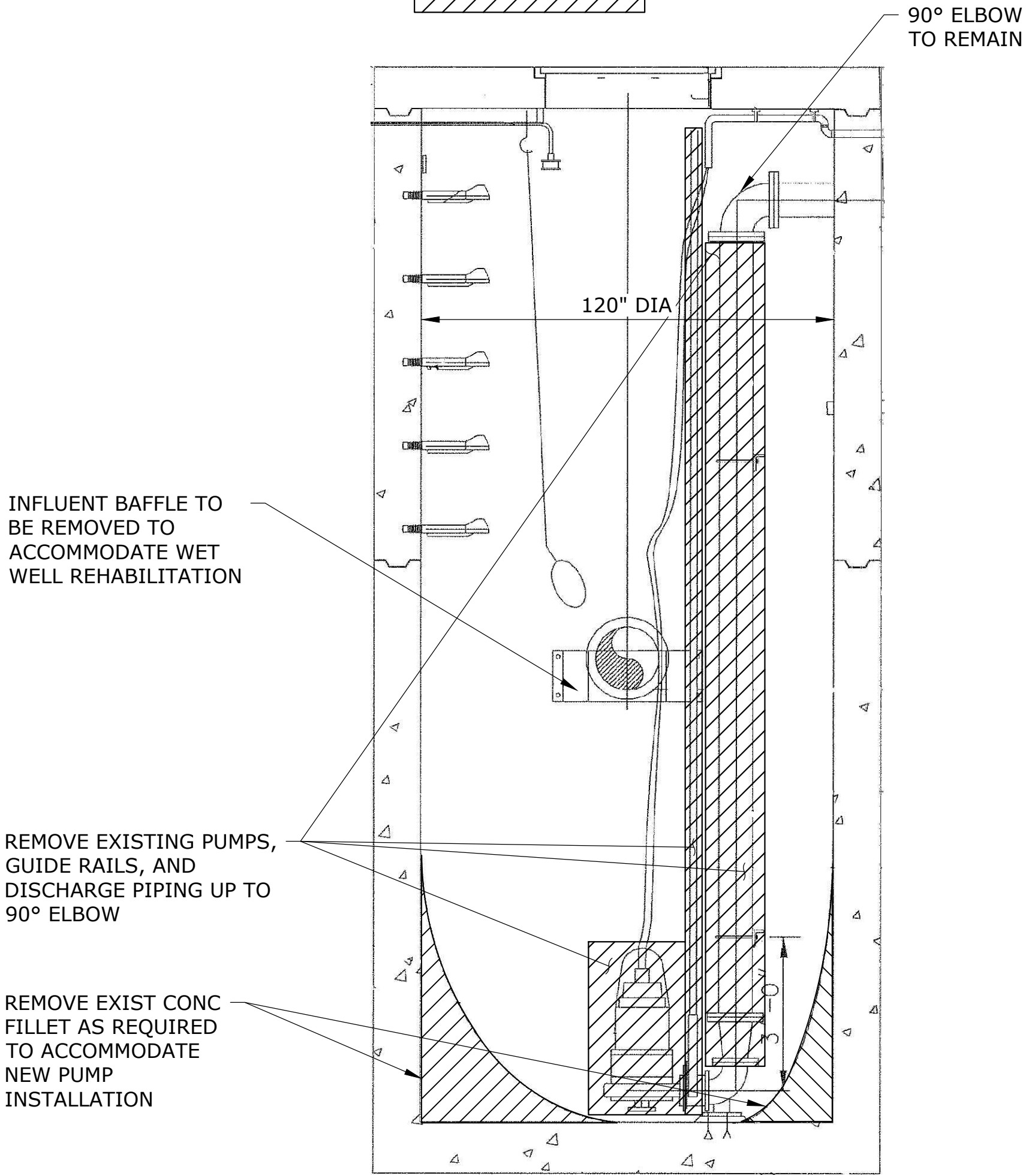
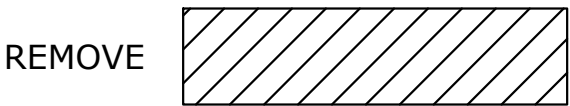
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NOTES:

1. DEMOLITION WORK REQUIRES DETAILED PLANNING OF CONSTRUCTION SEQUENCING, SPECIAL COORDINATION AND COMPREHENSIVE PROGRAMMING, COMBINED WITH OTHER SPECIAL WORK ACTIVITIES. CONTRACTOR SHALL PREPARE AND SUBMIT DETAILED WORK SEQUENCE PLAN TO THE ENGINEER FOR REVIEW BEFORE CONSTRUCTION ACTIVITIES BEGIN.
2. THE EXISTING PUMP STATION FACILITIES SHALL BE REMOVED FROM SERVICE AND DEMOLISHED ACCORDING TO THESE CONTRACT DRAWINGS AND SPECIFICATIONS.
3. CONTRACTOR SHALL PROTECT IN PLACE EXISTING CONTROL CABINET
4. REMOVE EXISTING EMBEDDED ANCHORS 2" MINIMUM INTO STRUCTURE, FILL W/ NON-SHRINK GROUT.
5. ANY LIFT STATION ELEMENTS NOT IDENTIFIED FOR DEMOLITION SHALL BE PROTECTED FOR RE-USE.

LEGEND



EXISTING LIFT STATION DEMOLITION

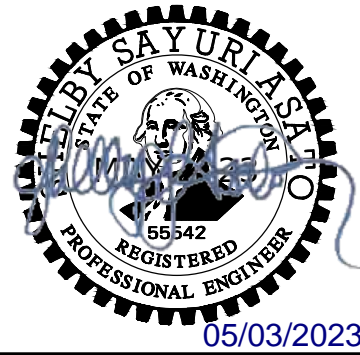
SCALE: NTS

1
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NO.	DATE	BY	REVISION

NOTICE
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

TMH
DESIGNED
JSD/DKH
DRAWN
SSA
CHECKED



CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 37 DEMOLITION PLAN

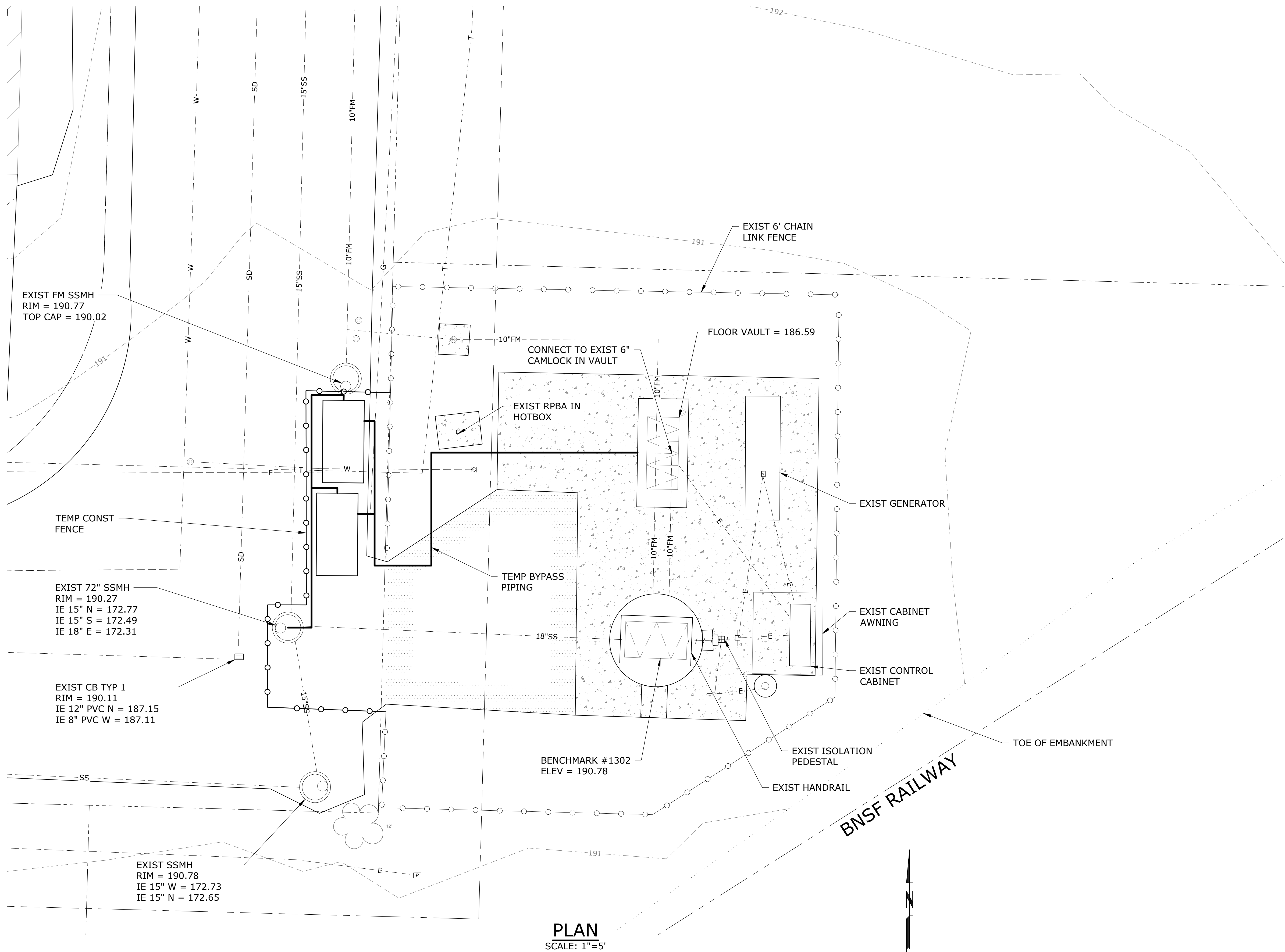
PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

C-6

19 of 28

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- NOTES:
1. DEMOLITION WORK REQUIRES DETAILED PLANNING OF CONSTRUCTION SEQUENCING, SPECIAL COORDINATION AND COMPREHENSIVE PROGRAMMING, COMBINED WITH OTHER SPECIAL WORK ACTIVITIES. CONTRACTOR SHALL PREPARE AND SUBMIT DETAILED WORK SEQUENCE PLAN TO THE ENGINEER FOR REVIEW BEFORE CONSTRUCTION ACTIVITIES BEGIN.
 2. THE EXISTING PUMP STATION FACILITIES SHALL BE REMOVED FROM SERVICE AND DEMOLISHED ACCORDING TO THESE CONTRACT DRAWING AND SPECIFICATIONS.
 3. BYPASS AND TRAFFIC CONTROL PLANS SHOWN ON THIS SHEET ARE CONCEPTUAL IN NATURE. CONTRACTOR SHALL SUBMIT BYPASS PLANS INCLUDING PROPOSED TRAFFIC CONTROL MEASURES FOR APPROVAL PRIOR TO CONDUCTING BYPASS.
 4. PEDESTRIAN THRU-ACCESS SHALL BE MAINTAINED AT ALL TIMES DURING BYPASSING.

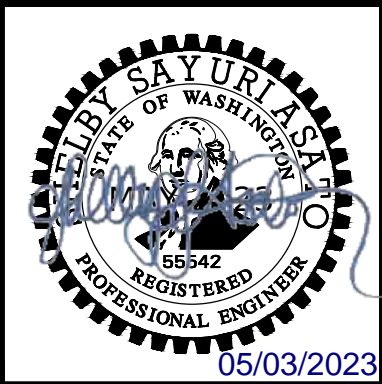
NO.	DATE	BY	REVISION

NOTICE

0 1/2 1

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DESIGNED
JSD
DRAWN
SSA
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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

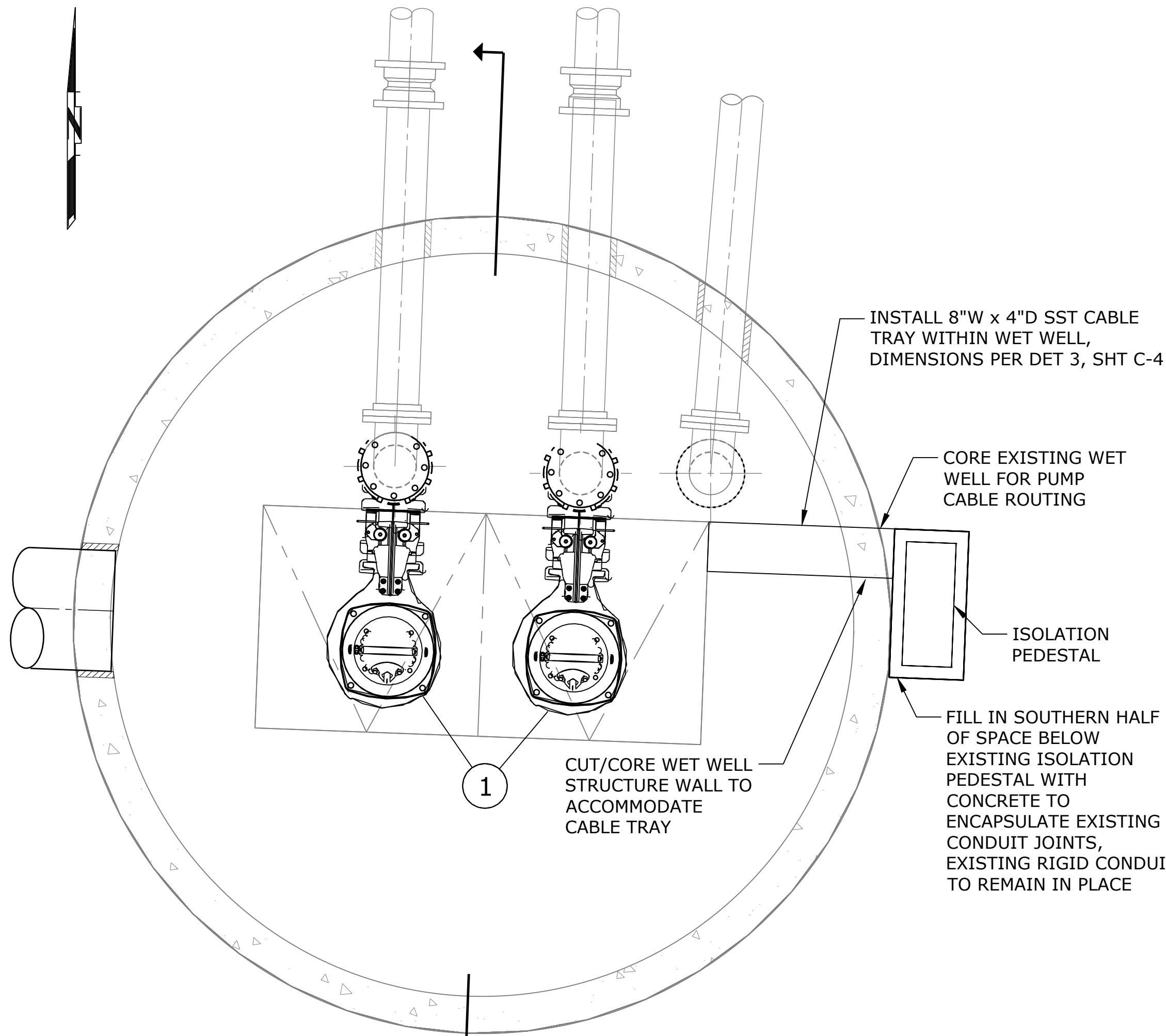
PROJECT NO.:	22-3380.03	SCALE:	AS SHOWN	DATE:	MAY 2023
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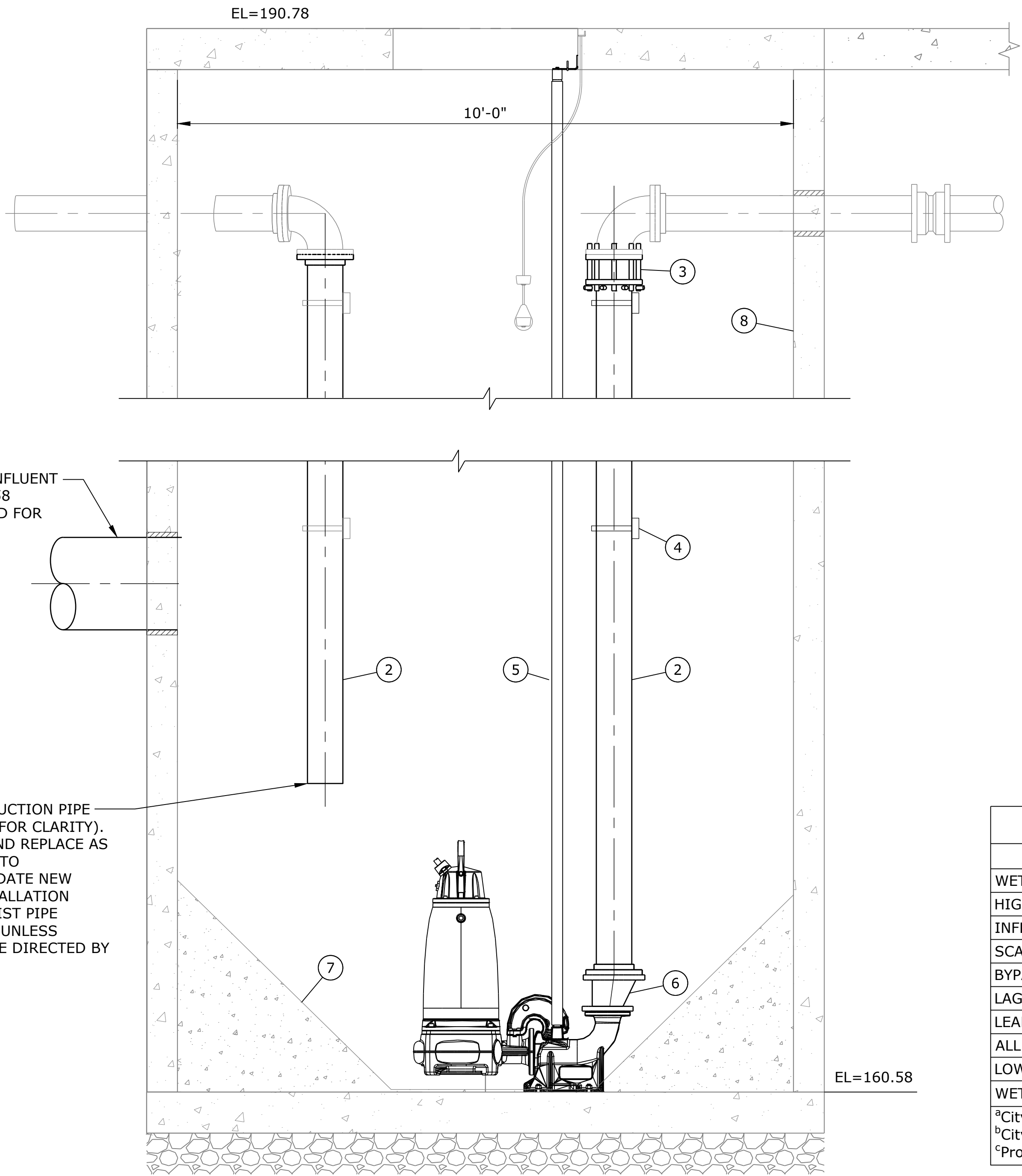
C-7

20 of 28

K:\TAC_Projects\22\3380.01-06 - Lacey LS Consultant Projects\CAD\Sheets\LS 37\22-3380-WA-LS37-C-8.dwg C-8 5/1/2023 3:21 PM DEREK.CLOUD 24.1s (LMS Tech)



PLAN
SCALE: 3/4" = 1'-0"



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

NOTES:

1. ALL HARDWARE AND FASTENERS SHALL BE 316 STAINLESS STEEL.
2. ALL DUCTILE IRON MECHANICAL JOINT FITTINGS, PIPE AND VALVES SHALL BE CLASS 52 EPOXY LINED AND COATED PER CITY STANDARD SECTION 7-17.2 WITH RESTRAINED JOINTS.
3. CONTRACTOR SHALL COORDINATE WET WELL LAYOUT, PUMP SPACING AND MOUNTING DETAILS TO ALLOW SMOOTH PUMP REMOVAL AND INSTALLATION.
4. CITY SHALL APPROVE WET WELL STRUCTURE WALL CUT/CORE LAYOUT FOR CONDUITS PRIOR TO INSTALLATION. PENETRATIONS SHALL NOT IMPACT EXISTING WET WELL TOP SLAB.

MATERIAL LIST

- 1 SUBMERSIBLE WASTEWATER PUMP (TYP OF 2), SEE SPEC SECTION 43 21 39
- 2 6" DI SPL, FLG OR PE AS SHOWN, LTF
- 3 6" RFCA
- 4 PIPE SUPPORT BRACKET, SEE DET 2, SHT C-4. PIPE SUPPORT SHALL NOT BE LOWER THAN THE CROWN OF THE INFLUENT PIPE.
- 5 2" DIA SST TYPE 316 GUIDE RAIL, TYP OF 4, INSTALL AS REQ'D BY MFR
- 6 6"x4" DI ECCENTRIC REDUCER, FLG
- 7 REPAIR INTERIOR WET WELL FILLET IF DAMAGED OR REMOVED TO ACCOMMODATE PUMP INSTALLATION PER PUMP MANUFACTURER RECOMMENDATIONS; SLOPE FILLET AT MINIMUM 45 DEGREES
- 8 COAT WET WELL WITH RAVEN 405 AND PRIMER PER MANUFACTURER RECOMMENDATIONS.

EXISTING WET WELL LEVELS

DESCRIPTION	ELEVATION (FT)	WET WELL LEVEL (FT)
WET WELL RIM ^b	190.78	30.20
HIGH LEVEL FLOAT ^b	173.28	11.00
INFLUENT SEWER ^a	172.58	12.60
SCADA ALARM ^c	172.00	10.00
BYPASS PIPE ^c	170.00	9.40
LAG PUMP ON ^c	170.00	9.40
LEAD PUMP ON ^c	169.00	8.40
ALL PUMPS OFF ^c	165.00	4.40
LOW LEVEL ALARM ^c	163.00	2.40
WET WELL BOTTOM ^b	160.58	0.00

^aCity-Provided As-Built Drawings (Existing)
^bCity-Provided As-Built Data Spreadsheet (Existing)
^cProposed

NO.	DATE	BY	REVISION

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0 1/2 1
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JLC
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**CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION**

**LS 37 LIFT STATION
PLAN AND SECTION**

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

C-8

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P:\Projects\21.83.01_MSA_Lacey_LS_#37\DWG\22-3380-WA-LS37-E-8.dwg E-8 5/2/2023 4:28 PM ROBERTC 23.1s (LMS Tech)

CONTROL DRAWING SYMBOLS

-
- CONTACT – NORMALLY OPEN
-
- CONTACT – NORMALLY CLOSED
-
- CONTACT –NORMALLY OPEN TIMING CLOSED
-
- CONTACT –NORMALLY CLOSED TIMING OPEN
-
- CONTACT –NORMALLY OPEN TIMING OPEN
-
- CONTACT –NORMALLY CLOSED TIMING CLOSED
-
- FLOAT SWITCH – NORMALLY OPEN
-
- FLOAT SWITCH – NORMALLY CLOSED
-
- TEMPERATURE SWITCH – NORMALLY OPEN
-
- TEMPERATURE SWITCH – NORMALLY CLOSED
-
- LIMIT SWITCH – NORMALLY OPEN
-
- LIMIT SWITCH – NORMALLY CLOSED
-
- LIMIT SWITCH – NORMALLY OPEN HELD CLOSED
-
- LIMIT SWITCH – NORMALLY CLOSED HELD OPEN
-
- PUSHBUTTON – NORMALLY OPEN
-
- PUSHBUTTON – NORMALLY CLOSED
-
- 2 POSITION SELECTOR SWITCH
-
- 3 POSITION SELECTOR SWITCH (HOA)
-
- 2 POLE 3 POSITION SELECTOR SWITCH
-
- CIRCUIT BREAKER – SINGLE POLE
-
- FUSE
-
- COIL – CONTROL RELAY
-
- PILOT LIGHT – PUSH-TO-TEST BLUE
-
- PILOT LIGHT – PUSH-TO-TEST RED
-
- PILOT LIGHT – STANDARD – COLOR INDICATED

CONTROL DRAWING SYMBOLS

-
- MOTOR, 3 PHASE
-
- THERMAL OVERLOAD
-
- MAGNETIC STARTER
-
- REDUCED VOLTAGE STARTER
(SOFT START)
-
- TRANSFORMER
-
- HEATER
-
- CONNECTION
-
- NO CONNECTION
-
- FIELD WIRE
-
- SHIELDED WIRE
-
- GROUND (CHASSIS)
-
- GROUND (EARTH)
-
- FIELD TERMINAL
(PUMP CONTROL PANEL BACKPLATE)
-
- TERMINAL
-
- CONNECTOR
-
- ELAPSED TIME METER
-
- COUNTER

INSTRUMENTATION SYMBOLS

-
- LE100 – LEVEL ELEMENT
(TRANSDUCER)
-
- LIC100 – LEVEL INDICATE CONTROLLER
(WET WELL LEVEL)
-
- PIT100 – PRESSURE INDICATE TRANSMITTER
(FORCE MAIN PRESSURE)
-
- FE100 – FLOW ELEMENT
(FLOW METER ELEMENT)
-
- FIT100 – FLOW INDICATE TRANSMITTER
(FLOW METER TRANSMITTER)

WIRING NOTES

- 480 VOLT SUPPLY MAIN CONTROL CABINET WIRING SHALL BE BROWN/ORANGE/YELLOW TINNED MTW/TEW. PHASE ROTATION SHALL BE FORWARD A. B. C.
- ALL NEUTRAL MAIN CONTROL CABINET WIRING SHALL BE WHITE TINNED MTW/TEW. ALL WIRES CONNECTED TO BREAKERS IN THE BREAKER PANEL SHALL BE BLACK 12 AWG TINNED MTW/TEW.
- ANY 120 VAC WIRE THAT IS NOT CONNECTED DIRECTLY TO A BREAKER IS A CONTROL WIRE, ALL MAIN CONTROL CABINET CONTROL WIRES SHALL BE RED 14 AWG TINNED MTW/TEW.
- ALL MAIN CONTROL CABINET 12 VDC+ WIRES SHALL BE ORANGE 16 AWG TINNED MTW/TEW.
ALL MAIN CONTROL CABINET 12 VDC– WIRES SHALL BE YELLOW 16 AWG TINNED MTW/TEW.
- ALL MAIN CONTROL CABINET 24 VDC+ WIRES SHALL BE DARK BLUE 16 AWG TINNED MTW/TEW.
ALL MAIN CONTROL CABINET 24 VDC– WIRES SHALL BE WHITE WITH A BLUE STRIPE 16 AWG TINNED MTW/TEW.
- ALL INTRINSICALLY SAFE WIRES SHALL BE PURPLE.
- ALL ANALOG SINGALS SHALL BE 18 AWG SHIELDED TWISTED PAIR CONDUCTORS BETWEEN SOURCE AND DEVICE
CONNECT THE SHIELD DRAIN ON THE PUMP CONTROL PANEL END.
- BRANCH CIRCUITS, CONTROL CIRCUITS AND PUMP MOTOR FIELD WIRING SHALL BE THE SAME SIZE AND COLOR AS THE CONTROL PANEL WIRING IT IS CONNECTED TO. ALL FIELD WIRING SHALL BE THHN/THWN.
- WIRE NUTS AND BUTT SPLICES SHALL NOT BE USED IN ANY CIRCUIT OTHER THAN LIGHTING CIRCUITS.
- ALL VOLTAGES WITHIN THE MAIN CONTROL CABINET ARE CONSIDERED LOCAL. NO FOREIGN VOLTAGES EXIST.

WIRE MARKINGS

- ALL WIRES SHALL BE LABELED WITH THE SAME DESCRIPTION ON BOTH ENDS.
- WIRES LABEL SHALL HAVE THE SAME DESCRIPTION AS THE CITY OF LACEY’S ORIGINAL DRAWING.
- WIRE LABELS SHALL BE PRINTED HEAT SHRINK TYPE WIRE MARKING SLEEVES.
- WIRE LABEL TEXT SHALL BE ORIENTED IN THE SAME DIRECTION. HORIZONTAL WIRE TO READ FROM LEFT TO RIGHT AND VERTICAL WIRES TO READ FROM TOP TO BOTTOM.
- COLOR CODE ALL SECONDARY SERVICE FEEDER AND BRANCH CIRCUIT CONDUCTORS.

TERMINAL BLOCK MARKINGS

- TERMINAL BLOCK MARKING AND WIRE LABELING SHALL HAVE THE SAME DESCRIPTION.
- TERMINALS BLOCKS LABELING SHALL BE MACHINE PRINTED.
- TERMINAL BLOCK TEXT SHALL BE ORIENTED IN THE SAME DIRECTION AS THE WIRE. BLOCKS TO READ FROM LEFT TO RIGHT AND FROM TOP TO BOTTOM.

CONDUIT MARKINGS

- CONDUITS WITH INTRINSICALLY SAFE CONDUCTORS SHALL BE LABELED.

CONTROL SYSTEMS MANUFACTURE’S NOTE

- SUBMITTAL DRAWINGS SHALL BE SUBMITTED IN AN UNPROTECTED AUTOCAD FORMAT.
- SUBMITTAL DRAWINGS SHALL CONTAIN EVERY DETAIL CONTAINED IN THE CITY OF LACEY’S ORIGINAL DRAWING. EVERY COMPONENT AND SYMBOL SHALL BE REPRESENTED.
- SUBMITTAL DRAWINGS SHALL HAVE A LAYOUT KEY WITH EVERY COMPONENT OF THE CITY OF LACEY’S ORIGINAL DRAWING IDENTIFIED.
- SUBMITTAL DRAWINGS SHALL USE THE SAME COMPONENT NAMES AS THE LAYOUT KEY IN CITY OF LACEY’S ORIGINAL DRAWING.
- FACILITY INTEGRATOR SHALL COMPLETE THE APPROVED MATERIAL CHECK LIST AND SHALL VERIFY ALL PARTS LISTED.

DRAWING LIST

- | | |
|------|--|
| E–8 | WIRING SYMBOLS AND REQUIREMENTS |
| E–9 | ELECTRICAL SITE PLAN |
| E–10 | MAIN CONTROL CABINET MODIFICATIONS |
| E–11 | ONE–LINE & ELECTRICAL CONNECTION DETAILS |
| E–12 | ISOLATION PEDESTAL CONSTRUCTION DETAILS |
| E–13 | LOAD TABLES AND CONDUIT SCHEDULE |
| E–14 | APPROVED MATERIALS LIST (BOM) |
| E–15 | PHENOLIC LEGENDS AND VINYL LABELS |

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PROJECT#: 21.83.01

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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 37 WIRING SYMBOLS
AND REQUIREMENTS

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

E-8

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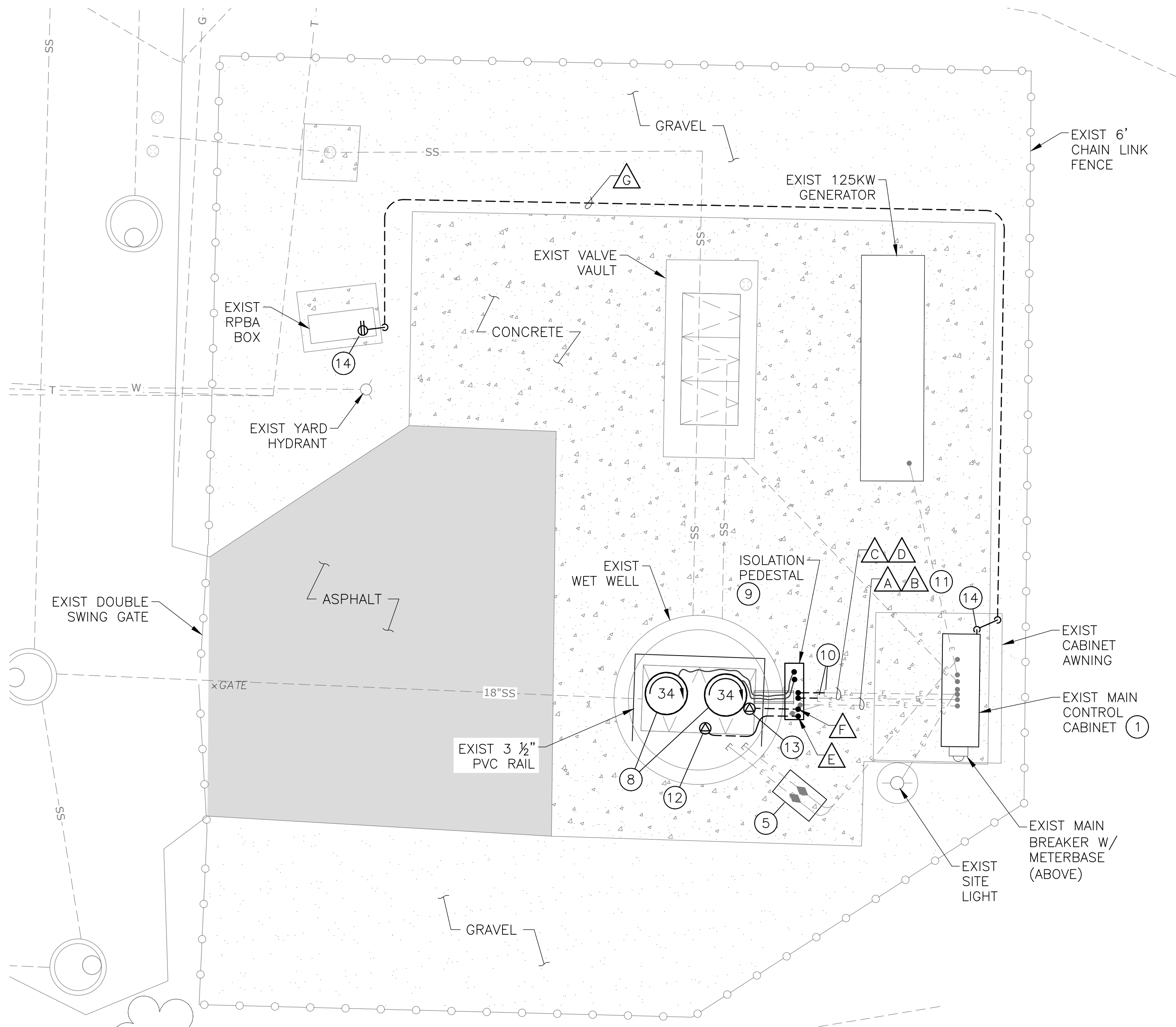
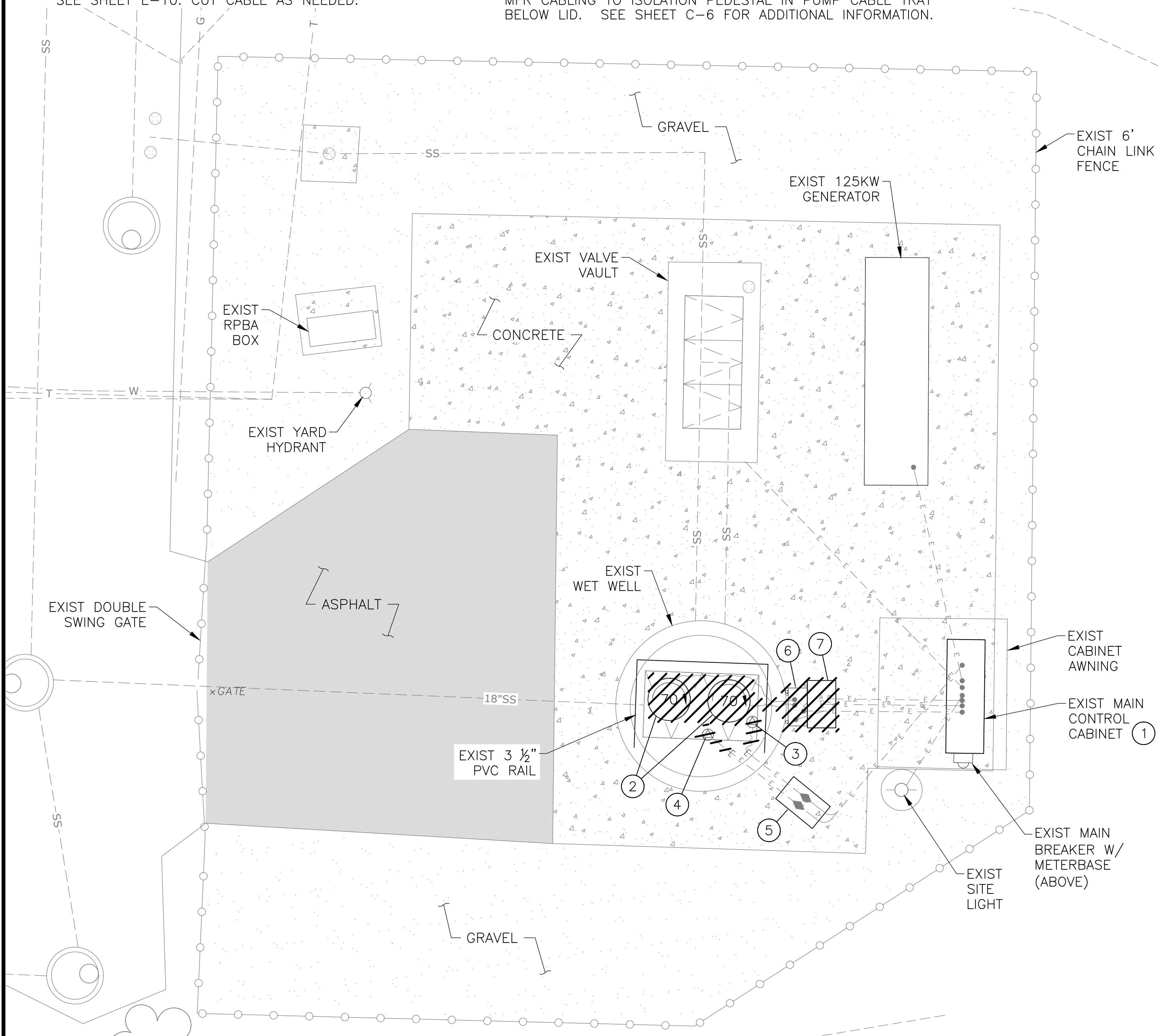
KEY NOTES

- EXISTING MAIN CONTROL CABINET TO REMAIN. SEE SHEET E-10 FOR ELEVATION VIEW AND DETAILS OF MODIFICATIONS.
- EXISTING PUMPS AND CABLING TO BE REMOVED. SEE SHEET C-5.
- EXISTING HIGH LEVEL FLOAT SWITCH TO BE DEMO'D. CONDUIT TO BE CAPPED AT EXISTING CABLE GLAND. CUT CABLE AS NEEDED.
- EXISTING LEVEL TRANSDUCER TO BE DEMO'D. CONDUIT TO BE REMOVED TO EXISTING COUPLING AND CAPPED. SEE SHEET E-10. CUT CABLE AS NEEDED.
- EXISTING HANDHOLE WITH SEAL-OFFS FOR FLOAT SWITCH AND LEVEL TRANSDUCER TO BE ABANDONED IN PLACE.
- REMOVE EXISTING ISOLATION PEDESTAL AND STAND. PARTIALLY FILL IN EXISTING OPEN CABLING AND CONDUIT AREA BELOW PEDESTAL WITH CONCRETE, COVERING COUPLINGS, AND ENSURING CONTINUOUS CONDUIT ROUTE BELOW GRADE TO PEDESTAL. SEE SHEET E-10 AND E-12.
- REMOVE EXISTING HANDHOLE AND FILL WITH CONCRETE. SEE SHEET C-6, E-10.
- NEW SUBMERSIBLE PUMPS IN EXISTING WETWELL. ROUTE PUMP MFR CABLING TO ISOLATION PEDESTAL IN PUMP CABLE TRAY BELOW LID. SEE SHEET C-6 FOR ADDITIONAL INFORMATION.
- NEW ISOLATION PEDESTAL WITH PUMP DISCONNECT PLUGS AND RECEPTACLE TO REPLACE EXISTING. SEE SHEET E-11.
- EXISTING 2" AND 3/4" CAPPED CONDUITS IN EXISTING HANDHOLE TO BE EXTENDED TO NEW ISOLATION PEDESTAL.
- EXISTING 2" AND 3/4" CONDUIT AT EXISTING ISOLATION PEDESTAL TO BE RE-CONNECTED TO NEW ISOLATION PEDESTAL.
- LEVEL TRANSDUCER, SEE SHEET E-12. INSTALL LINK SEAL FOR CONDUIT AT WALL PENETRATION. RE-CALIBRATE LEVEL CONTROLLER FOR NEW SENSOR HEIGHT AND ADJUST SETPOINTS PER OWNERS DIRECTION.
- HIGH LEVEL (HIGH BALL) FLOAT. SEE SHEET E-12. INSTALL LINK SEAL FOR CONDUIT AT WALL PENETRATION.
- INSTALL NEW RECEPTACLE AND HEAT TRACE TAPE. SEE SHEET E-13. REMOVE EXISTING WEATHER-PROOF RECEPTACLE ON SIDE OF EXISTING MAIN CONTROL CABINET AND CONNECT IN NEW CONDUIT, REPLACING EXISTING EXPOSED CORD TO RPBA.

GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY POWER INCLUDING BUT NOT LIMITED TO ANY REQUIREMENTS FOR BYPASS PUMPING AND ANY CONSTRUCTION NEEDS. COORDINATE WITH PUGET SOUND ENERGY AS NEEDED.

△ CONDUIT PENETRATIONS.
SEE CONDUIT SCHEDULE SHEET E-13.



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DEMO PLAN
SCALE: 1/4"=1'

PLAN
SCALE: 1/4"=1'

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0 1/2 1

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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 37 ELECTRICAL
SITE PLAN

SHEET

E-9

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PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

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MAIN CONTROL CABINET INTERIOR DETAIL

SCALE: NTS

1
-



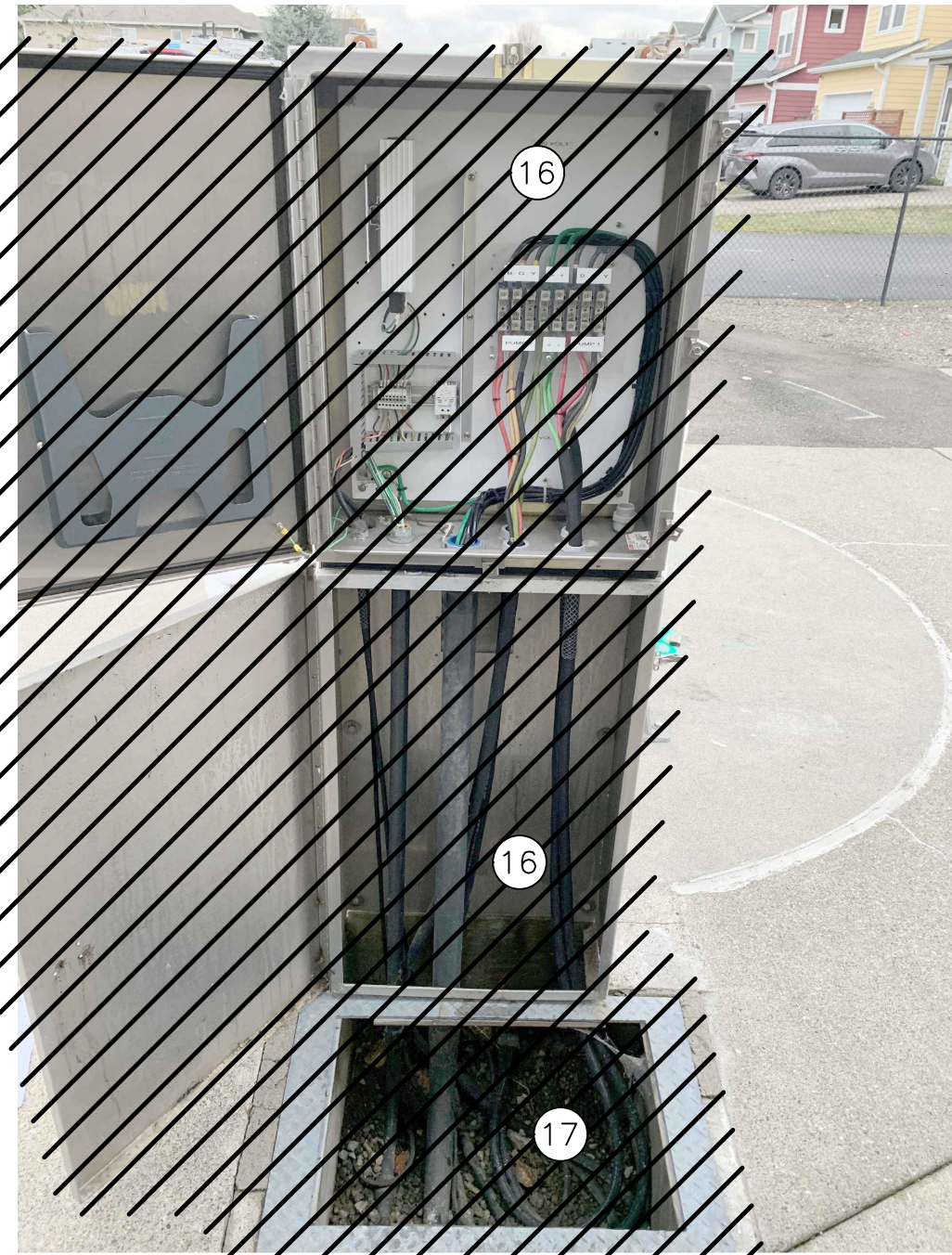
MAIN CONTROL CABINET ELEV.

SCALE: NTS

3
-

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EXIST. ISOLATION PANEL ELEV.

SCALE: NTS

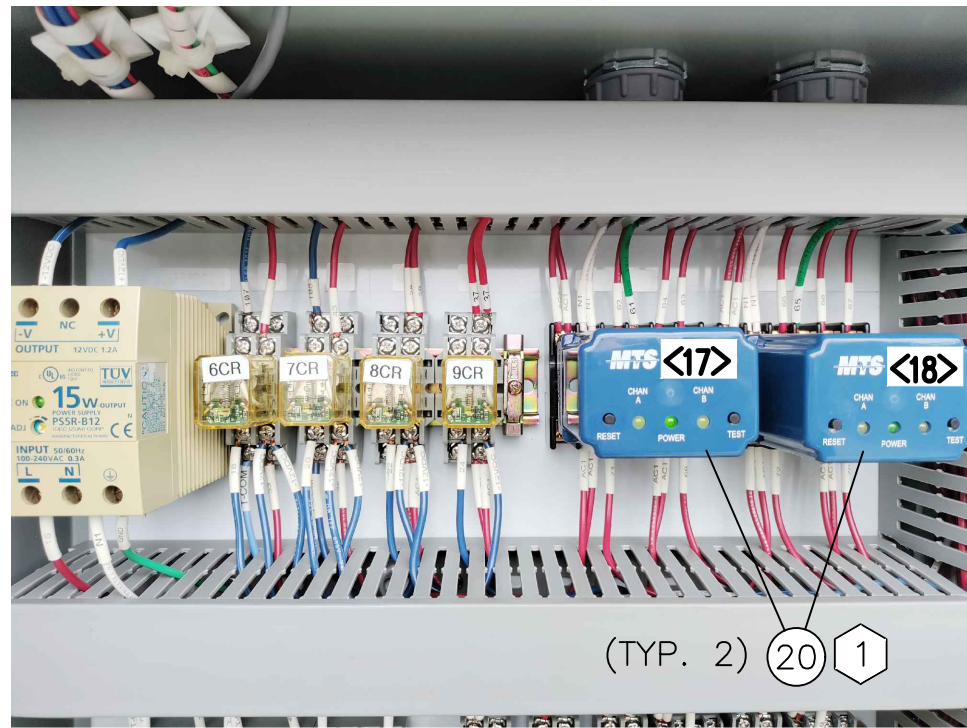
4
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SOFT START DETAIL



MOTOR CIRCUIT PROTECTOR DETAIL

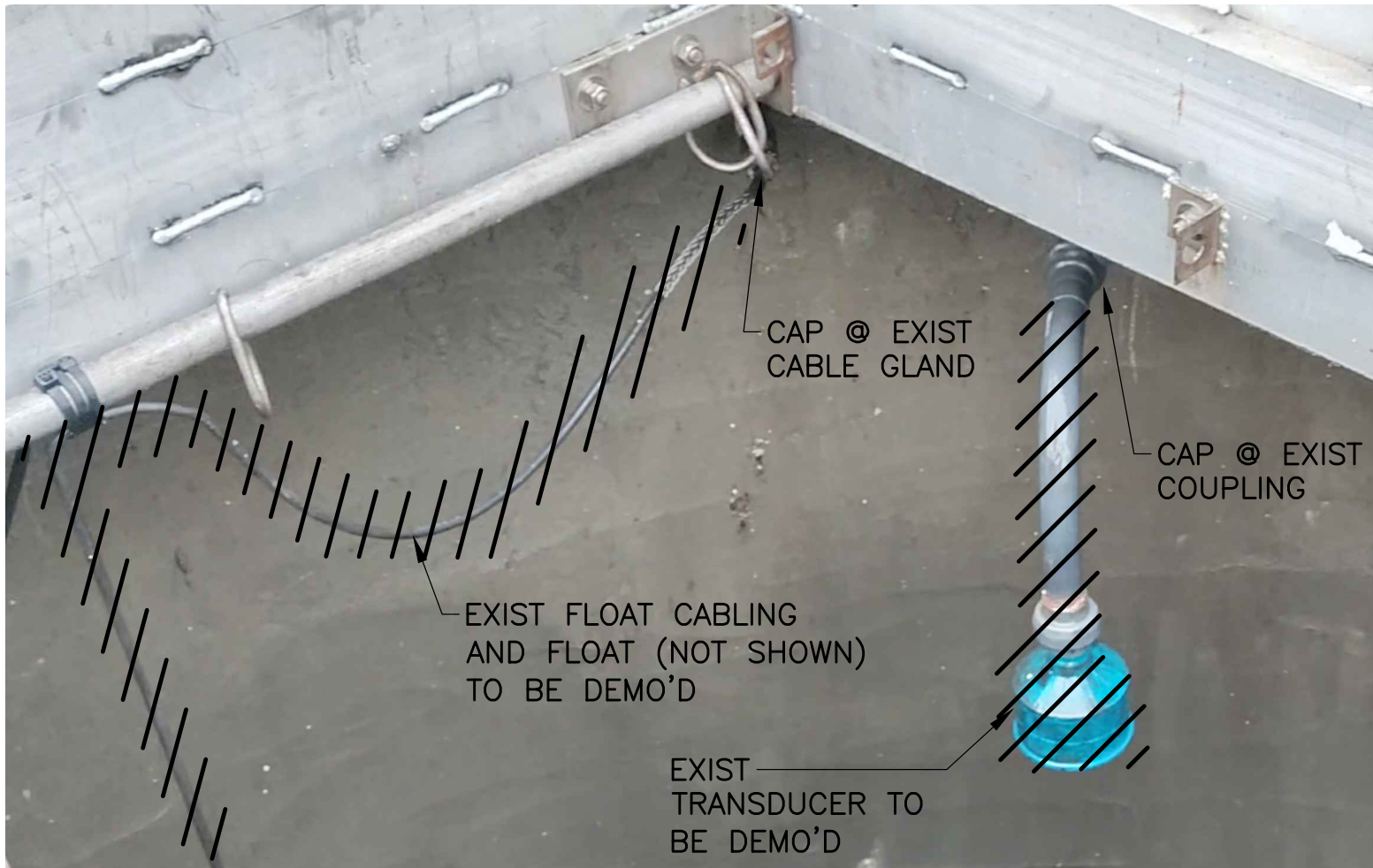


SEAL FAIL RELAY DETAIL

PUMP CONTROL PANEL INTERIOR DETAILS

SCALE: NTS

2
-



LEVEL TRANSMITTER DEMO DETAIL

SCALE: NTS

5
-

KEY NOTES

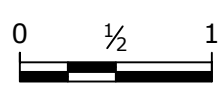
- EXISTING 72Wx72Hx24D MAIN CABINET ENCLOSURE WITH 12" FEET STANDS.
- EXISTING TELEMETRY PANEL.
- EXISTING INTRUSION SWITCH.
- EXISTING POLE LIGHT SWITCH.
- EXISTING INTERIOR LIGHT.
- EXISTING TRANSFER SWITCH
- EXISTING 120V BREAKER PANEL. CONTRACTOR TO REPLACE EXISTING 20A HOTBOX CIRCUIT BREAKER WITH NEW GFCI UNIT; CUTLER HAMMER TYPE CH. FIELD VERIFY.
- EXISTING 3KVA TRANSFORMER.
- EXISTING UPS RECEPTACLE.
- EXISTING UPS.
- EXISTING INTRINSIC SAFE ENCLOSURE.
- EXISTING CABINET UNIT HEATER.
- EXISTING SOFT START POWER SUPPLIES, PS2 & PS3
- EXISTING LEVEL ELECTRONICS.
- EXISTING PUMP CONTROL PANEL. SEE DETAIL 3 THIS SHEET FOR MODIFICATIONS.
- RETURN EXISTING ISOLATION PANEL AND STAND TO OWNER. RE-USE EXISTING 2" AND 3/4" CONDUITS FOR PUMP POWER AND FLOAT CIRCUITS.
- REMOVE EXISTING HANDHOLE. AREA TO BE FILLED IN WITH CONCRETE AFTER EXTENSION OF CONDUITS AND REMOVAL OF EXISTING CABLING.
- REPLACE EXISTING EATON S811+N10P3S SOFT START (75HP RATED) WITH NEW S811+N66P3S (50HP RATED) UNIT. SALVAGE EXISTING UNITS TO THE OWNER. RE-CONNECT WIRING AS REQUIRED. SEE SHEET E-11.
- REPLACE EXISTING EATON HMCPE100R3C MCP (100A RATED) UNIT WITH HMCPE50K2C (50A RATED) UNIT. RE-CONNECT WIRING AND DISCONNECT HANDLE AS REQUIRED. DEMO EXISTING UNITS.
- REPLACE EXISTING SEAL FAIL RELAY AND BASE WITH NEW FLYGT MINICAS II UNIT. SEE SHEET E-11 FOR WIRING INFORMATION. INSTALL NEW LABELS AS SHOWN.

SHEET LAYOUT KEY:

- # REFERENCE DRAWING E-13.
- 1 SEAL FAIL / OVER TEMP RELAY

SEE LABEL SCHEDULE SHEET E-14.

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LIFT STATION 34 & 37
REHABILITATION

LS 37 MAIN CONTROL CABINET
MODIFICATIONS

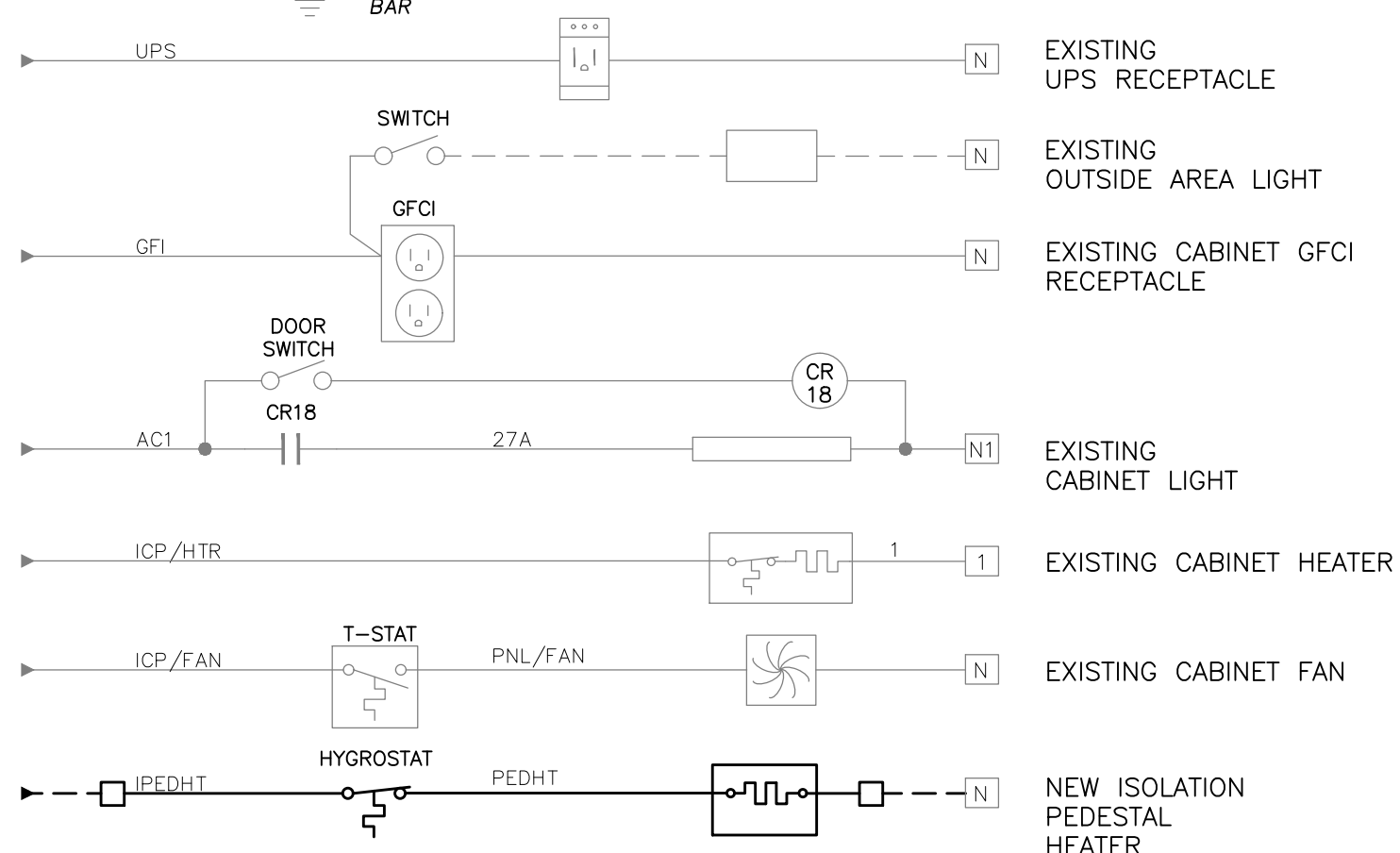
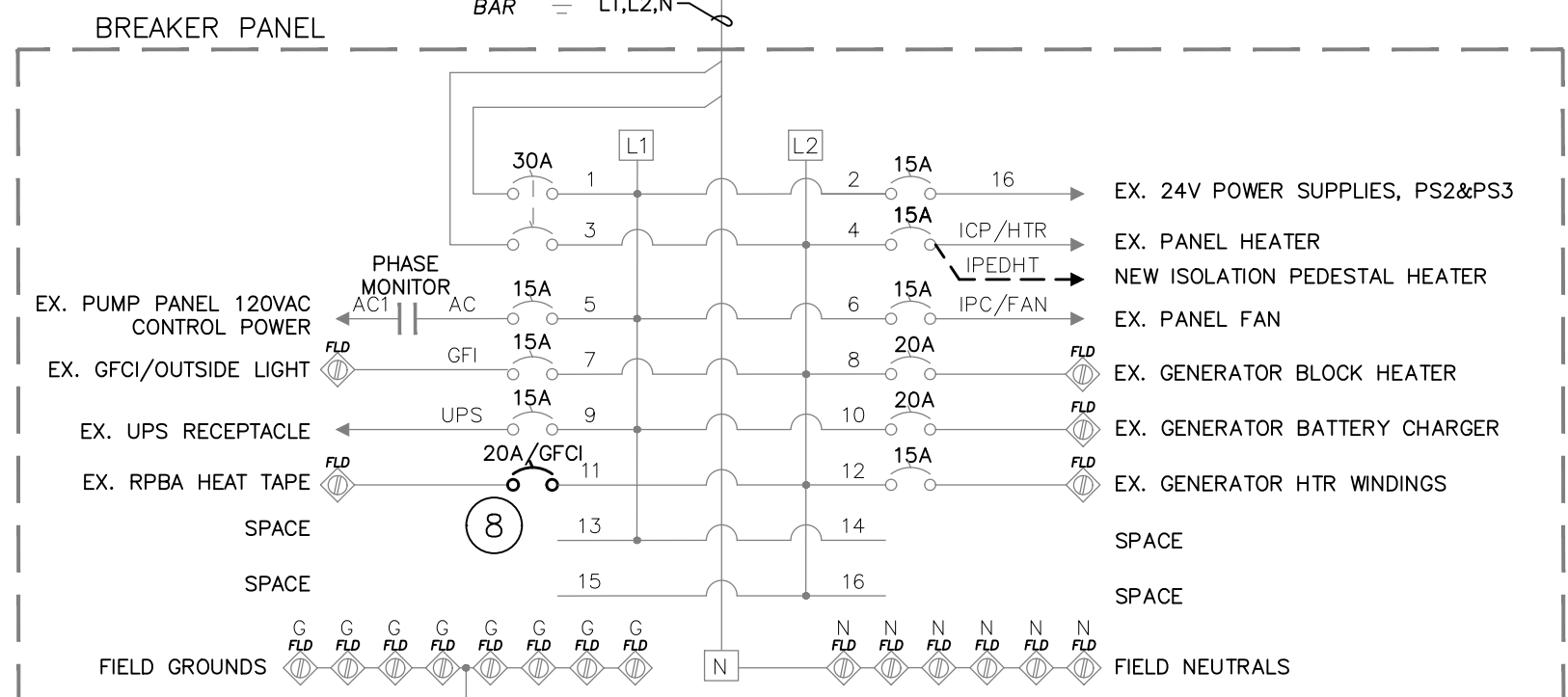
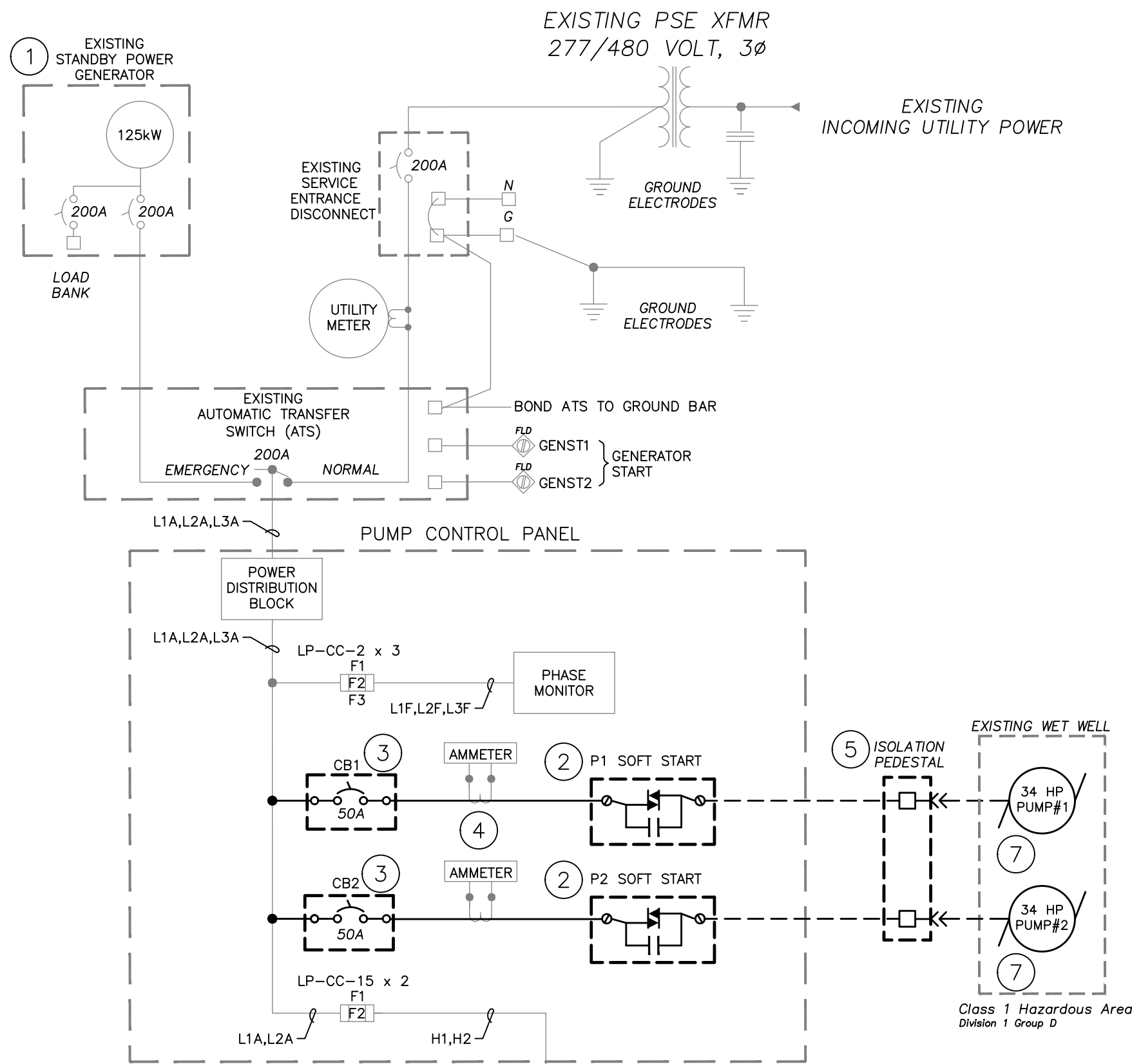
PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

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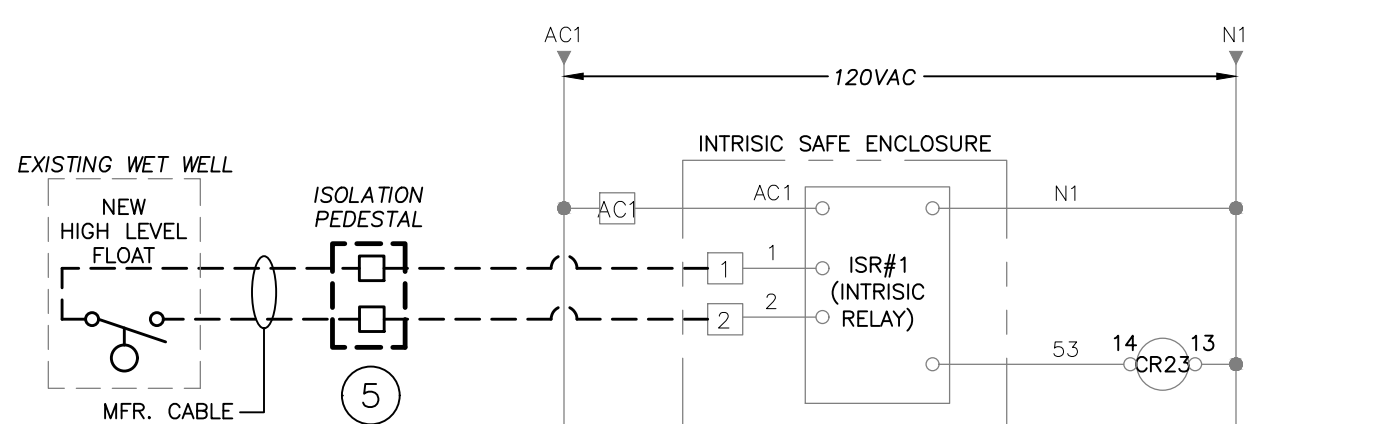
E-10

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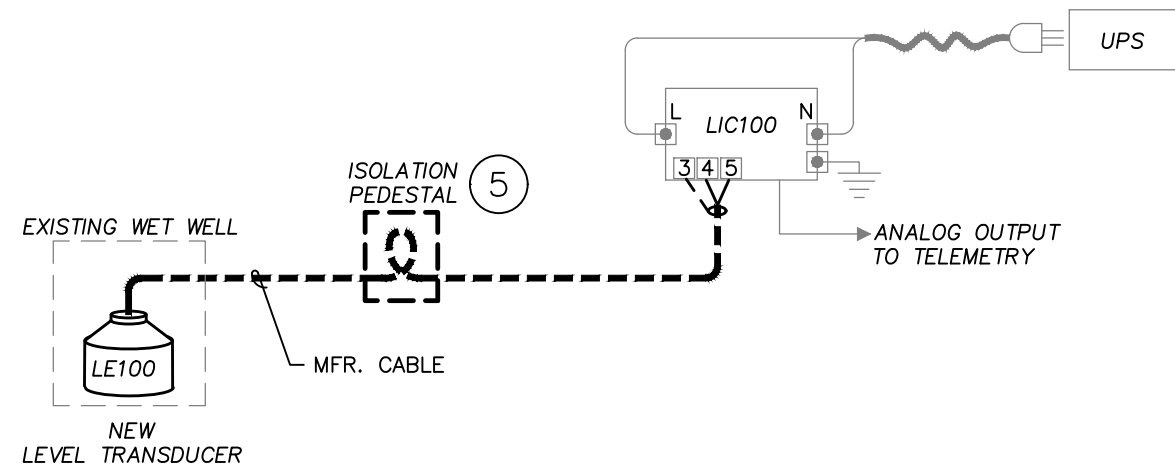
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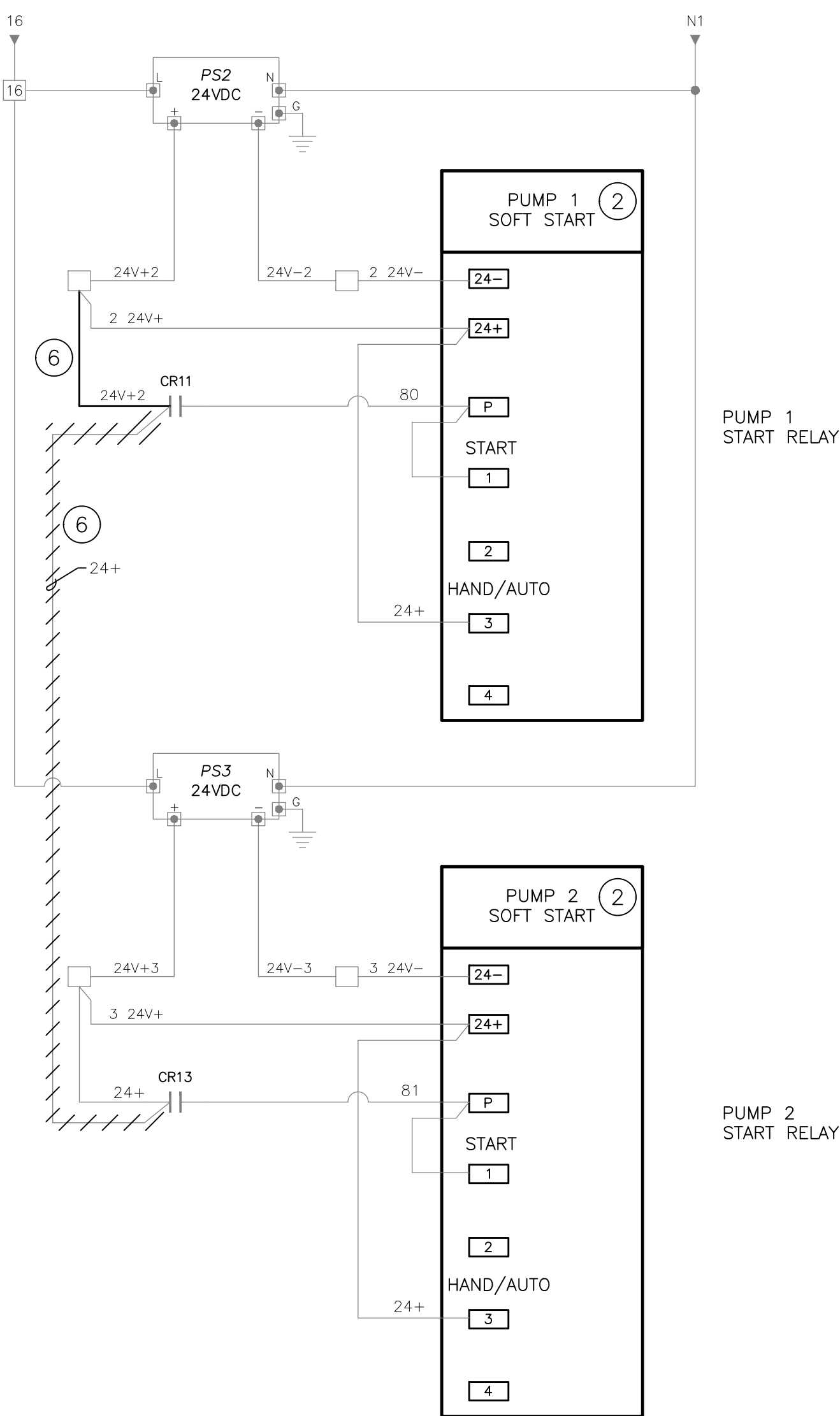
ONE-LINE DIAGRAM



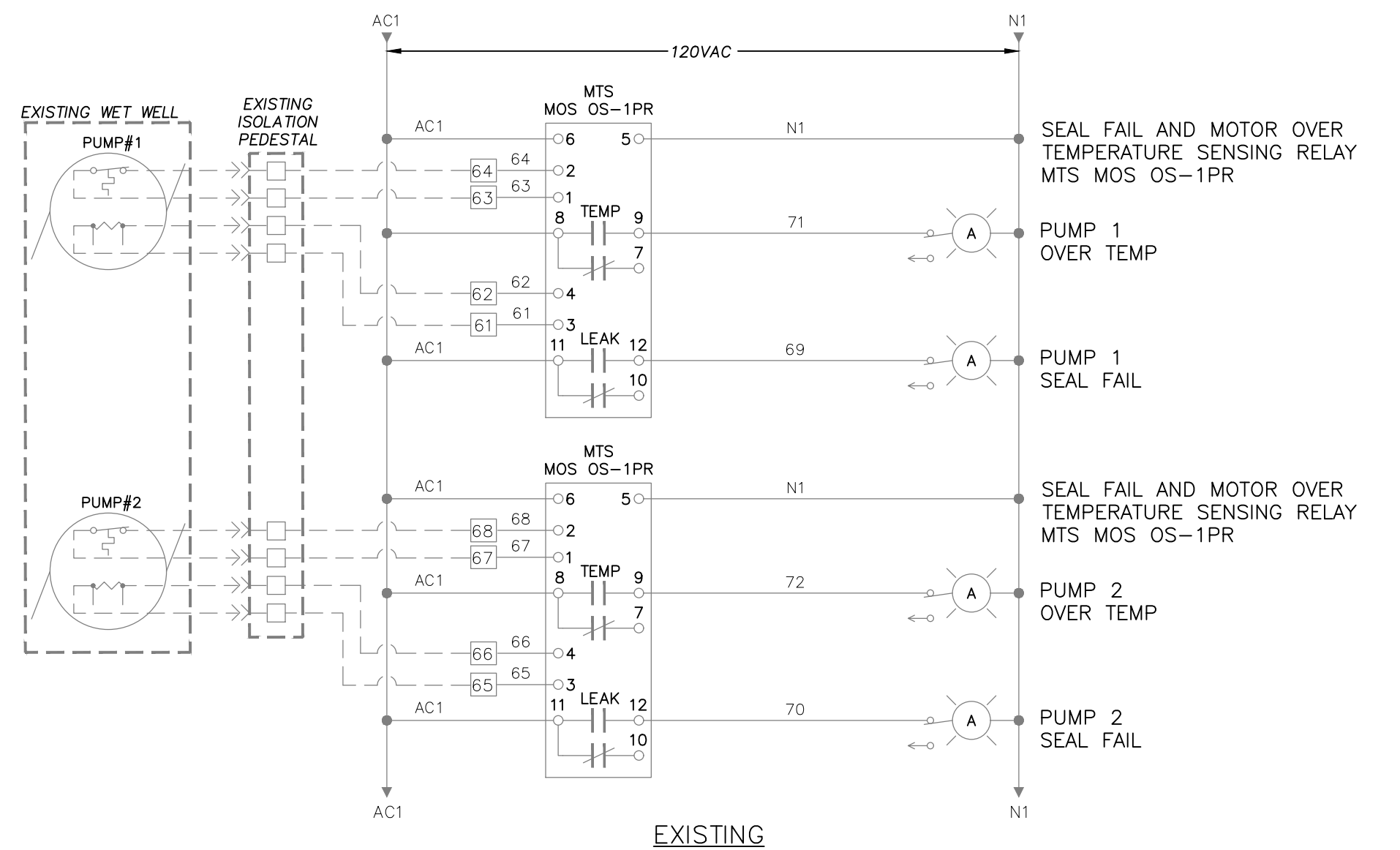
HIGH BALL WIRING DETAIL



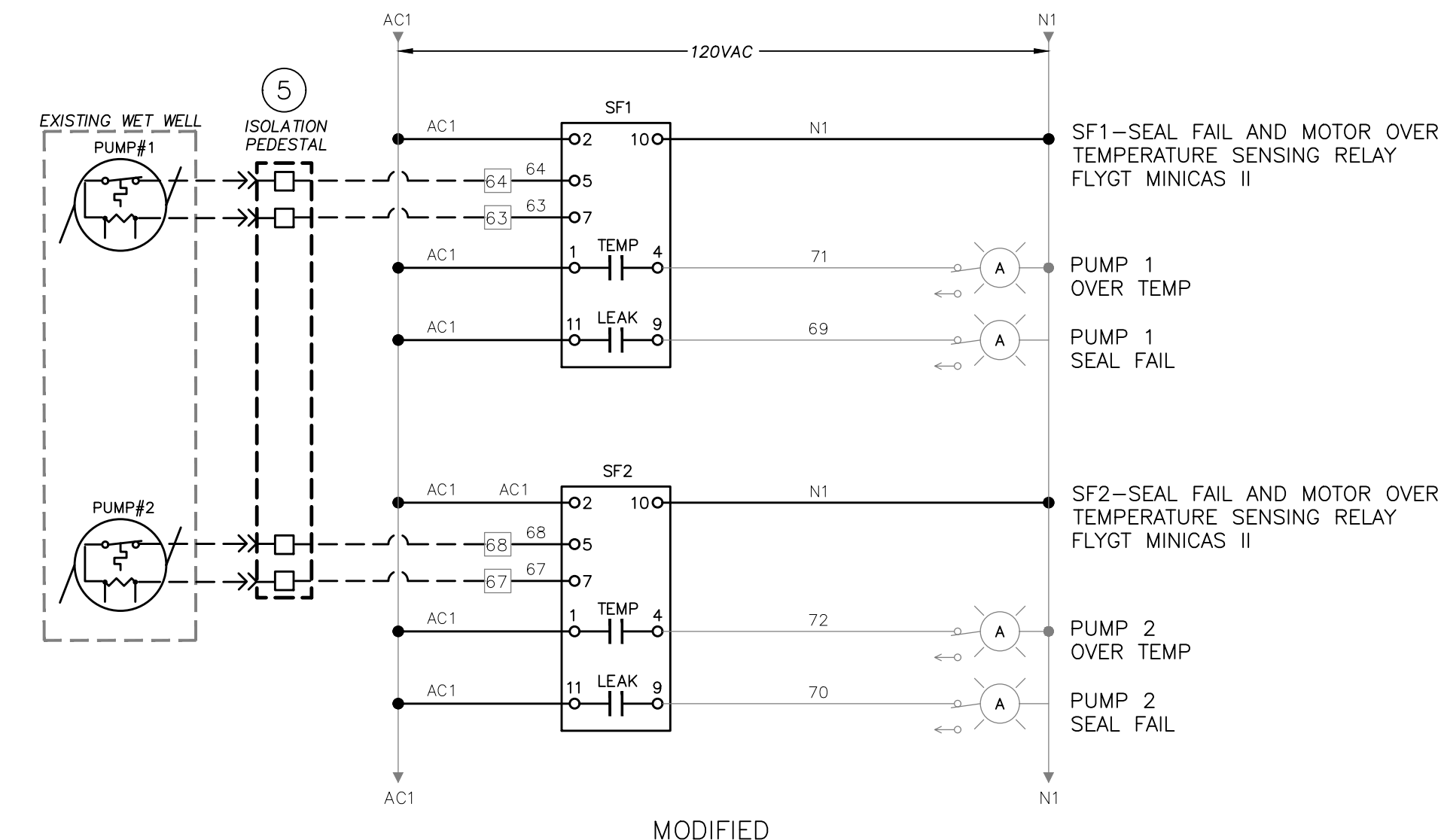
LEVEL TRANSDUCER WIRING DETAIL



SOFT STARTER WIRING



EXISTING



MODIFIED

SEAL FAIL AND OVERTEMP WIRING MODIFICATIONS

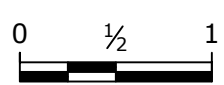
KEY NOTES

- EXISTING CUMMINS GENERATOR MODEL 1250DGD SERIAL NO. K040712959.
- REPLACE EXISTING SOFT START (75HP RATED) WITH (50HP RATED) UNIT. SALVAGE UNITS TO THE OWNER. RE-CONNECT EXISTING WIRING TO NEW SOFT START, MATCHING EXISTING. SEE DETAIL 3 SHEET E-10.
- REPLACE EXISTING MOTOR CIRCUIT PROTECTOR (100A RATED) WITH NEW (50A RATED) UNIT. DEMO EXISTING UNITS.
- EXISTING AMMETER'S TO BE RE-USED.
- NEW ISOLATION PEDESTAL. SEE SHEET E-12.
- DISCONNECT WIRE BETWEEN CR11 AND CR13 AND RECONNECT TO TERMINAL BLOCK FOR 2 24V+. RE-LABEL WIRE.
- NEW 34HP PUMPS TO REPLACE EXISTING 70HP UNITS.
- REPLACE EXISTING 20A HOTBOX CIRCUIT BREAKER WITH NEW GFCI UNIT; CUTLER HAMMER TYPE CH. FIELD VERIFY.

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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 37 ONE-LINE AND
ELECTRICAL CONNECTION DETAILS

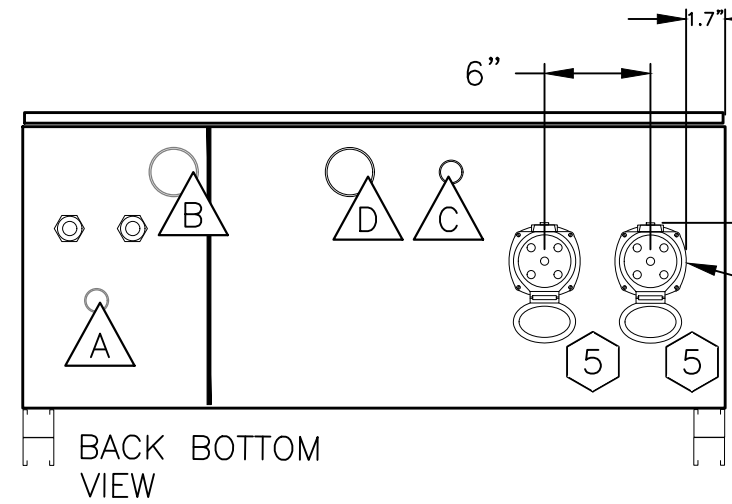
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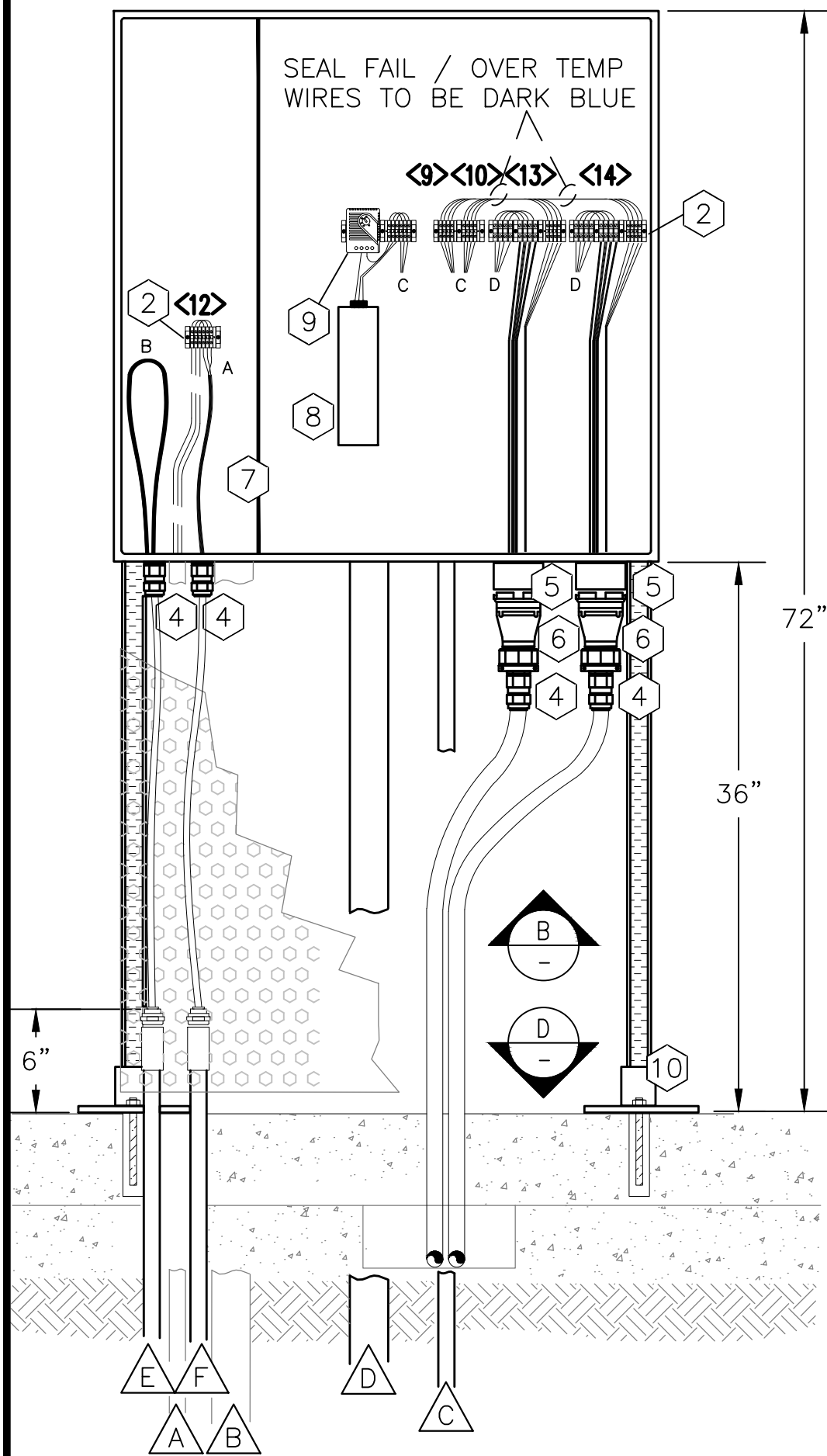
E-11

25 of 28

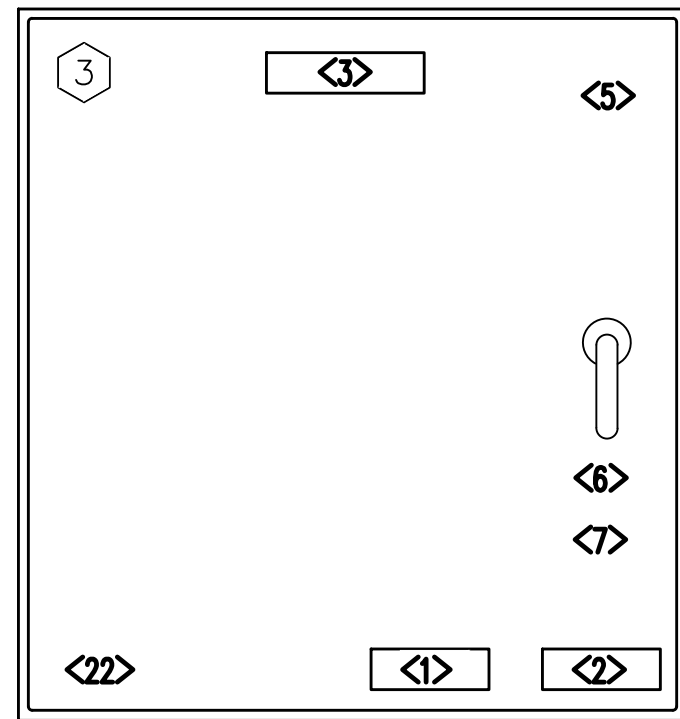
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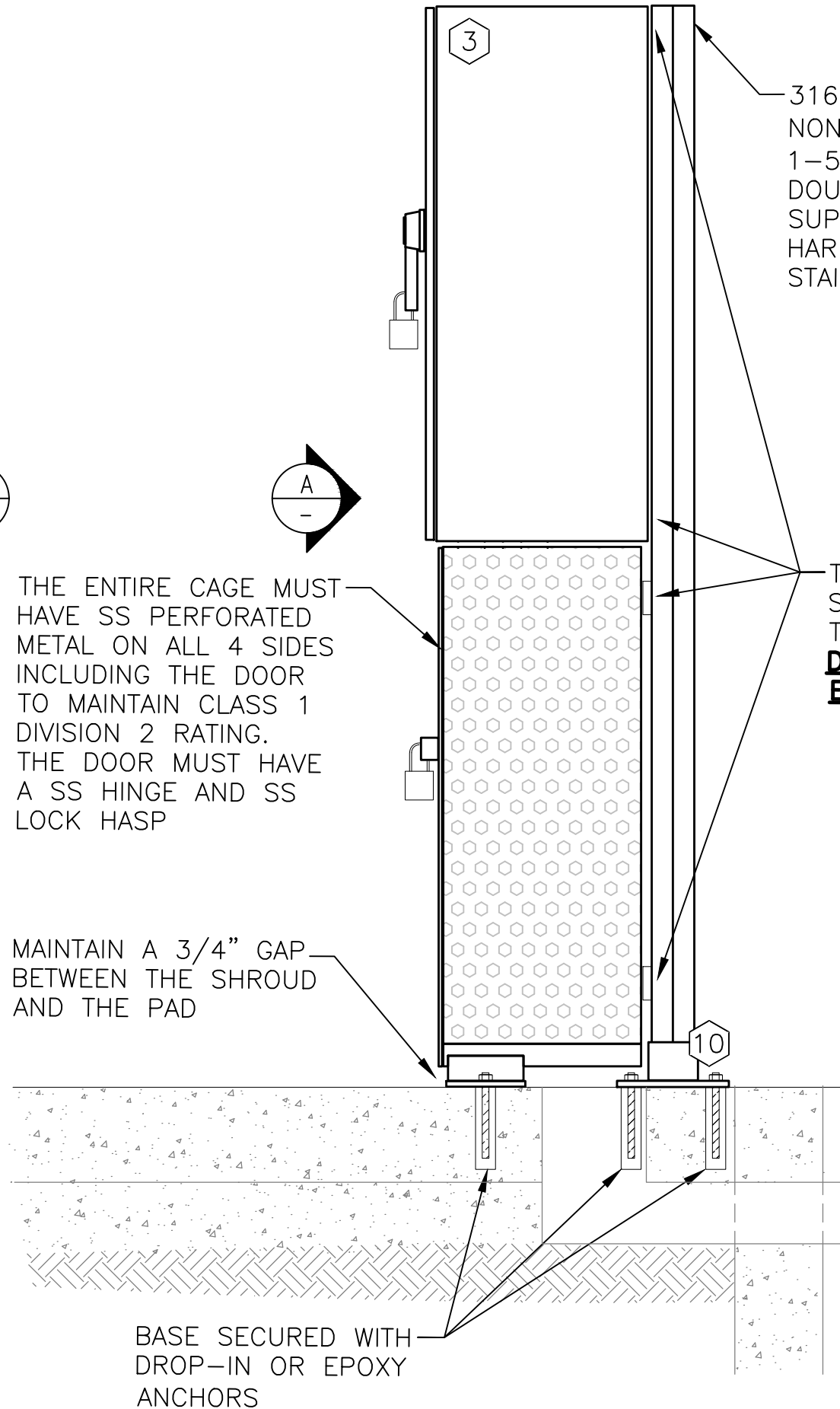
ENCLOSURE BOTTOM
VIEW 'B'



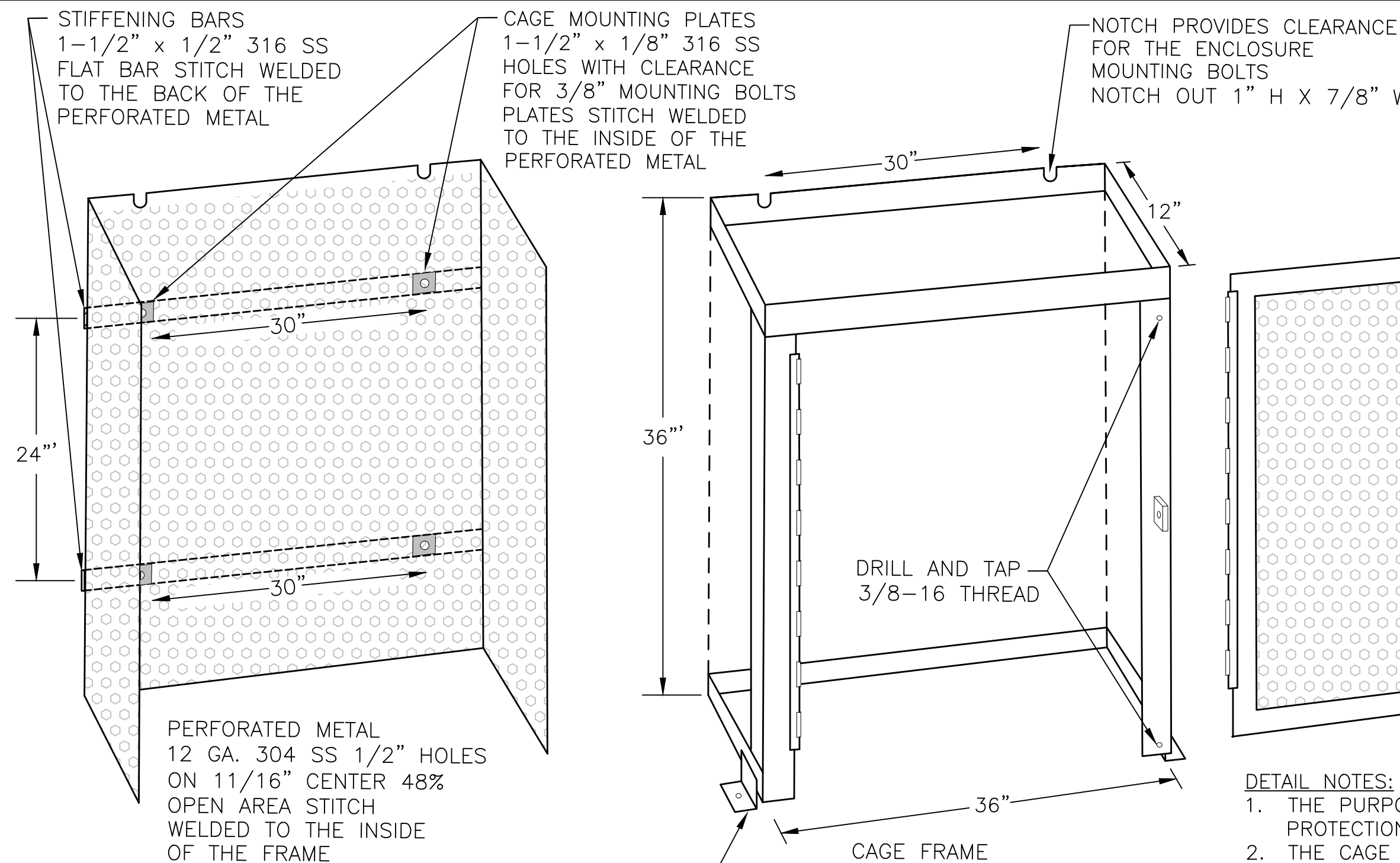
WETWELL ISOLATION
PEDESTAL
ELEVATION VIEW 'A'



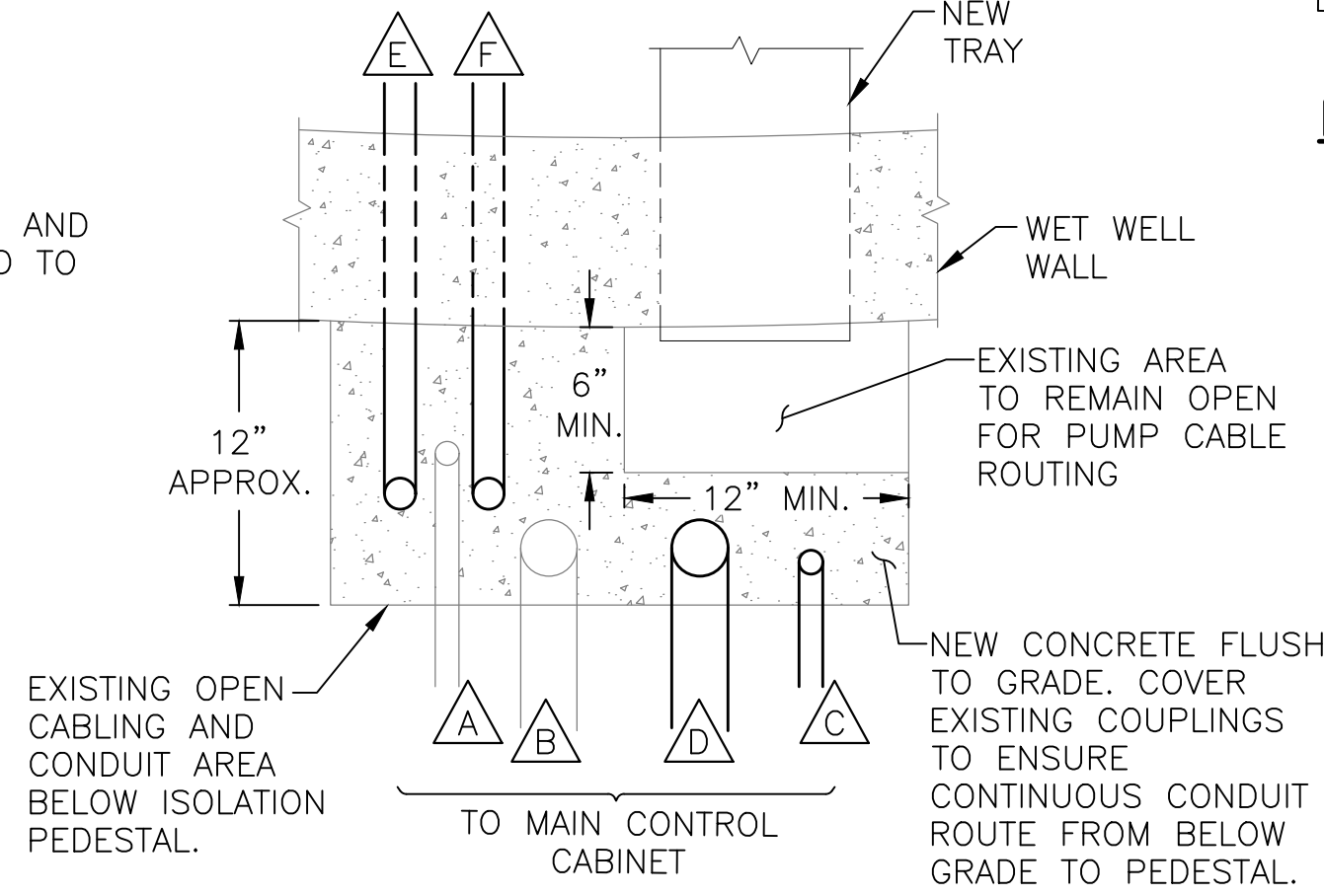
ISOLATION PEDESTAL
ENCLOSURE EXTERIOR



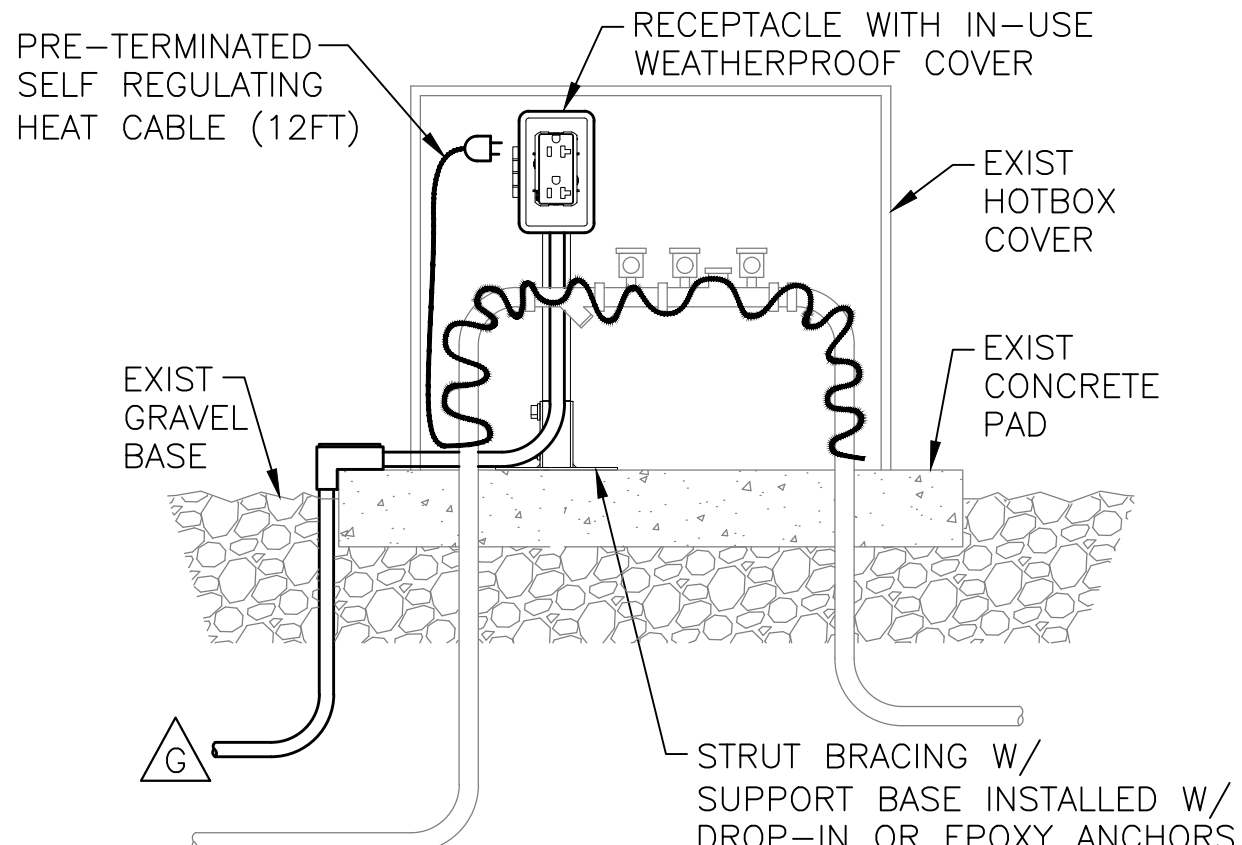
PEDESTAL FOOT MOUNTING
SIDE VIEW 'C'



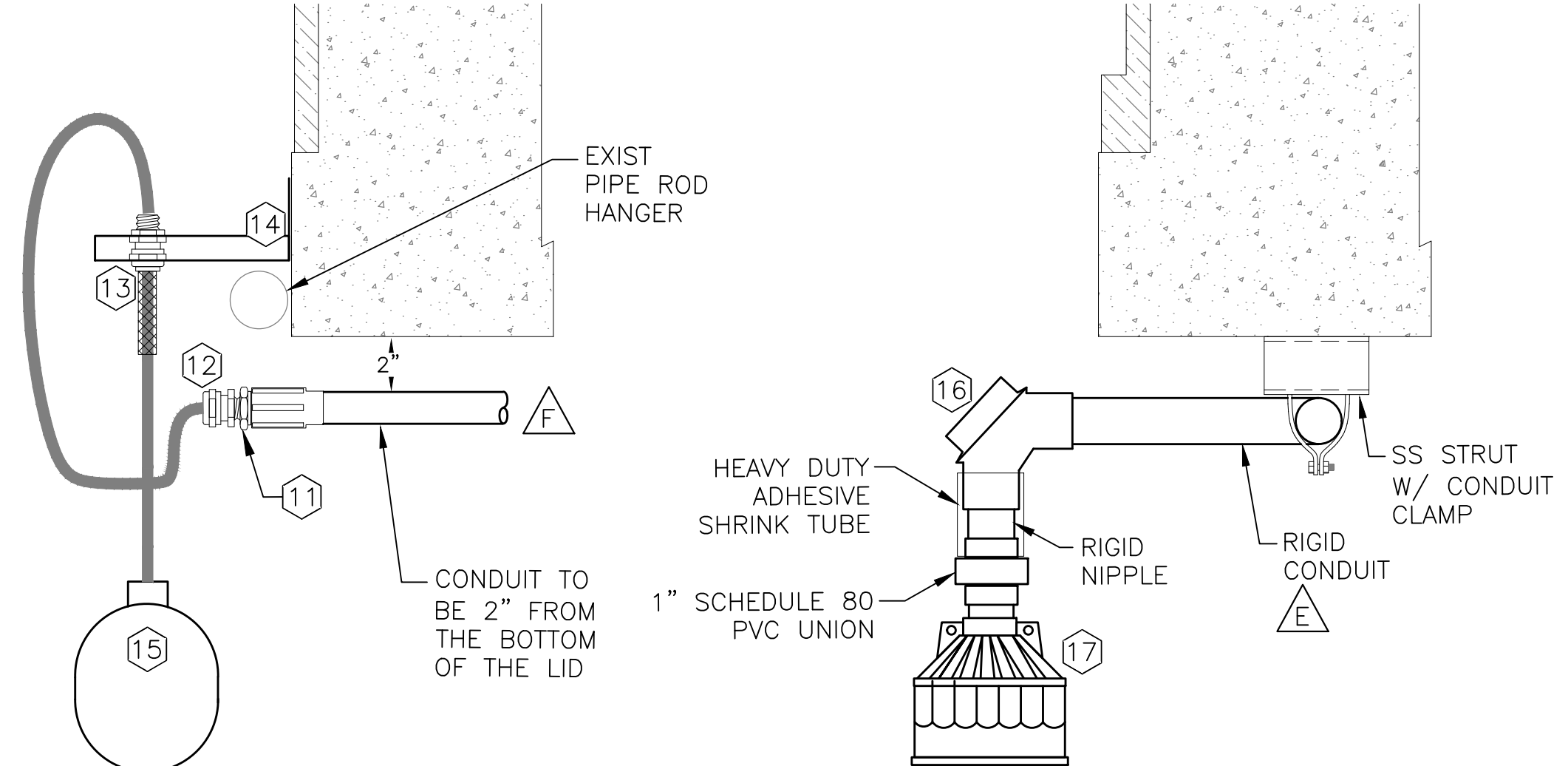
ISOLATION PEDESTAL CAGE



PUMP CABLE ROUTING AREA
BOTTOM VIEW 'D'



HOT BOX GFCI
INSTALLATION DETAIL



HIGH BALL
INSTALLATION DETAIL

LEVEL TRANSDUCER
INSTALLATION DETAIL

SHEET LAYOUT KEY:			
1	REFERENCE SHEET E-13	10	ISOLATION PEDESTAL POST BASE
2	TERMINAL BLOCKS	11	1" X 1/2" SS REDUCER BUSHING
3	ISOLATION PEDESTAL ENCLOSURE	12	SS CORD GRIP
4	CABLE SEAL	13	SS CORD GRIP WITH STRAIN RELIEF
5	PUMP POWER RECEPTACLE	14	HIGH BALL MOUNTING BRACKET
6	PUMP CORD CONNECTOR	15	HIGH BALL
7	ISOLATION PEDESTAL BARRIER	16	PULLING "L"
8	ISOLATION PEDESTAL HEATER	17	LEVEL TRANSDUCER
9	ISOLATION PEDESTAL HYGROSTAT		

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PROJECT# 21.83.01

△ CONDUIT PENETRATIONS.
SEE CONDUIT SCHEDULE SHEET E-13.
✕ SEE LABEL SCHEDULE SHEET E-14.

NOTICE
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CITY OF LACEY
LIFT STATION 34 & 37
REHABILITATION

LS 37 ISOLATION PEDESTAL
CONSTRUCTION DETAILS

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET
E-12
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LOAD SUMMARY				
Voltage		480	3 Phase	4 Wire
QTY.	DESCRIPTION	LOAD KVA	LOAD HP	Amperes @ 480 VAC
1	PUMP 1	31.59	34.00	38.0
1	PUMP 2	31.59	34.00	38.0
NON MOTOR LOADS				
1	EXSTING TRANSFORMER - *	3.0		6.3
1**	GENERATOR BLOCK HEATER	1.5		
1**	CONTROL CABINET HEATER	0.2		
1**	ISOLATION PEDESTAL HEATER	0.15		
1**	LIGHTING (CABINET & OUTDOOR)	0.12		
* - AMP LOAD FOR XFMR IS 1-PHASE				
** - LOADS INCLUDED IN XFMR LOAD				
SUBTOTAL		66.18	68.0	82.3
LARGEST MOTOR X 25%		7.90		9.5
NON-MOTOR LOADS X 25%		1.31		1.6
SPARE CAPACITY (10%)		6.84		8.2
TOTAL				101.6

NOTE: EXISTING TRANSFORMER LOAD INCLUDES LOADS SHOWN, PLUS ALL MISC LOADS, INCLUDING PANEL CONTROLS, GENSET BATTERY CHARGER, UPS, AND HOT BOX CIRCUITS.

EXISTING SERVICE SIZE IS 200 AMPS. LOADING SHOWN FOR INFORMATIONAL PURPOSES OF REPLACEMENT OF EXISTING 70HP PUMPS WITH NEW 34HP PUMPS.

GENERATOR LOAD CHART			
LOAD REQUIREMENTS		PERFORMANCE REQUIREMENTS	
RUNNING KW	56.4	NOMINAL 480V, 60HZ, 3PH	
RUNNING KVA	63	MAX. VOLTAGE DIP %	20.0
RUNNING P.F.	0.9	MAX. FREQUENCY DIP %	10.0
MAX. START KW	49.2	MAX. VOLTAGE HARMONIC	
MAX. START KVA	119.9	DISTORATION %	10.0
		MIN. GENERATOR LOADED %	30.0
		MAX. GENERATOR LOADED %	90.0
EXISTING GENSET IS 125KW -		TOTAL KW REQUIRED	80.0
		TOTAL AMPS REQUIRED	120.0
GENERATOR SIZING BASED ON THE FOLLOWING STEP CONFIGURATION:			
STEP 1 - TRANSFORMER - FULL LOAD			
STEP 2 - PUMP 1			
STEP 3 - PUMP 2			

NOTE: GENERATOR IS EXISTING TO BE RE-USED. LOAD CHART FOR INFORMATIONAL PURPOSES.

CONSTRUCTION NOTE : CONDUIT INSTALLATION

1. ALL STRUT MOUNTING HARDWARE MUST BE STAINLESS STEEL.
2. MYERS HUB FITTING MUST BE USED ON ALL CONDUIT PENETRATIONS INTO ENCLOSURES.
3. ALL CONDUIT MUST BE PVC COATED GALVANIZED RIGID.
4. THE PROPER TOOLS MUST BE USED WHILE CUTTING, THREADING, BENDING AND TIGHTENING ANY PVC COATED CONDUIT.
5. THE PVC COATING MUST REMAIN INTACT; ONLY 1 INCH OF THE COATING MAY BE REMOVED AT THE END OF THE CONDUIT TO ALLOW FOR THREADING.
6. ANY CONDUIT WITH THE DAMAGED COATING MUST BE REPLACED.
7. THE COATING TOUCH-UP PAINT IS TO BE USED FOR COSMETIC BLEMISHES.
8. ALL THREADED CONNECTIONS MUST BE COPPER COATED AND TIGHTENED APPROPRIATELY.
9. ALL UNDERGROUND CONDUIT RUNS MUST BE INSPECTED BEFORE THEY CAN BE COVERED.
10. CORE AND INSTALL LINK SEAL ON ALL CONDUIT PENETRATIONS INTO BELOW GRADE STRUCTURES, I.E. VAULTS AND WET WELL.

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NO.	DATE	BY	REVISION

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LS 37 LOAD TABLES,
CONDUIT SCHEDULE, AND
APPROVED MATERIALS LIST (BOM)

PROJECT NO.: 22-3380.03 SCALE: AS SHOWN DATE: MAY 2023

SHEET

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CONDUIT AND WIRE SCHEDULE

CONDUIT USE	CONDUIT DESIGNATION	CONDUIT SIZE	CONDUIT TYPE	CONDUCTOR SIZE AND NUMBER OF CONDUCTORS	CONDUIT FROM	CONDUIT TO
HIGH BALL CKT	A	EXIST 3/4"	PGRS	(2) #14, C (1) #14, G	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
LEVEL TRANSDUCER CKT	B	EXIST 2"	PGRS	MFR CABLE	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
OVERTEMP & SEAL FAIL CKT	C	EXIST 3/4"	PGRS	(4) #14, C (1) #14, G (1) #12, P (1) #12, N (1) #12, G	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
ISOLATION PEDESTAL HEATER CKT						
PUMP #1 POWER	D	EXIST 2"	PGRS	(6) #6, P (2) #8, G	MAIN CONTROL ENCLOSURE	ISOLATION PEDESTAL
PUMP #2 POWER						
LEVEL TRANSDUCER	E	1"	PGRS	MFR CABLE	WET WELL	ISOLATION PEDESTAL
HIGH BALL	F	1"	PGRS	MFR CABLE	WET WELL	ISOLATION PEDESTAL
RPBA HOT BOX HEAT TRACE	G	3/4"	PGRS	(1) #12, P (1) #12, N (1) #12, G	MAIN CONTROL ENCLOSURE	RPBA HOT BOX

APPROVED MATERIAL LIST (BOM)

ITEM	CITY OF LACEY DESCRIPTION	MANUFACTURER	PART #	SPECIAL CONSTRUCTION NOTES
1	SEAL FAIL / OVER TEMP RELAY FOR FLYGT PUMPS	MINICAS II		*FACILITY INTEGRATOR AND INSTALLING CONTRACTOR SHALL USE LISTED PARTS AND INSTALL THEM USING THE SPECIAL CONSTRUCTION NOTES.
2	TERMINAL BLOCKS	SPRECHER SCHUH	V7-W SERIES	SEE DETAIL SHEET E-10 SET ON MANUAL RESET.
3	ISOLATION PEDESTAL ENCLOSURE	HOFFMAN	A36H3612SS6LP3PT WITH WHITE STEEL BACKPLATE	STEEL DIN RAIL (NO ALUMINUM). STOPS INSTALLED. AMPERAGE RATING AS REQUIRED.
4	CABLE SEAL			SEE DETAIL SHEET E-12
5	LIQUID POUR RESIN BARRIER	APPLETON	PXSS2K SERIES	
6	PUMP POWER RECEPTACLE DE-CONTACTOR TYPE	MELTRIC DSN SERIES	63-84043-972	PROVIDE WITH PILOT CONTACTS. SEE DETAIL SHEET E-12
7	PUMP CORD CONNECTOR DE-CONTACTOR TYPE	MELTRIC DSN SERIES	63-88043-972 W/ 514P0N12 HANDLE	PROVIDE WITH PILOT CONTACTS AND USE WITH 1-1/4" NPT POLY HANDLE. SEE DETAIL SHEET E-12. VERIFY HANDLE SIZE WITH PUMP MFR CABLE.
8	ISOLATION PEDESTAL BARRIER	"CUSTOM"		CONSTRUCTED OF ALUMINUM AND NEEDS TO RUN THE FULL HEIGHT OF THE PANEL AND EXTEND 6 INCHES TOWARDS THE DOOR FROM THE BACK PLATE.
9	ISOLATION PEDESTAL HEATER	PFANNENBERG	17015005007	
10	ISOLATION PEDESTAL HYGROSTAT	STEGO	MFR012	
11	ISOLATION PEDESTAL POST BASE	B-LINE	B281SQ SS4	SEE DETAIL SHEET E-12
12	1" X 1/2" SS REDUCER BUSHING	UNISTRUT	P2073ASQSS	SEE DETAIL SHEET E-12
13	SS CORD GRIP	CROUSE - HINDS	RBSS31	SEE DETAIL SHEET E-12
14	SS CORD GRIP WITH STRAIN RELIEF	WOODHEAD	MAX - LOC 1300980070	SEE DETAIL SHEET E-12
15	HIGH LEVEL FLOAT (HIGH BALL) MOUNTING BRACKET	WOODHEAD	MAX - LOC 130097 - 034	SEE DETAIL SHEET E-12
16	HIGH LEVEL FLOAT (HIGH BALL)	ANCHOR SCIENTIFIC	W-MS	SEE DETAIL SHEET E-12
17	PVC COATED CAPPED ELL	ANCHOR SCIENTIFIC	ROTO-FLOAT N.O. TYPE "S" ** FOOT	SEE DETAIL SHEET E-12
18	LEVEL TRANSDUCER	OCAL	LBY35-G	APPLY COPPER COAT TO CAP THREADS. SEE DETAIL SHEET E-12
19		SIEMENS	XPS-15 7ML11180EA30	CABLE WILL LOOP THROUGH THE ISOLATION PEDESTAL AND HOME RUN TO LEVEL CONTROL. DO NOT REMOVE THE SHEATHING. SEAL CABLE GLAND DIRECTLY TO SHEATHING WITH RESIN. SEE DETAIL SHEET E-12

KEY NOTES

- 1 EXISTING CONDUITS AT EXISTING ISOLATION PEDESTAL BEING REMOVED TO BE RE-USED AND RE-CONNECTED TO NEW ISOLATION PEDESTAL.
- 2 EXISTING CONDUIT TO BE EXTENDED FROM EXISTING HANDHOLE TO NEW ISOLATION PEDESTAL.

