MASON COUNTY PUD #1

MASON COUNTY WASHINGTON

AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/AND ELECTRICAL

PUD OFFICIALS

Mike Sheetz
District 1 Commissioner

Ron Gold
District 2 Commissioner

Jack Janda
District 3 Commissioner

Kristin Masteller
General Manager

MICHAEL B. JOHNSON
STATE OF WASHINGTON
36408
REGISTERED
PROFESSIONAL ENGINEER
11/20/23

Gray & Osborne, Inc.
CONSULTING ENGINEERS

SEPTEMBER 2023
G&O JOB #20275

SHEET INDEX

PROJECT DATA

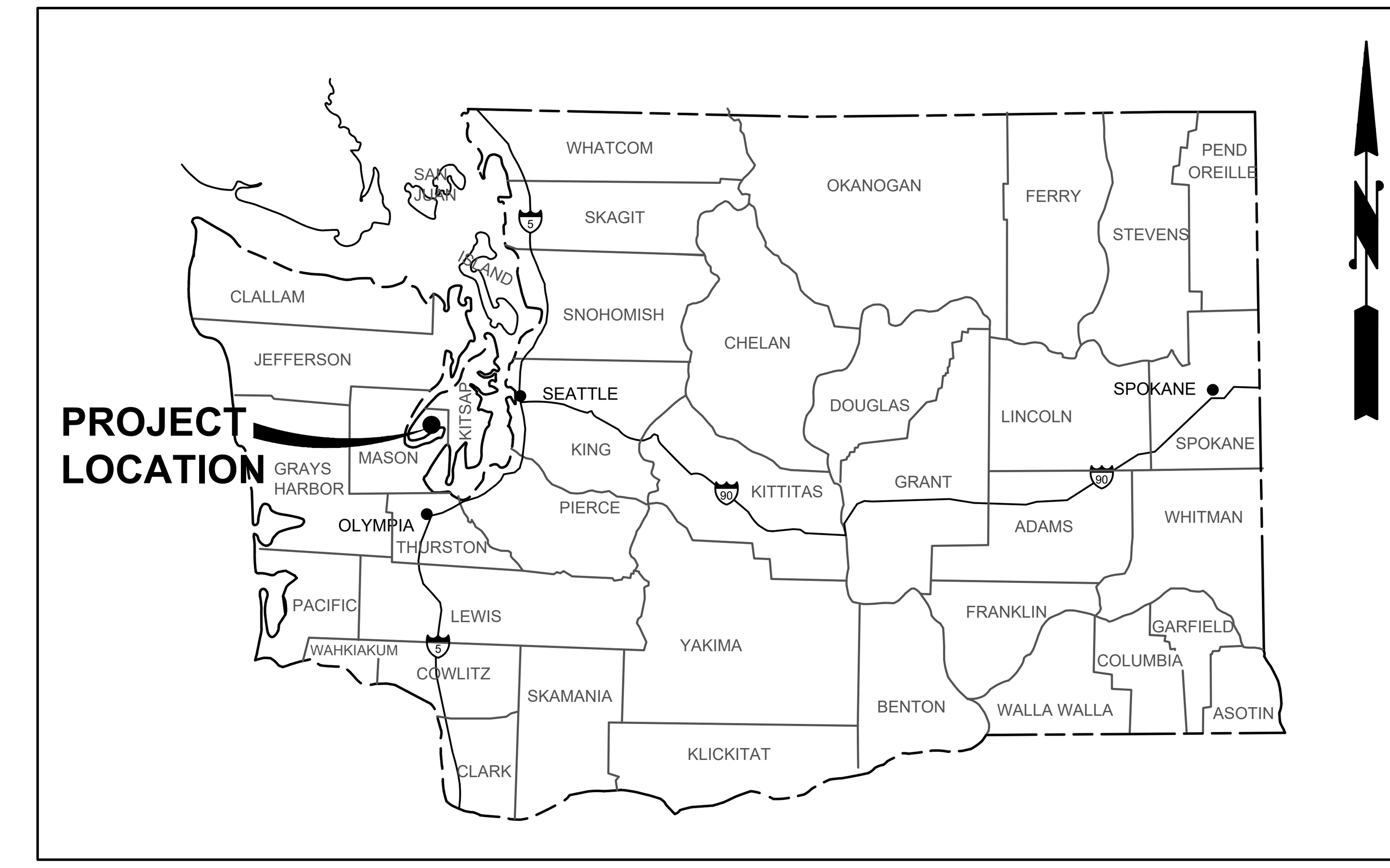
LOCATION:
PARCEL #3202453001018, MASON COUNTY

OWNER:
MASON COUNTY PUBLIC UTILITY DISTRICT NO. 1
N. 21971 HWY. 101
SHELTON, WA 98584

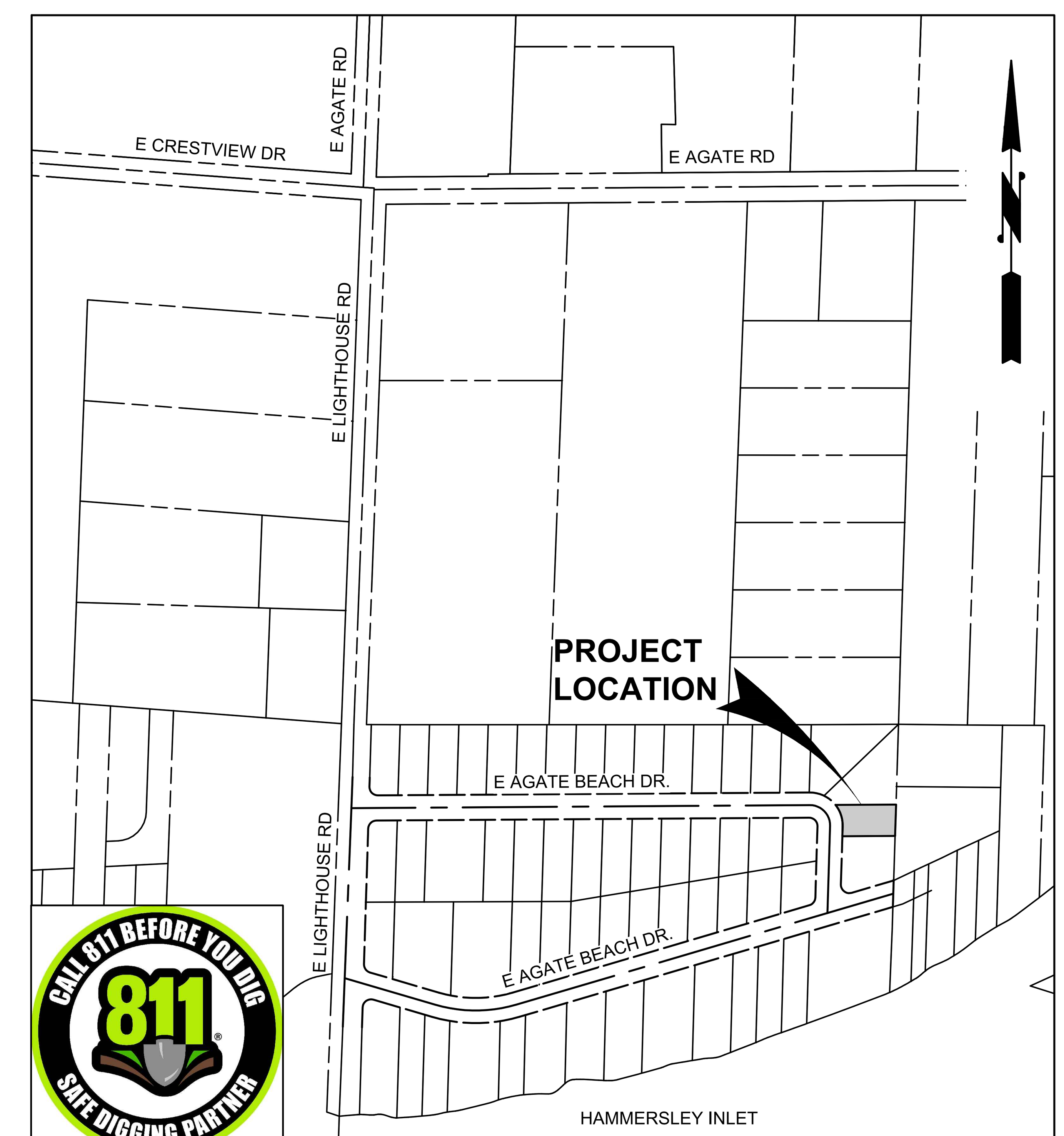
OWNER CONTACT:
BRANDY MILROY WATER RESOURCE ENGINEERING
EMAIL: BRANDYM@MASON-PUD1.ORG
PHONE: (360) 877-5249 EXT. 218

ENGINEER:
GRAY & OSBORNE, INC
8513 NE HAZEL DELL AVENUE, SUITE 202
VANCOUVER, WA 98665

ENGINEER CONTACTS:
MIKE JOHNSON, P.E.
EMAIL: MJOHNSON@G-O.COM
PH: 206-284-0860



VICINITY MAP
NTS



LOCATION MAP
SCALE: 1:300

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
1130 RAINIER AVENUE SOUTH, SUITE 300
SEATTLE, WASHINGTON 98144 • (206) 284-0860

DATE:	SEP 2023
DRAWN:	RAH
CHECKED:	ANM
APPROVED:	MBJ

No.	REVISION	DATE	APPD

MICHAEL B. JOHNSON
STATE OF WASHINGTON
36498
REGISTERED PROFESSIONAL ENGINEER
11/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

SHEET INDEX, VICINITY AND LOCATION MAPS

SHEET: G-1
OF: 4
JOB NO.: 20275
DWG:LEGEND

m:\mason county pud 1\20275.00 agate beach water system improvements\01 design\planset ph3\General\Legend.dwg, 11/1/2023 11:30 AM, SHARI GAER

ABBREVIATIONS

AC	ASBESTOS CEMENT PIPE
ADJ	ADJUST
ALT	ALTERNATE
ALUM	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AP	ANGLE POINT
ASPH	ASPHALT
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
ATB	ASPHALT TREATED BASE
AVE	AVENUE
BF	BLIND FLANGE
BLDG	BUILDING
BLK	BLOCK
BO	BLOW OFF
BOP	BEGINNING OF PROJECT
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
C	CONDUIT
CAP	CORRUGATED ALUMINUM PIPE
CB	CATCH BASIN
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CICL	CAST IRON CLASS
CLR	CLEARANCE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COE	CW CORPS OF ENGINEERS CIVIL WORK GUIDE
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUED/CONTINUOUS
CPEP	CORRUGATED POLYETHYLENE PIPE
CPLG	COUPLING
CTR	CENTER
CY	CUBIC YARD
℄	CENTER LINE
D	DRAIN
DC	DEGREE OF CURVATURE
DI	DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DOT	DEPARTMENT OF TRANSPORTATION
DWGS	DRAWING(S)
E	EAST
EA	EACH
EL	ELEVATION
ELEC	ELECTRICAL
EOA	EDGE OF ASPHALT
EOP	END OF PROJECT
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EXIST	EXISTING
FIG	FIGURE
FIN	FINISHED
FL	FLANGE
FT	FEET
GA	GAUGE
GALV	GALVANIZED
GI	GALVANIZED IRON
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH
INV	INVERT
L	LENGTH
LB	POUND
LF	LINEAR FEET
MAX	MAXIMUM
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
N	NORTH
NGPA	NATIVE GROWTH PROTECTION AREAS
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
PC	POINT OF CURVATURE
PE	PLAIN END
PERF	PERFORATED
PI	POINT OF INTERSECTION
PP	POWER POLE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENT
QTY	QUANTITY
R	RADIUS
R/W	RIGHT-OF-WAY
RED	REDUCER
REINF	REINFORCE
REQD	REQUIRED
RET	RETAINING
RR	RAILROAD
S	SOUTH
SCH	SCHEDULE
SF	SQUARE FEET
SHT	SHEET
SL	SLOPE
SPECS	SPECIFICATIONS
SQ	SQUARE
STA	STATION
STD	STANDARD
TB	THRUST BLOCK
TC	TOP OF CURB
TDH	TOTAL DYNAMIC HEAD
TEL	TELEPHONE
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
THRD	THREADED
THRU	THROUGH
TYP	TYPICAL
VERT	VERTICAL
W	WEST
W/	WITH
W/O	WITHOUT
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

LINETYPES

EXISTING	PROPOSED	DESCRIPTION
SURFACE FEATURES		
		ASPHALT PAVEMENT
		GRAVEL SURFACING
		CONCRETE SURFACING
	x x	FENCE/RAILING (TYPE AS NOTED)
	x x	FENCE WITH GATE
		SHRUB/TREE/VEGETATION LINE
		EDGE OF LANDSCAPING
SURVEY		
		RIGHT-OF-WAY LINE
		CENTERLINE OF RIGHT-OF-WAY
		PROPERTY LINE
10		CONTOUR LINE
UTILITIES		
OH		OVERHEAD UTILITIES
E	E	BURIED ELECTRICAL
W		WATER MAIN (SIZE AS NOTED)
D		STORM DRAIN (SIZE AS NOTED)
D		CULVERT (SIZE & TYPE AS NOTED)
		DITCH CENTERLINE/THALWEG

WATER SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		CAP/PLUG
		COUPLING/ADAPTER
		GUARD POST
		REDUCER
		THRUST BLOCK
		WATER METER
		WELL
		DRAFT HYDRANT
JOINTS		
		MECHANICAL JOINT
VALVES		
		AIR RELIEF VALVE
		BLOW-OFF VALVE
		WATER SPIGOT
		GATE VALVE

GAS/POWER/TELEPHONE SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		UTILITY POLE
		UTILITY POLE ANCHOR
		UTILITY PEDESTAL

SURFACE FEATURES/LANDSCAPING

EXISTING	PROPOSED	DESCRIPTION
		BUILDING
		MAIL BOX (NOTED)
		SIGN
		SHRUB
		TREE (CONIFER)
		TREE (DECIDUOUS)

SANITARY/STORM SEWER SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		STORM DRAIN CATCH BASIN, CONCRETE INLET, OR YARD/AREA DRAIN

SURVEY SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		CONTROL POINT
		MONUMENT (SURFACE)

EXAMPLE OF SECTION NUMBERING SYSTEM AND PLAN/DRAWING TITLES

FOR DETAILS SUBSTITUTE DETAIL NUMBER FOR SECTION LETTER

ELEVATION VIEW ON SHT. M-1 — A / M-1

SECTION CUT ON SHT. M-1 — A / M-1

SECTION LETTER OR DETAIL NUMBER

SHT. ON WHICH SECTION OR DETAIL APPEARS

ON SHT. M99-9 THIS SECTION IS IDENTIFIED AS:

SECTION
SCALE: ?"=1'-0" — A / M-1

SECTION LETTER OR DETAIL NUMBER

SHT. FROM WHICH SECTION OR DETAIL WAS TAKEN

A / - — SECTION LETTER OR DETAIL NUMBER; SECTION APPEARS ON SAME DWG AS CUT

A / TYP — SECTION LETTER OR DETAIL NUMBER; SECTION IS TYPICAL TO MANY PLACES

DETAILS ARE REFERENCED IN A SIMILAR MANNER EXCEPT NUMBERS ARE USED INSTEAD OF LETTERS

DRAWING TITLE IDENTIFICATION :

DRAWING TITLE
SCALE: ?"=1'-0"

GENERAL NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE FURNISHED AND SUPPLIED IN ACCORDANCE WITH THE 2022 EDITION OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, UNLESS OTHERWISE SPECIFICALLY NOTED.
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT AND COORDINATE WITH ALL UTILITY COMPANIES IN ORDER TO ASSURE THAT ALL LINES, PIPES, POLES AND OTHER APPURTENANCES ARE PROPERLY LOCATED, SECURED, AND/OR PROTECTED. BURIED UTILITIES (WHERE KNOWN) ARE SHOWN IN THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL HAVE UTILITIES VERIFIED ON THE GROUND PRIOR TO ANY CONSTRUCTION. NOTIFY THE UNDERGROUND UTILITIES LOCATE CENTER: 1-800-424-5555.
3. ON-SITE EROSION AND SEDIMENT CONTROL MEASURES ARE REQUIRED AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR SHALL HAVE A COPY OF THESE PLANS, ANY ADDENDA, CHANGE ORDERS, AND THE CONTRACT SPECIFICATIONS ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
5. THE CONTRACTOR SHALL PROMPTLY NOTIFY THE ENGINEER IN THE EVENT OR DISCOVERY OF UNSUITABLE SOILS OR HIGH GROUND WATER CONDITIONS OR DISCREPANCIES FROM THE PLANS.
6. THE CONTRACTOR SHALL MAINTAIN A CLEAN LEGIBLE SET OF RECORD DRAWINGS AND PROVIDE A SET TO THE OWNER PRIOR TO DEMOBILIZATION OF THE SITE. SEE SPECIFICATIONS.

0 1" 2"
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CONSULTING ENGINEERS
1130 RAINIER AVENUE SOUTH, SUITE 300
SEATTLE, WASHINGTON 98144 • (206) 284-0860

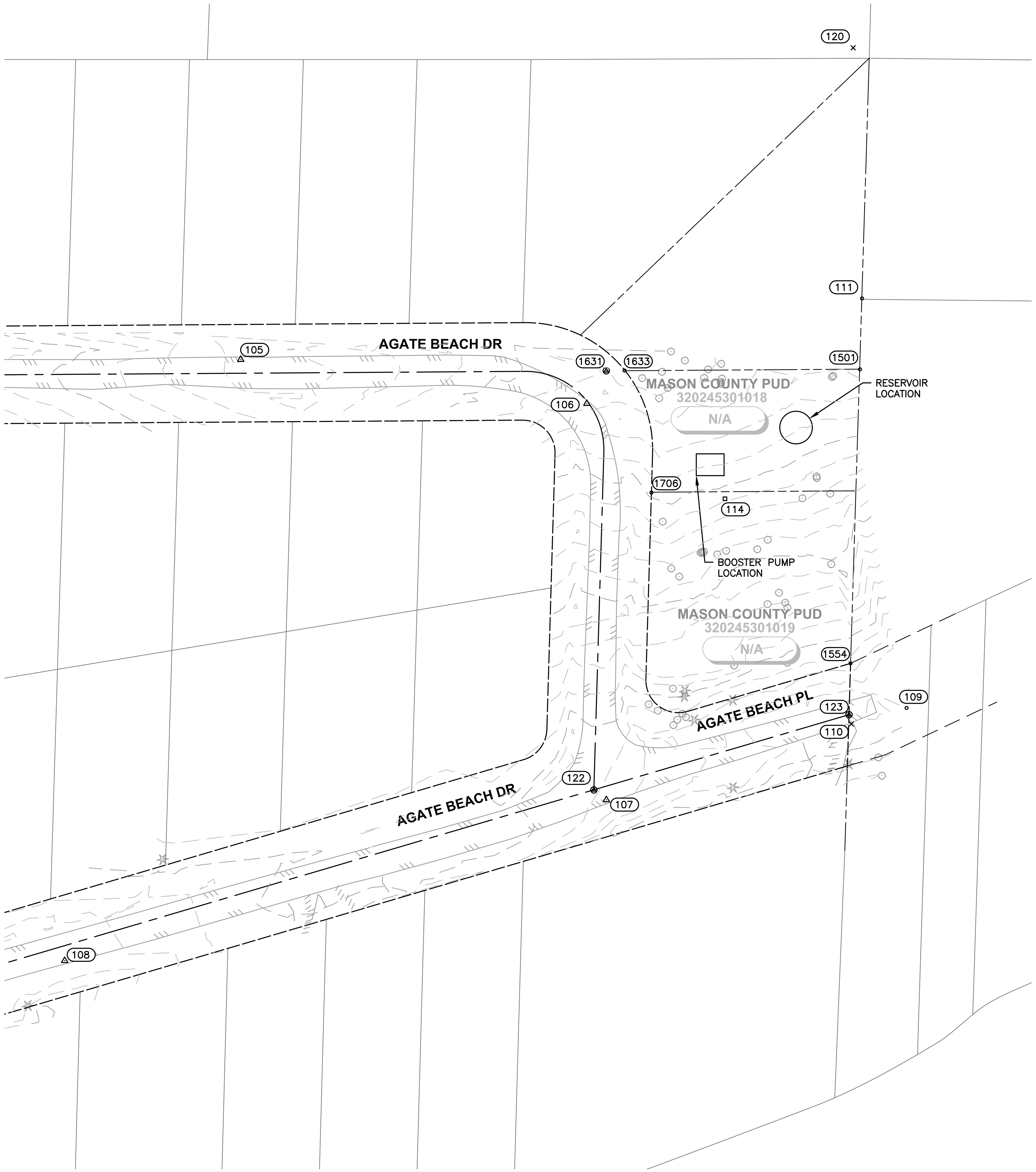
DATE: SEP 2023
DRAWN: RAH
CHECKED: ANM
APPROVED: MBJ

No.	REVISION	DATE	APPD

11/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
LINETYPES, SYMBOLS, AND GENERAL NOTES

SHEET: G-2
OF: 4
JOB NO.: 20275
DWG:LEGEND



400' 200' 0 400' 800'
SCALE: 1"=400'

MASON COUNTY PUD - AGATE BEACH WATER IMPROVEMENTS
JOB NUMBER - 20275

HORIZONTAL DATUM: **NAD83/2011, EPOCH 2010.00**
WSPCS SOUTH ZONE, GRID NORTH
MODIFIED GROUND COORDINATES, SCALED TO GROUND USING AVG. CGF OF 0.99997249824 AT BASE POINT G&O #2

VERTICAL DATUM: **NAVD88**
HOLDING WSDOT BM "GP23003-11" (G&O #1)

POINT	NORTHING	EASTING	ELEV.	DESCRIPTION
1	715463.27	1021260.22	177.87	SFMC=FOUND MONUMENT IN CASE, WSDOT "GP23003-11" NE COR D-WAY ENTRANCE TO LAVENDER LN. MON ID: 1464.
2	695660.01	1016124.09	120.26	SFM=FOUND SURFACE MONUMENT, 1 1/2 DISC W/PUNCH, POOR CONDITION. NE COR INTX AGATE RD & CRESTVIEW & LIGHTHOUSE. 1' W OF STOP BAR W/ WEST BOUND LANE. ~17.5' S OF LARGE STOP SIGN.
106	694162.13	1017199.79	96.61	SSNT, 2.5' SW OF NE'LY EDGE ASPHALT ALONG CURVE AGATE BEACH DR. 1.5' SW'LY GRASS OF GRASS ON ROAD. @ 1/2 DELTA.
105	694189.22	1016986.80	106.66	SSNT, 1.5' S OF N'LY EDGE ASPHALT. ~13' S OF 25 MPH SIGN. ~28' W OF CREST OF HILL.
107	693918.35	1017211.81	67.23	SSNT, 2' N OF S EDGE ASPHALT AGATE BEACH PL @ INTX. 6' N'LY OF STREET NAME SIGN. ~16' E OF CL DWAY #271
108	693819.43	1016878.50	65.44	SSNT, 2' N OF S EDGE ASPHALT AGATE BEACH DR. EXT'D CL DWAY #320. ~72' E OF DWAY #331E
109	693974.92	1017396.51	61.70	SSRC, 5/8 REBAR W/RED G&O CAP. ~3' S OF S EDGE GRAVEL ON AGATE BEACH PL. ~24' W OF W'LY DWAY TO LIGHT BLUE HOUSE ON WATER. ~45' E OF CL DWAY #20E. ~18' E OF E END ASPHALT.
110	693965.01	1017362.54	61.82	SSN, SMALL MAG IN S EDGE ASPHALT AGATE BEACH PL. 15' E OF CL DAWY #20E. ~16' W OF E END ASPHALT.
111	694226.83	1017369.13	100.84	SFP, 1" IP W/GRAY CAP. "0??D? 1135" 0.45 ABOVE GRADE. NW COR PROP 41 E AGATE BEACH PL. @ 90 IN FENCE LINE.
114	694103.58	1017284.78	87.93	SSHT, IN MIDDLE OF LOT. ~47' NE OF PP S OF WM.
120	694380.97	1017363.69	110.33	SSN, 60D NAIL. 0.25' DOWN IN GRAVEL/GRASS. ~7' S OF EDGE GRAVEL E TO W DIRECTION PVT DRWYS. ~13' SE'LY EXT'D CL N-S PVT DWAY.
122	693924.45	1017204.11	66.89	SFM, STONE MON W/ X. 1.5' DOWN. AT CENTERLINE E AGATE BEACH DR & E AGATE BEACH PL. 14' NE OF CENTERLINE DRWY TO #271. @ S EDGE ASPHALT AGATE BEACH DR.
123	693970.76	1017361.11	60.95	SFM, STONE MON W/ X. 1.0' DOWN. CENTERLINE E AGATGE BEACH PL. 18' W OF E END EDGE OF ASPHALT. 13' E OF CENTERLINE DRWY #20E.
1501	694183.1769	1017367.89	97.048	SFR, FOUND 1/2" REBAR, AT FENCE, 0.4' ABOVE GROUND.
1554	694002.3045	1017362.056	67.09	SFR, FOUND 1/2" REBAR, NO CAP, AT S. END OF FFENCE, BENT NORTH.
1631	694182.28	1017211.76	97.62	SFM, STONE MON W/ "X." ~1.75' DOWN. PI MONUMENT 2' W OF GROUND BREAK. 9.5' E OF DITCH CENTERLINE. 22' NE OF NE EDGE ASPHALT.
1633	694182.44	1017222.99	99.08	SFR, FOUND 1/2" REBAR, NO CAP, UNDER & W. OF BUSH, ~1' DOUNW, BENT W'LY
1706	694107.34	1017239.50	90.29	SFR, FOUND 1/2" REBAR, NO CAP, 0.45' ABOVE GROUND, BEHIND/EAST OF W.M.

RIGHT-OF-WAY DISCLAIMER

The right-of-way and/or property lines shown hereon are based on available information, not on a surveyed location and are only approximate.

0 1" 2"
TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

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SEATTLE, WASHINGTON 98144 • (206) 284-0860

DATE: SEP 2023
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CHECKED: ANM
APPROVED: MBJ

No.	REVISION	DATE	APPD

MICHAEL B. JOHNSON, STATE OF WASHINGTON, 36498, REGISTERED PROFESSIONAL ENGINEER 9/8/23
RICHARD A. BOND, STATE OF WASHINGTON, 40097, REGISTERED PROFESSIONAL LAND SURVEYOR 09/08/2023

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
SURVEY CONTROL MAP AND TABLE

SHEET: G-3
OF: 6
JOB NO.: 20275
DWG:SURVEY

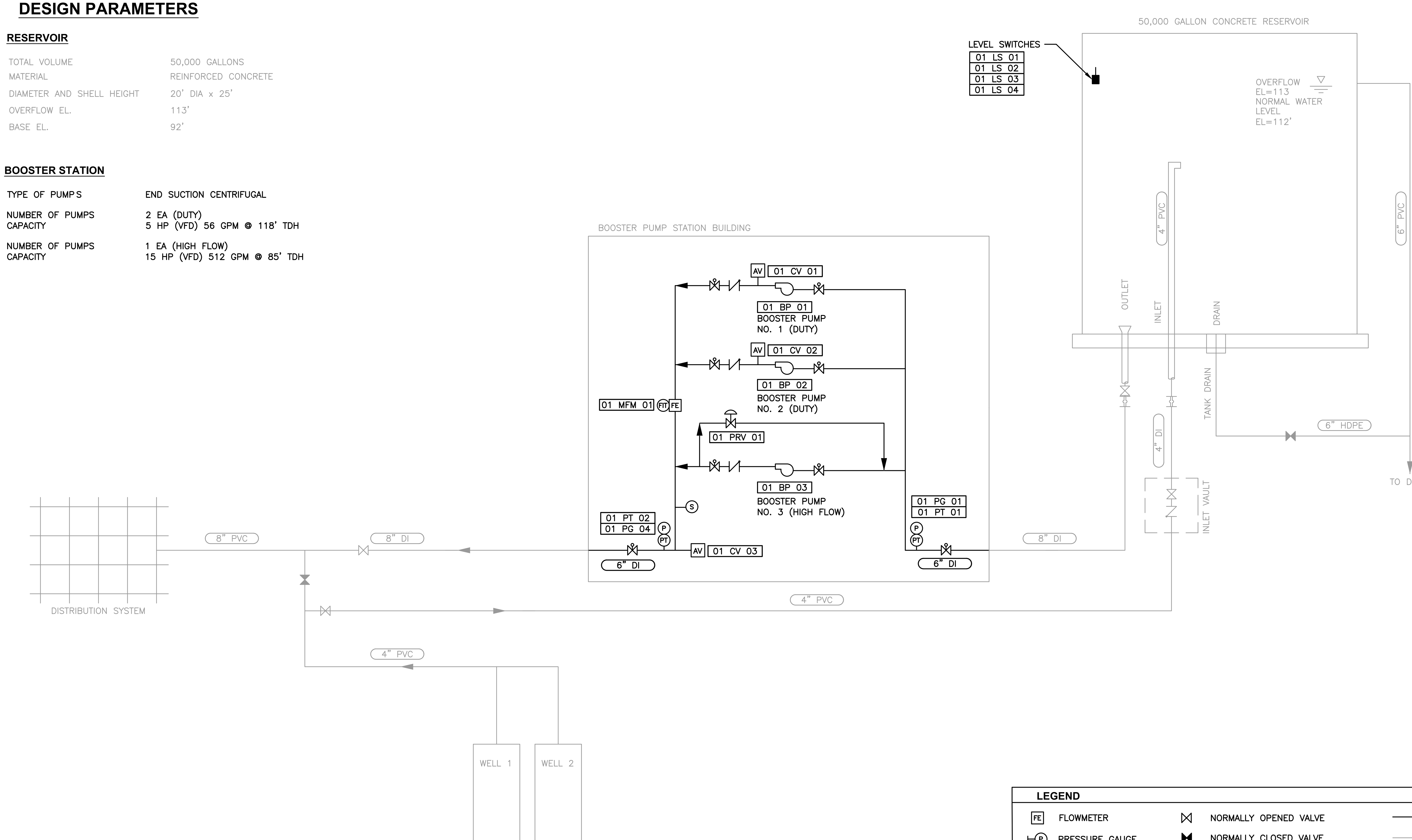
DESIGN PARAMETERS

RESERVOIR

TOTAL VOLUME	50,000 GALLONS
MATERIAL	REINFORCED CONCRETE
DIAMETER AND SHELL HEIGHT	20' DIA x 25'
OVERFLOW EL.	113'
BASE EL.	92'

BOOSTER STATION

TYPE OF PUMPS	END SUCTION CENTRIFUGAL
NUMBER OF PUMPS	2 EA (DUTY)
CAPACITY	5 HP (VFD) 56 GPM @ 118' TDH
NUMBER OF PUMPS	1 EA (HIGH FLOW)
CAPACITY	15 HP (VFD) 512 GPM @ 85' TDH



LEGEND

FE	FLOWMETER
P	PRESSURE GAUGE
S	SAMPLE TAP
	PUMP
	LEVEL SWITCHES
	PRESSURE RELIEF VALVE
AV	COMBINATION AIR VALVE
	NORMALLY OPENED VALVE
	NORMALLY CLOSED VALVE
	NORMALLY OPENED BUTTERFLY VALVE
	NORMALLY CLOSED BUTTERFLY VALVE
	CHECK VALVE
	FLEXIBLE EXPANSION COUPLING
FIT	FLOW INDICATOR/TRANSMITTER
PT	PRESSURE TRANSDUCER
	PROPOSED
	EXISTING

PROCESS FLOW DIAGRAM

NTS

0 1" 2"

TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

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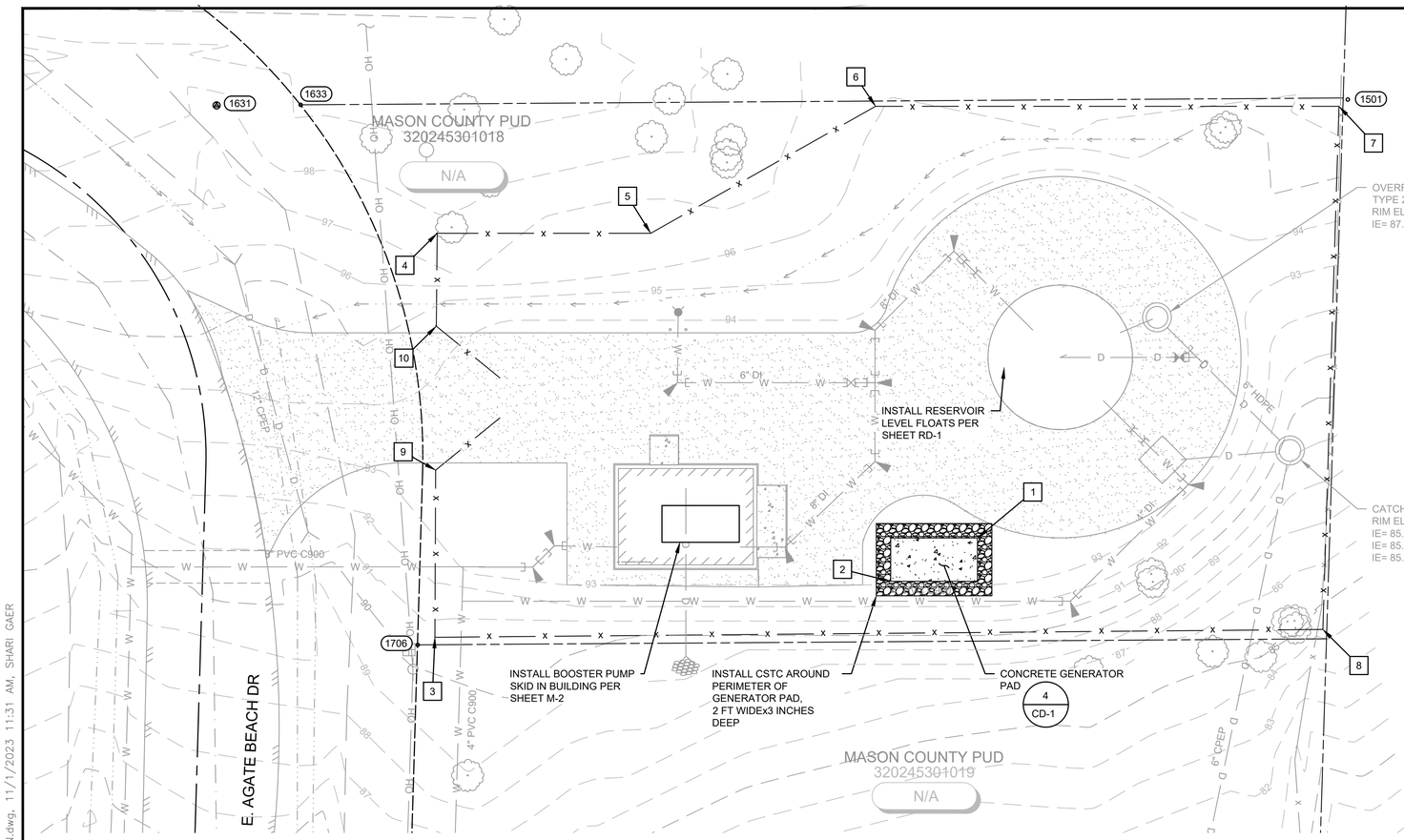
STATE OF WASHINGTON
36498
REGISTERED PROFESSIONAL ENGINEER
11/20/23

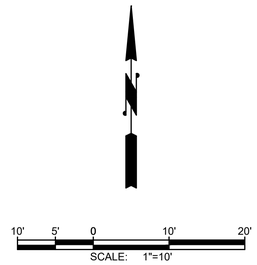
MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

PROCESS FLOW DIAGRAM

SHEET: **G-4**
OF: **4**

JOB NO.: 20275
DWG: PROCESS FLOW DIAGRAM





PAD AND FENCE TABLE				
X	DESCRIPTION	ELEVATION	NORTHING	EASTING
1	CONCRETE PAD, NE CORNER	93.0	694116.41	1017305.05
2	CONCRETE PAD, SW CORNER	93.0	694122.41	1017317.05
3	FENCE CORNER	90.5	694108.66	1017241.97
4	FENCE CORNER	95.9	694164.58	1017242.29
5	FENCE CORNER	94.5	694164.58	1017271.83
6	FENCE CORNER	96.0	694182.15	1017302.94
7	FENCE CORNER	95.7	694182.15	1017367.08
8	FENCE CORNER	84.3	694109.75	1017364.85
9	GATE POST	94.2	694131.80	1017242.07
10	GATE POST	95.0	694151.73	1017242.16

0 1" 2"
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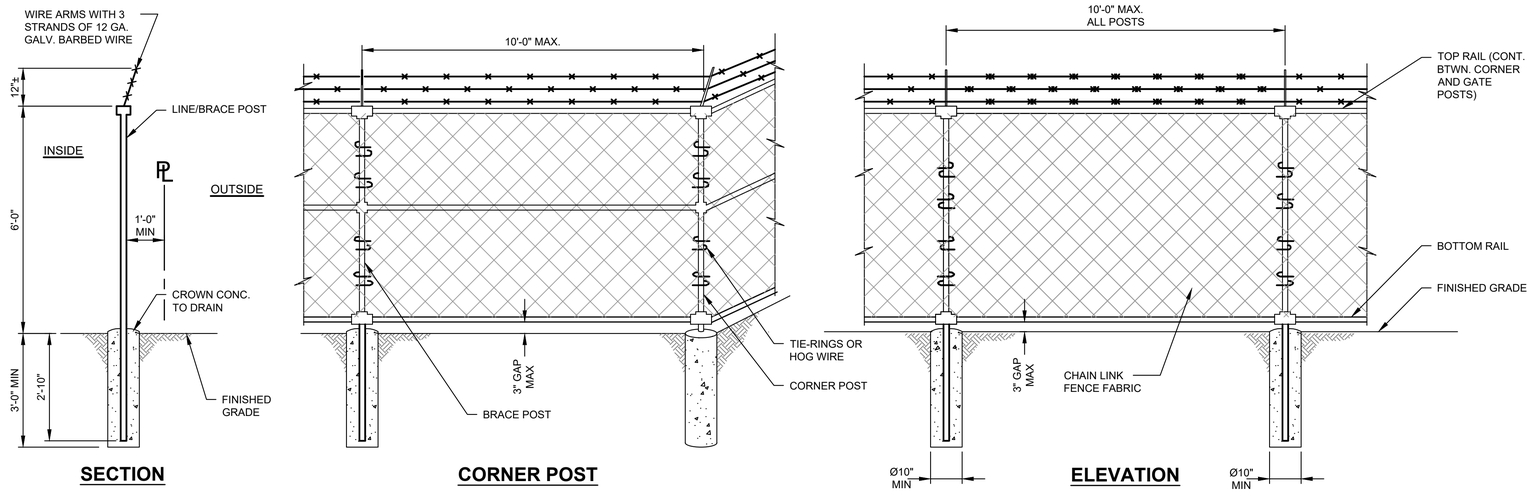
MICHAEL B. JOHNSON
STATE OF WASHINGTON
20485
REGISTERED
PROFESSIONAL ENGINEER
11/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
SITE PLAN

SHEET: C-1
OF: 1
JOB NO.: 20275
DWG:SITE PLAN

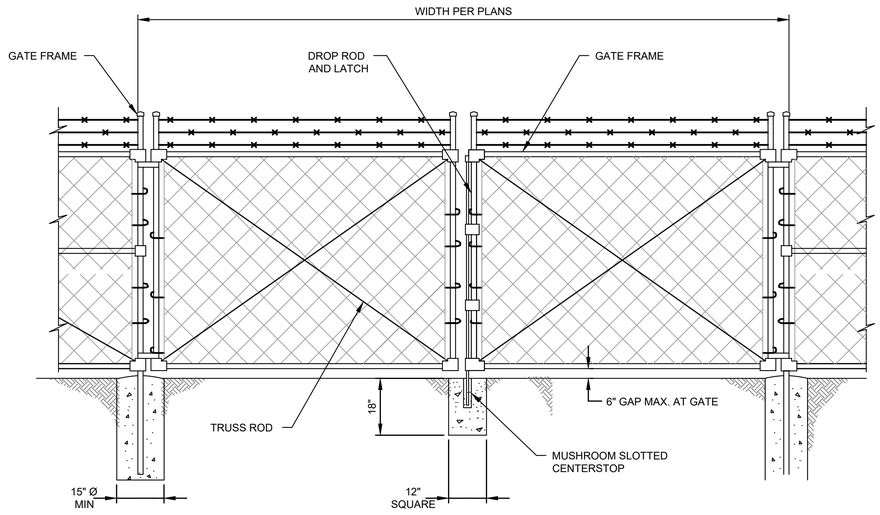
m:\mason county pud 1\20275.00 agate beach water system improvements\01 design\planset ph3\Civil\SITE PLAN.dwg, 11/1/2023 11:31 AM, SHARI GAER



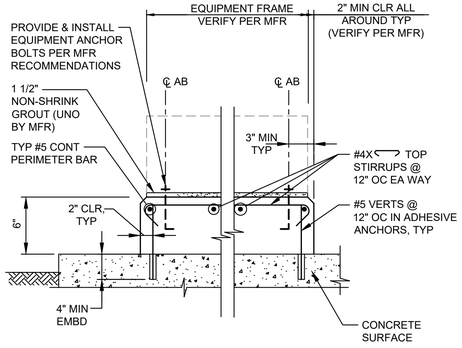
1 / - **FENCE DETAILS**
SCALE: 1/2"=1'-0"

NOTES:

1. SEE SPECIFICATIONS FOR TYPICAL MATERIAL AND INSTALLATION REQUIREMENTS.
2. INSTALL CORNER POSTS WHERE ALIGNMENT CHANGES 30° OR MORE.
3. PROVIDE GALVANIZED FINISH ON POSTS, RAILS AND FITTINGS.
4. PROVIDE GALVANIZED IRON, MUSHROOM TYPE, SLOTTED CENTERSTOP FOR DOUBLE GATE DROP ROD. EMBED IN 12"x12"x18" DIA. CONC. FOUNDATION.
5. DROP ROD FOR SWING GATE AND MAN GATE SHALL COME EQUIPPED WITH PADLOCK LATCH.



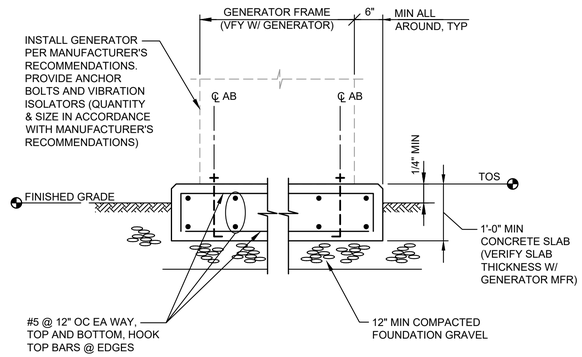
2 / - **SWING GATE**
SCALE: 1/2"=1'-0"



NOTE:

1. CHAMFER ALL EXPOSED CORNERS OF HOUSEKEEPING PADS.

3 / TYP **TYP HOUSEKEEPING PAD DETAIL**
NOT TO SCALE



4 / TYP **TYP GENERATOR PAD DETAIL**
NOT TO SCALE

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

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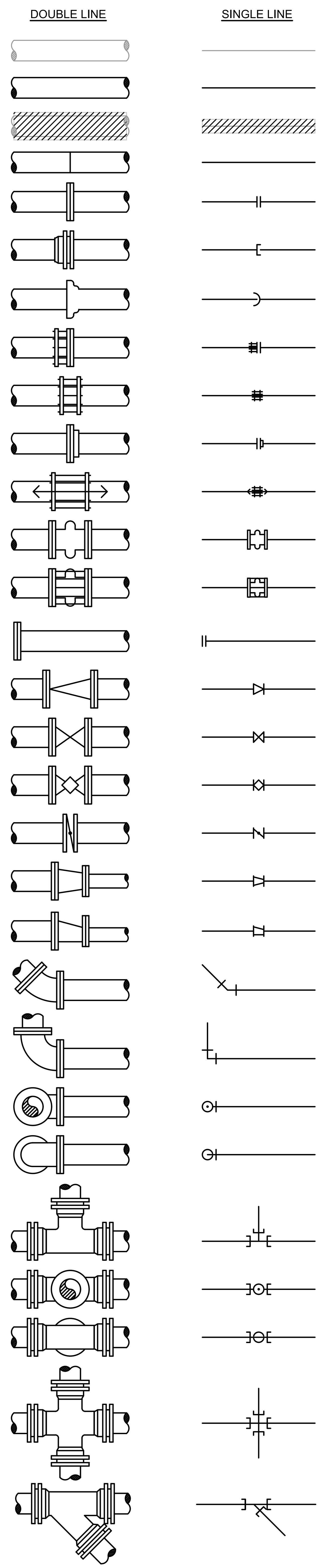
MICHAEL B. JOHNSON — STATE OF WASHINGTON — 36466 — REGISTERED PROFESSIONAL ENGINEER — 11/20/23

MASON COUNTY PUD #1
WASHINGTON
MASON COUNTY
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

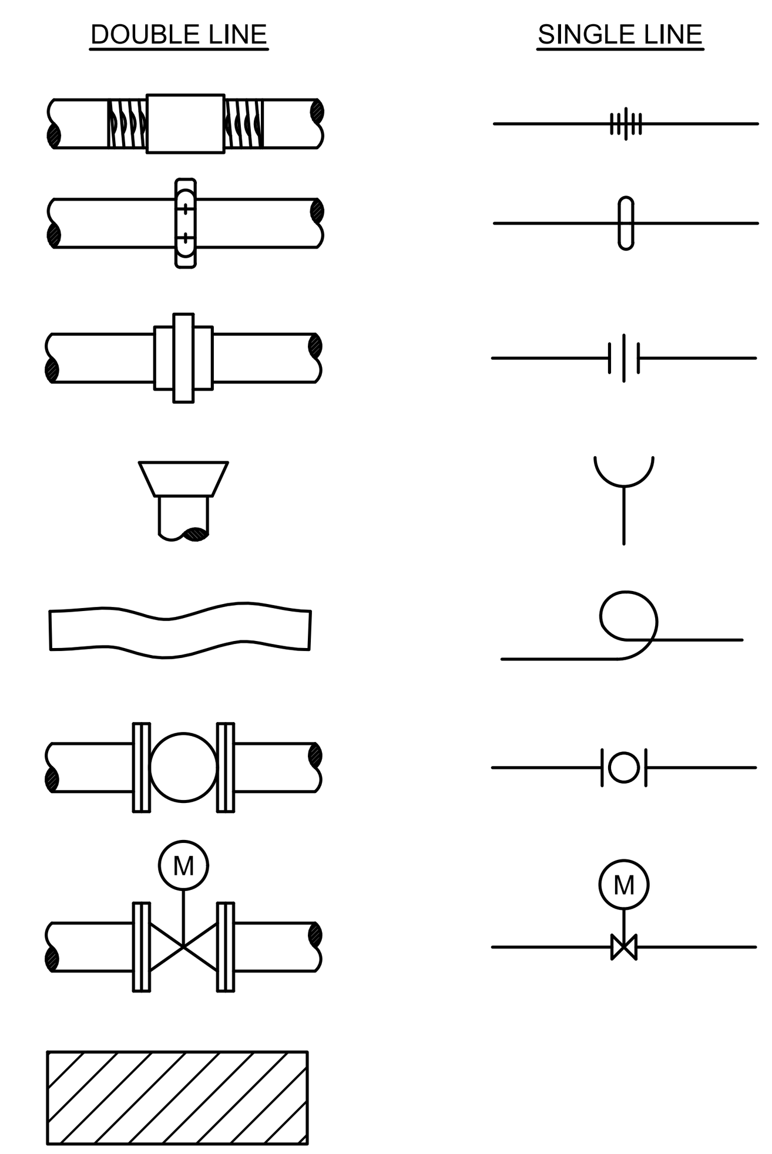
FENCE DETAILS

SHEET: **CD-1**
OF: **1**
JOB NO.: 20275
DWG:C-FENCE

PIPING SYMBOLS



- EXISTING PIPE
- NEW PIPE
- EXISTING PIPE TO BE REMOVED
- WELDED
- FLANGED
- MECHANICAL JOINT
- SOLVENT WELDED JOINT
- FLANGED COUPLING ADAPTER
- FLEXIBLE COUPLING
- ADAPTOR FLANGE
- RESTRAINED FLEXIBLE COUPLING
- RUBBER EXPANSION JOINT
- RESTRAINED RUBBER EXPANSION JOINT
- BLIND FLANGE
- CHECK VALVE
- GATE VALVE
- PLUG VALVE
- BUTTERFLY VALVE
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- ELBOW, 45°
- ELBOW, 90°
- ELBOW UP
- ELBOW DOWN
- TEE
- TEE UP
- TEE DOWN
- CROSS
- WYE



- SCREWED JOINT
- GROOVED COUPLING
- UNION
- BELL UP
- FLEXIBLE HOSE OR TUBING
- BALL VALVE
- VALVE WITH MOTOR ACTUATOR
- DENOTES ITEMS TO BE REMOVED AND DISPOSED OF BY CONTRACTOR IN ACCORDANCE WITH THE SPECIFICATIONS

AREA, PIPE AND EQUIPMENT IDENTIFICATIONS

01 BP 01

- AREA (01)
- EQUIPMENT TYPE (BP)
- EQUIPMENT NUMBER (SEQUENTIAL LISTING) (01)

AREA

01 BOOSTER STATION/RESERVOIR

PIPE

W WATER

EQUIPMENT

BP	BOOSTER PUMP
CV	COMBINATION AIR VALVE
MFM	MAGNETIC FLOW METER
PRV	PRESSURE RELIEF VALVE

PIPING MATERIAL AND JOINTING SCHEDULE

(EXCEPT WHERE SHOWN DIFFERENTLY ON THE DRAWINGS)

PROCESS PIPING CODE (SEE THIS SHEET)	INSIDE STRUCTURES
W (ON SITE)	FLANGED DUCTILE IRON

0 1" 2"
TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
1130 RAINIER AVENUE SOUTH, SUITE 300
SEATTLE, WASHINGTON 98144 • (206) 284-0860

DATE: SEP 2023
DRAWN: RAH
CHECKED: ANM
APPROVED: MBJ

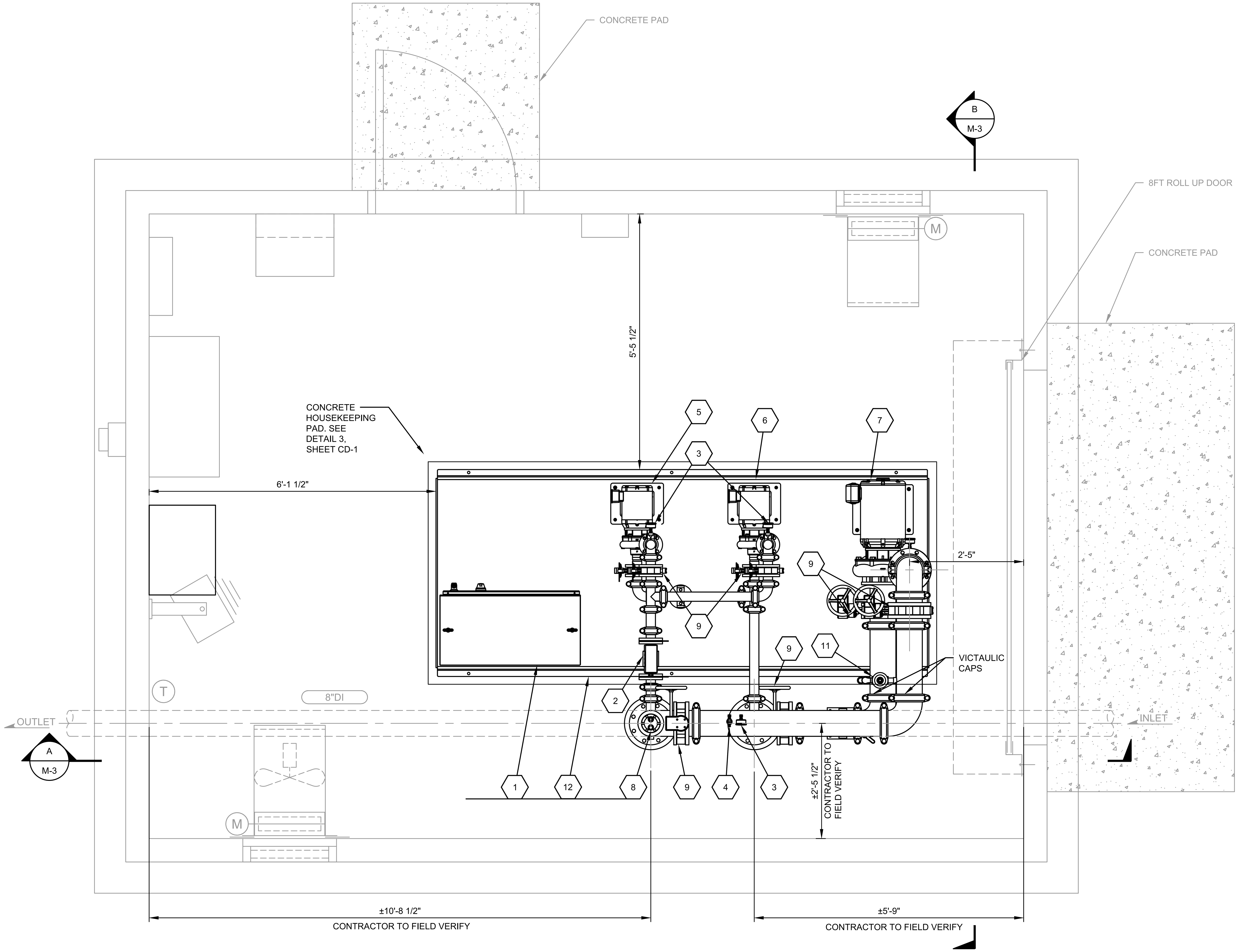
No.	REVISION	DATE	APPD

11/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
PIPE SYMBOLS, GENERAL SYMBOLS, AREA AND EQUIPMENT IDENTIFICATIONS

SHEET: **M-1**
OF: **3**
JOB NO.: 20275
DWG:M-GEN

m:\mason county pud 1\20275.00 agate beach water system improvements\01 design\planset ph3\Mechanical\M-GEN.dwg, 11/1/2023 11:31 AM, SHARI GAER



BOOSTER PUMP STATION PLAN

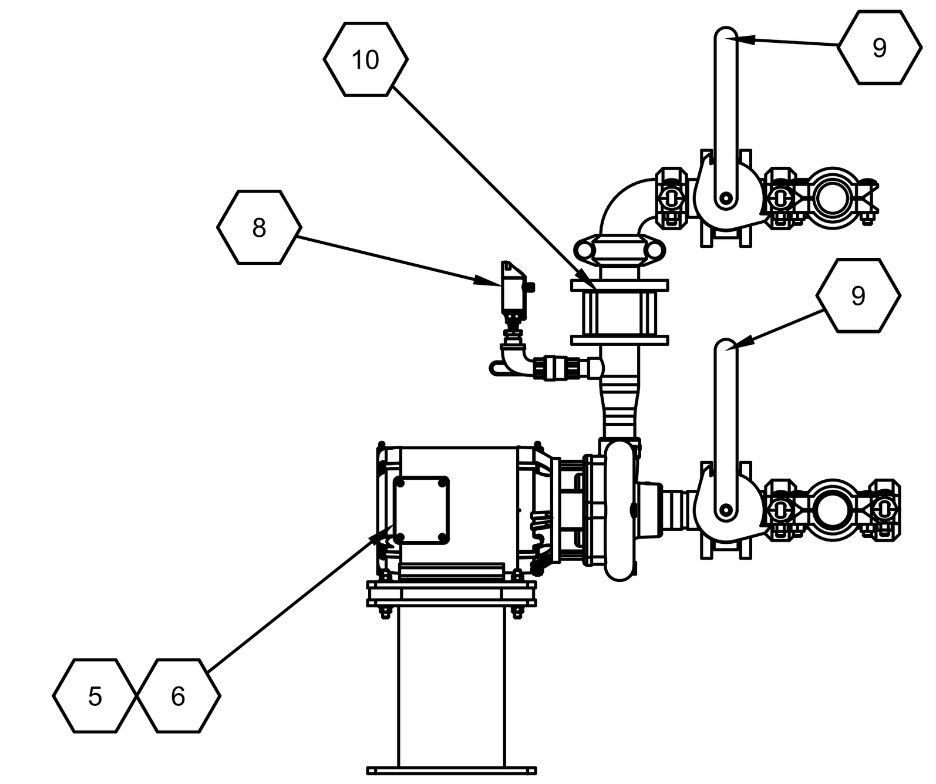
SCALE: 3/4"=1'-0"

LEGEND

1	CONTROL PANEL	01 PCP 01
2	FLOW METER	01 MFM 01
3	PRESSURE GAUGE	01 PG 01, 01 PG 02
4	PRESSURE TRANSDUCER	01 PT 01, 01 PT 02
5	BOOSTER PUMP NO. 1 (DUTY)	01 BP 01
6	BOOSTER PUMP NO. 2 (DUTY)	01 BP 02
7	BOOSTER PUMP NO. 3 (HIGH FLOW)	01 BP 03
8	COMBINATION AIR VALVE	01 CV 01, 01 CV 02, 01 CV 03
9	BUTTERFLY VALVE	
10	SILENT CHECK VALVE	
11	PRESSURE RELIEF VALVE	01 PRV 01
12	SKID	
13	SAMPLE TAP	

1' 6" 0 1' 2' 3'

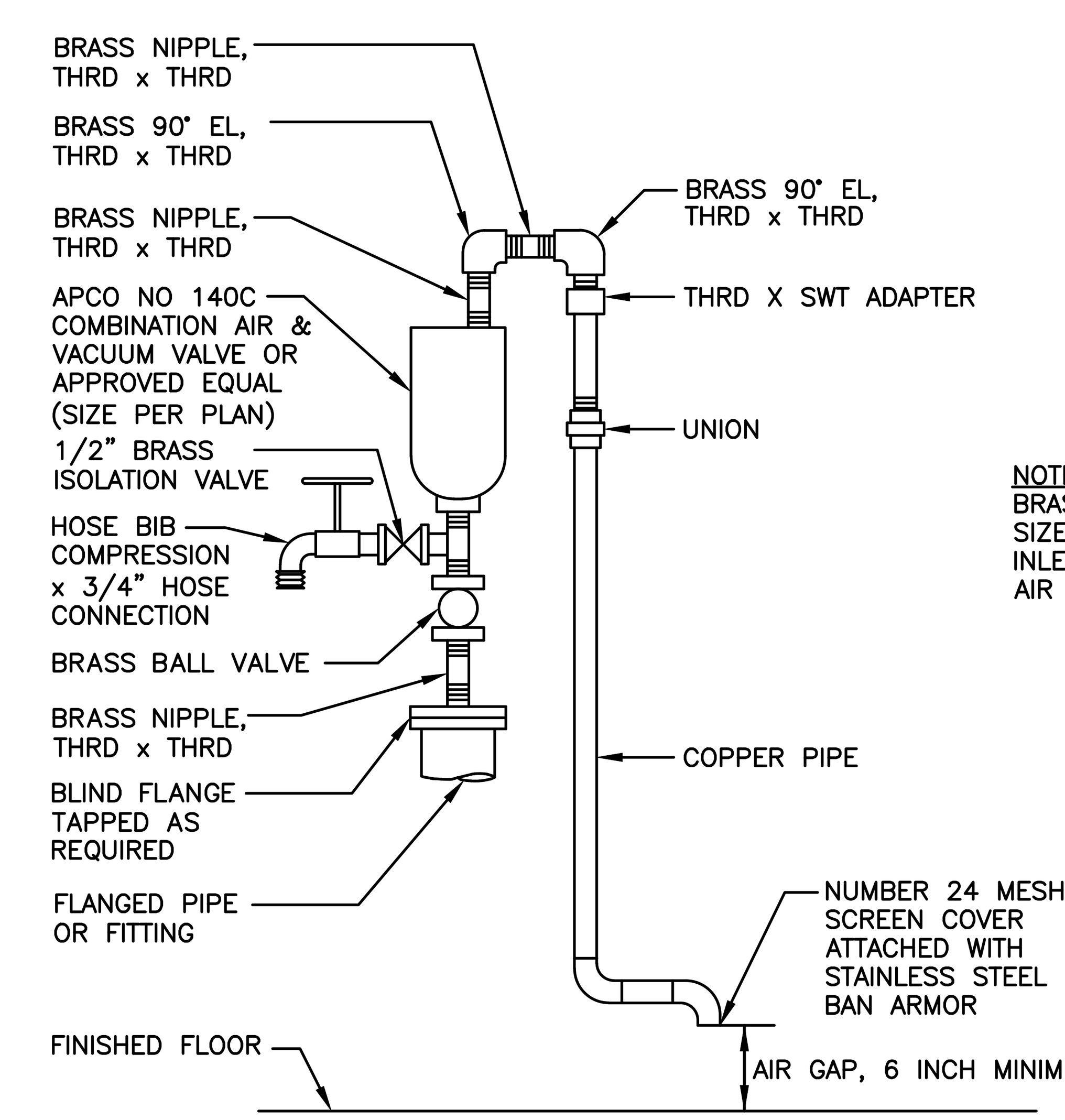
SCALE: 3/4"=1'-0"



1 / -

DUTY PUMP ASSEMBLY

NOT TO SCALE



NOTE:
BRASS AND COPPER SIZES SHALL MATCH INLET AND OUTLET OF AIR VALVE.

2 / -

COMBINATION AIR VALVE

NOT TO SCALE

0 1" 2"

TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

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SEATTLE, WASHINGTON 98144 • (206) 284-0860

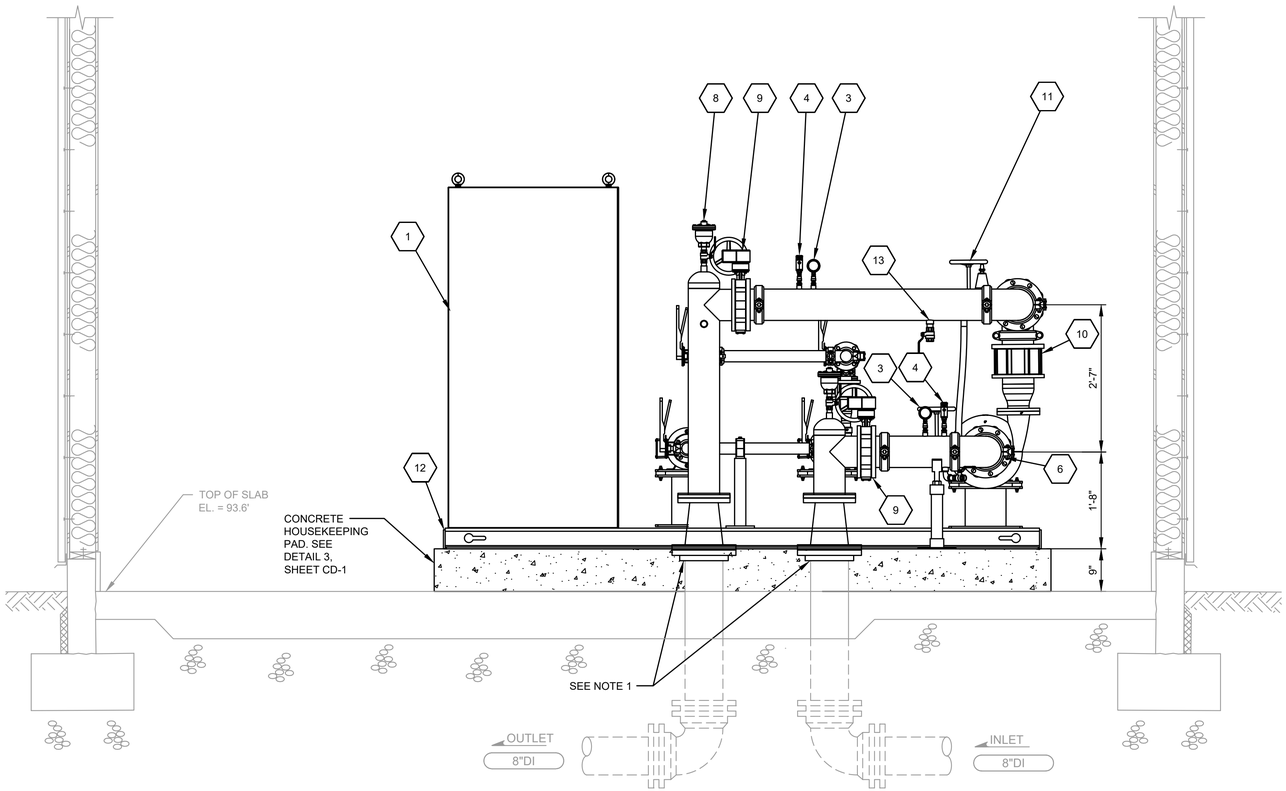
DATE:	SEP 2023
DRAWN:	RAH
CHECKED:	ANM
APPROVED:	MBJ

No.	REVISION	DATE	APPD

MICHAEL B. JOHNSON, STATE OF WASHINGTON, 36498, REGISTERED PROFESSIONAL ENGINEER
11/20/23

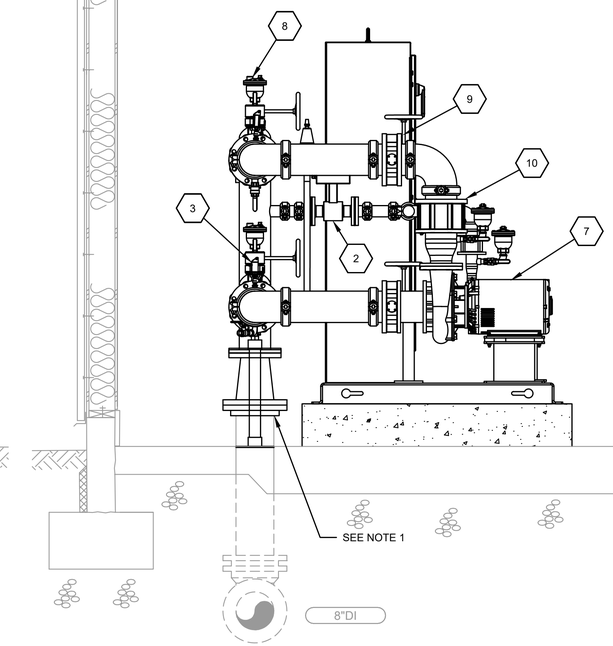
MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
BOOSTER PUMP STATION PLAN

SHEET: **M-2**
OF: **3**
JOB NO.: 20275
DWG:P–BPS



A M-2 **BOOSTER PUMP STATION SECTION**

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



B M-2 **BOOSTER PUMP STATION SECTION**

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

LEGEND

1	CONTROL PANEL	01 PCP 01	
2	FLOW METER	01 MFM 01	
3	PRESSURE GAUGE	01 PG 01	01 PG 02
4	PRESSURE TRANSDUCER	01 PT 01	01 PT 02
5	BOOSTER PUMP NO. 1 (DUTY)	01 BP 01	
6	BOOSTER PUMP NO. 2 (DUTY)	01 BP 02	
7	BOOSTER PUMP NO. 3 (HIGH FLOW)	01 BP 03	
8	COMBINATION AIR VALVE	01 CV 01	01 CV 02
		01 CV 03	
9	BUTTERFLY VALVE		
10	SILENT CHECK VALVE		
11	PRESSURE RELIEF VALVE	01 PRV 01	
12	SKID		
13	SAMPLE TAP		

NOTE:

1. CUT EXISTING 8" INLET AND OUTLET RISERS. WHEN BOOSTER PUMP STATION HAS BEEN DISINFECTED, INSTALL 8"x6" REDUCER W/ UNI-FLANGE TO CONNECT TO BOOSTER PUMP STATION PIPING.

0 1" 2"

TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
1130 RAINIER AVENUE SOUTH, SUITE 300
SEATTLE, WASHINGTON 98144 • (206) 284-0860

DATE: SEP 2023	DRAWN: RAH	CHECKED: ANM	APPROVED: MBJ

No.	REVISION	DATE	APPD

MICHAEL B. JOHNSON — STATE OF WASHINGTON — 36486 — REGISTERED PROFESSIONAL ENGINEER — 11/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
BOOSTER PUMP STATION ELEVATION

SHEET: M-3
OF: 3

JOB NO.: 20275
DWG: P–BPS

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HVAC DESIGN CRITERIA

OA VENTILATION

NONE: BOOSTER PUMP STATION IS CONSIDERED A NON-OCCUPIED EQUIPMENT ROOM.

DESIGN TEMPERATURES

WINTER AMBIENT TEMP:	23 °F
SUMMER AMBIENT TEMP:	83 °F
INTERIOR HEATING SETPOINT:	45 °F
INTERIOR COOLING SETPOINT:	95 °F

HEATING/COOLING

BOOSTER PUMP STATION:

REQ'D HEATING LOAD:	4.1 MBH
TYPE:	ELECTRIC RESISTANCE
CAPACITY:	1.2 KW
REQ'D COOLING LOAD:	5.2 MBH
TYPE:	VENTILATION; 10 °F DIFFERENCE
DESIGN AIR FLOW:	500 CFM

CONTROL DESCRIPTION:

EXHAUST FAN [01 EF 01] PROVIDES COOLING VENTILATION TO THE BOOSTER PUMP STATION AND IS CONTROLLED BY THERMOSTAT [01 T 01].

CONTROL DAMPERS [01 MD 01] AND [01 MD 02] ARE CONTROLLED BY EXHAUST FAN [01 EF 01].

UNIT HEATER [01 HT 01] PROVIDES HEAT TO THE BOOSTER PUMP STATION AND IS CONTROLLED BY AN INTERNAL THERMOSTAT.

HVAC ABBREVIATIONS

A	AMPERE
ACH	AIR CHANGES PER HOUR
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JUSIDICTION
BLDG	BUILDING
BTU	BRITISH THERMAL UNIT
CA	COMPRESSED AIR
CAP	CAPACITY
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
DIA	DIAMETER
DN	DOWN
EA	EXHAUST AIR
ECM	ELECTRONICALLY COMMUTATED MOTOR
EF	EXHAUST FAN
°F	DEGREES FAHRENHEIT
FS	FLOW SWITCH
GPM	GALLONS PER MINUTE
HOA	HAND/OFF/AUTO
MA	MIXED AIR
MBH	1,000 BTU'S/HR
MCA	MINIMUM CIRCUIT AMPS
MFR	MANUFACTURER
MOCP	MAXIMUM OVER CURRENT PROTECTION
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NG	NATURAL GAS
NO	NORMALLY OPEN
OA	OUTSIDE AIR
POC	POINT OF CONNECTION
RA	RETURN AIR
SA	SUPPLY AIR
SP	STATIC PRESSURE
TEMP	TEMPERATURE
UNO	UNLESS NOTED OTHERWISE
V	VOLTS
W	WATT
WC	WATER COLUMN
WP	WALL PENETRATION

HVAC SYMBOLS

DAMPER

LOUVER

THERMOSTAT, WALL MOUNTED
WALL TYPE VARIES, SEE S-SHEETS FOR WALL TYPE

ELECTRIC MOTOR

FLOW DIRECTION, EXHAUST LOUVER OR SUPPLY DIFFUSER/GRILLE

FLOW DIRECTION, INTAKE LOUVER OR EXHAUST/RETURN GRILLE

HVAC GENERAL NOTES

1. MATERIALS, METHODS AND INSTALLATION SHALL COMPLY WITH THE CONTRACT SPECIFICATIONS AND WITH THE PROVISIONS OF THE 2018 INTERNATIONAL MECHANICAL CODE, 2018 INTERNATIONAL BUILDING CODE, 2018 INTERNATIONAL FIRE CODE AS AMENDED BY THE STATE OF WASHINGTON AND THE LOCAL AUTHORITY HAVING JURISDICTION.
2. THESE PLANS ARE SCHEMATIC AND DO NOT SHOW EXACT ROUTING OR EVERY OFFSET, WHICH MAY BE REQUIRED. THE HVAC CONTRACTOR IS TO COORDINATE WITH ALL OTHER TRADES AND IS TO VERIFY ALL CLEARANCES BEFORE COMMENCING WORK.
3. CONTRACTOR SHALL VERIFY THE DIMENSIONS WITH THE EQUIPMENT MANUFACTURER TO PROVIDE DUCT TRANSITIONS TO HVAC VENTILATORS, FANS, LOUVERS, OR SUPPLY/EXHAUST GRILLES TO MATCH THE INLET/OUTLET DIMENSIONS OF THE EQUIPMENT.
4. PROVIDE EARTHQUAKE RESTRAINT FOR HVAC EQUIPMENT IN ACCORDANCE WITH SMACNA RESTRAINT MANUAL AS REQUIRED BY 2018 INTERNATIONAL BUILDING CODE REQUIREMENTS.
5. CONSTRUCTION, SUPPORTS AND INSTALLATION SHALL BE INSTALLED AND COMPLY WITH THE 2018 INTERNATIONAL MECHANICAL CODE (IMC) AND WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS-METAL AND FLEXIBLE.
6. ALL DUCTWORK IS CLASSIFIED AS LOW PRESSURE.
7. BALANCING: ALL HVAC SYSTEMS SHALL BE BALANCED BY A LICENSED CONTRACTOR IN ACCORDANCE WITH ACCEPTED ENGINEERING STANDARDS AND SPECIFICATION.
8. LOCATE THERMOSTATS 5 FEET AFF. UNLESS OTHERWISE NOTED.
9. BUILDING HVAC DOCUMENTS SUCH AS RECORDS, CALCULATIONS, COMPLIANCE FORMS, AND EQUIPMENT MANUALS SHALL BE SUPPLIED TO THE BUILDING OWNER.

FAN SCHEDULE

BUILDING	ROOM NAME	UNIT NO.	TYPE	MANUFACTURER & MODEL NO.	HP, VOLTAGE, AND PHASE	CONTROLS	CFM AND STATIC PRESSURE	REMARKS
BOOSTER PUMP STATION	BOOSTER PUMP STATION	01 SA 01	SIDEWALL SUPPLY ACCESORIES	GREENHECK SHORT WALL HOUSING OR EQUAL	N/A	N/A	N/A	PROVIDE SHORT-WALL HOUSING WITH MOTORIZED DAMPER [01 MD 01], SUPPLY FAN OMITTED, & HI-PRO POLYESTER FINISH.
		01 EF 01	SIDEWALL EXHAUST FAN	GREENHECK SE1-12-432-VG OR EQUAL	1/4 HP 115 V 1 Ø	01 T 01	500 CFM @ 0.25" WC	PROVIDE THERMAL OVERLOAD, FACTORY-MOUNTED CONTROL TRANSFORMER, NEMA 4X DISCONNECT, LONG-WALL HOUSING WITH MOTORIZED DAMPER [01 MD 02], S.S. FASTENERS, S.S SHAFT, & HI-PRO POLYESTER FINISH.

HEATER SCHEDULE

BUILDING	ROOM NAME	UNIT NO.	TYPE	MANUFACTURER & MODEL NO.	KW OUTPUT	CONTROLS	VOLTAGE AND PHASE	MOUTING TYPE	REMARKS
BOOSTER PUMP STATION	BOOSTER PUMP STATION	01 HT 01	UNIT HEATER	QMARK MUH OR EQUAL	3 KW	INTERNAL	480 V 3 Ø	WALL BRACKET	PROVIDE INTERNAL THERMOSTAT, INTEGRAL DISCONNECT, MOUNT 9'-0" ABOVE FINISH FLOOR.

CONTROL SCHEDULE

BUILDING	ROOM NAME	UNIT NO.	TYPE	CONTROLLED EQUIPMENT	MANUFACTURER & MODEL NO.	HEAT SET POINT	COOL SET POINT	VOLTAGE AND PHASE	REMARKS
BOOSTER PUMP STATION	BOOSTER PUMP STATION	01 T 01	PROGRAMMABLE THERMOSTAT	01 EF 01	GREENHECK TEMP/HUMID CONTROLLER OR EQUAL	N/A	95 °F	12 VDC	

CONTROL DAMPER SCHEDULE

BUILDING	ROOM NAME	DAMPER NO.	FRAME TYPE	MANUFACTURER & MODEL NO.	VOLTAGE, AND PHASE	NOMINAL SIZE (WxH)	ACTUATOR MFR.	ACTUATOR MOUNTING	NO. OF ACTUATORS	FAIL POSITION	REMARKS
BOOSTER PUMP STATION	BOOSTER PUMP STATION	01 MD 01	CHANNEL	GREENHECK ICD-45 OR EQUAL	115 V 1 Ø	18" X 18"	BELLIMO OR EQUAL	EXTERNAL	1	OPEN	PROVIDE HI-PRO POLYESTER FINISH. OPEN WHEN FAN IS RUNNING, OTHERWISE CLOSED.
		01 MD 02	CHANNEL	GREENHECK ICD-45 OR EQUAL	115 V 1 Ø	18" X 18"	BELLIMO OR EQUAL	EXTERNAL	1	OPEN	PROVIDE HI-PRO POLYESTER FINISH. OPEN WHEN FAN IS RUNNING, OTHERWISE CLOSED.

HVAC EQUIPMENT & AIR DEVICE IDENTIFICATIONS

EQUIPMENT TYPE (SEE LIST BELOW)
XX POL XX
EQUIPMENT NUMBER (SEQUENTIAL LISTING)
AREA NUMBER (SEE G-SHEETS)

AREA NUMBER (SEE G-SHEETS)
AIR DEVICE TYPE (SEE LIST BELOW)
SX-X
XXX
EQUIPMENT NUMBER (SEQUENTIAL LISTING)
FLOWRATE AT AIR DEVICE

EQUIPMENT

EF	EXHAUST FAN
HT	HEATER
MD	MOTORIZED DAMPER
SF	SUPPLY FAN
T	THERMOSTAT

AIR DEVICE

E	EXHAUST GRILLE
LVR	LOUVER
R	RETURN GRILLE
S	SUPPLY DIFFUSER/GRILLE

0 1" 2"
TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

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DATE: SEP 2023
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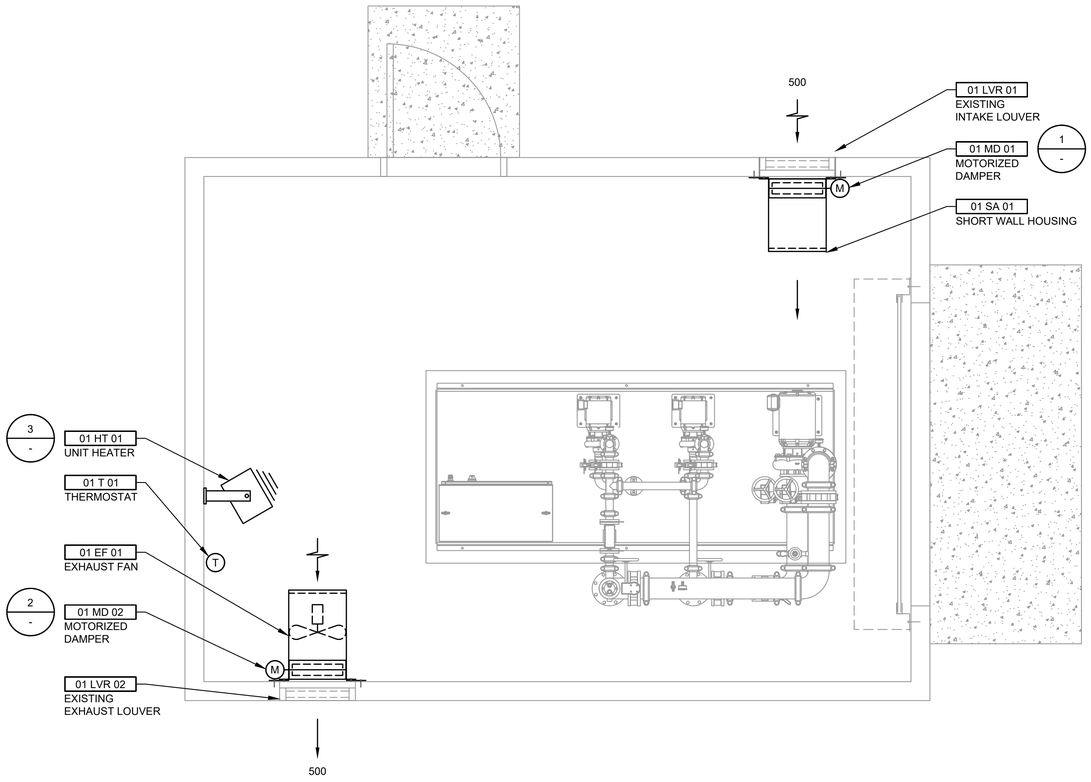
CHECKED: AMP
APPROVED: AMP

No.	REVISION	DATE	APPD

AARON M. PEASE
STATE OF WASHINGTON
40276
REGISTERED PROFESSIONAL ENGINEER
09/08/2023

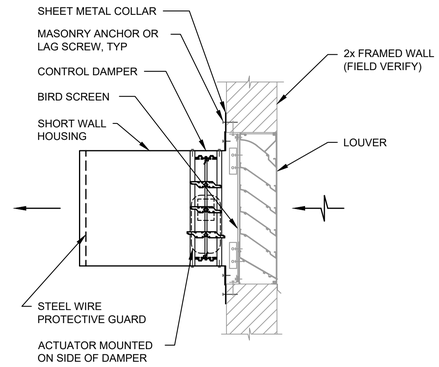
MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
HVAC DESIGN CRITERIA NOTES AND SCHEDULES

SHEET: H-1
OF: 2
JOB NO.: 20275
DWG:H_BPS_PLN_PH3



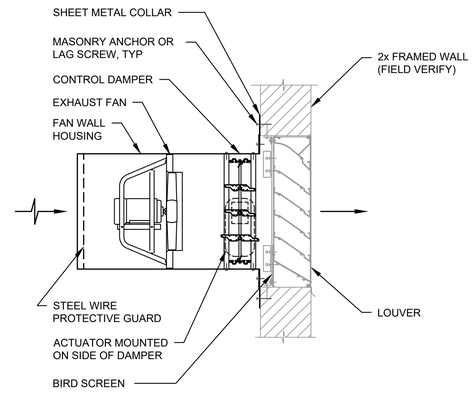
HVAC PLAN

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



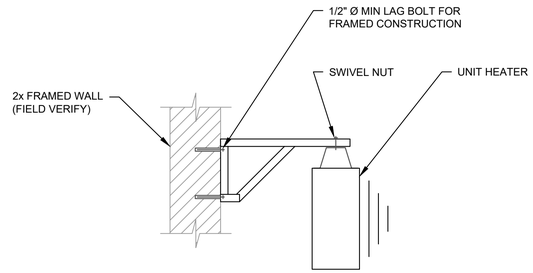
1 - CONTROL DAMPER INTAKE

SCALE: 1"=1'-0"



2 - SIDEWALL EXHAUST FAN W/ LOUVER AND CONTROL DAMPER

SCALE: 1"=1'-0"



3 - HEATER MOUNTING

SCALE: 1"=1'-0"

0 1" 2"

TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
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SEATTLE, WASHINGTON 98144 • (206) 284-0860

DATE: SEP 2023	DRAWN: ASD	CHECKED: AMP	APPROVED: AMP

No.	REVISION	DATE	APPD

ANTHONY M. PEASE
REGISTERED PROFESSIONAL ENGINEER
STATE OF WASHINGTON
21628
10/31/2023

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
HVAC PLAN

SHEET: H-2
OF: 2
JOB NO.: 20275
DWG:H_BPS_PLN_PH3

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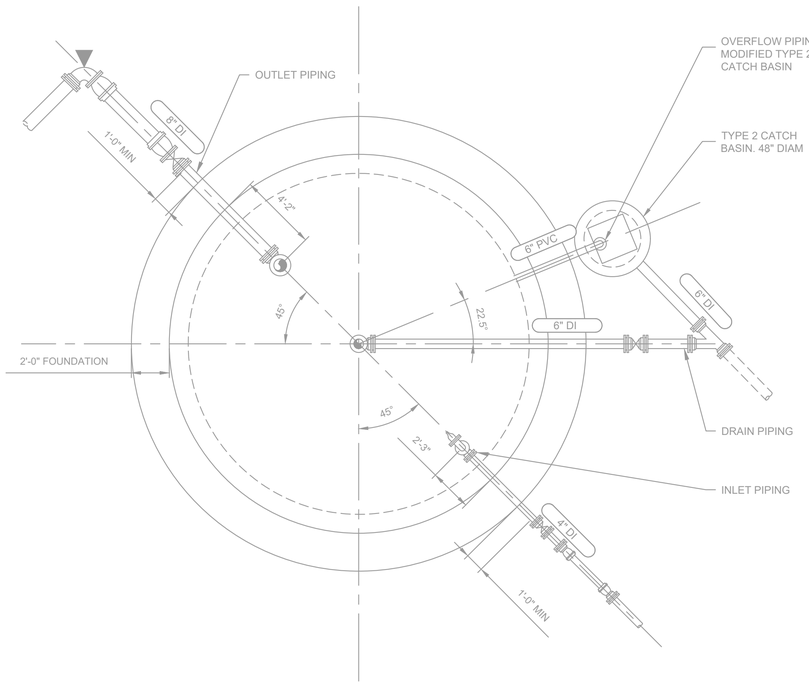
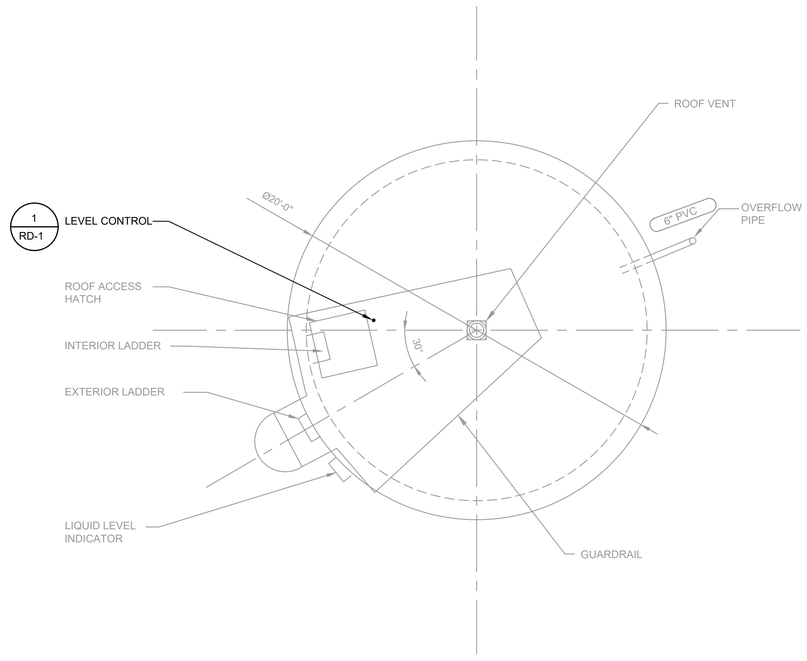


RESERVOIR FLOOR PLAN

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



RESERVOIR ROOF PLAN

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

0 1" 2"

TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
1130 RAINIER AVENUE SOUTH, SUITE 300
SEATTLE, WASHINGTON 98144 • (206) 284-0860

DATE: SEP 2023
DRAWN: RAH
CHECKED: ANM
APPROVED: MBJ

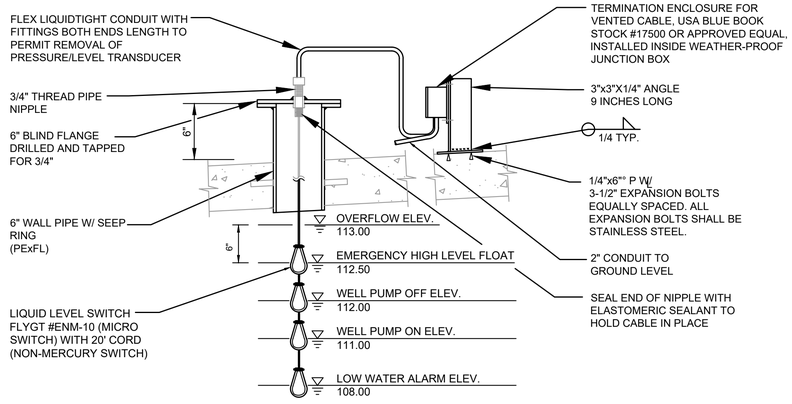
No.	REVISION	DATE	APPD

MICHAEL B. JOHNSON — STATE OF WASHINGTON — 36486 — REGISTERED PROFESSIONAL ENGINEER — 11/20/23

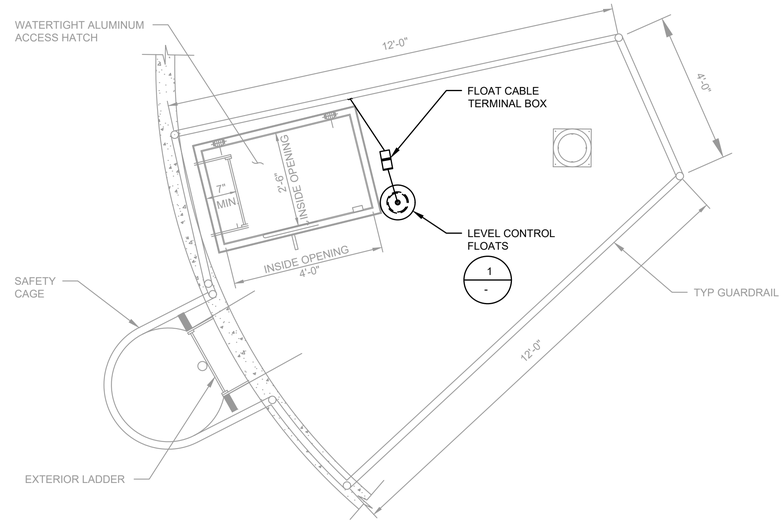
MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
RESERVIOR FLOOR AND ROOF PLAN

SHEET: R-1
OF: 1

JOB NO.: 20275
DWG:M–RESERVIOR



1 / - **LEVEL CONTROL**
NOT TO SCALE



2 / - **RESERVOIR ROOF ACCESS HATCH**
SCALE: 1/2"=1'-0"

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
1130 RAINIER AVENUE SOUTH, SUITE 300
SEATTLE, WASHINGTON 98144 • (206) 284-0860

DATE: SEP 2023	DRAWN: RAH	CHECKED: ANM	APPROVED: MBJ

No.	REVISION	DATE	APPD

MICHAEL B. JOHNSON — STATE OF WASHINGTON — 39245 — REGISTERED PROFESSIONAL ENGINEER
11/20/23

MASON COUNTY PUD #1
MASON COUNTY
WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
RESERVIOR DETAILS

SHEET: **RD-1**
OF: **1**
JOB NO.: 20275
DWG:M-RES-DTS

ABBREVIATIONS

A	AMPERE (AMP)
AC	ALTERNATING CURRENT
AF	BREAKER FRAME SIZE (IN AMPS)
AI	ANALOG INPUT
AIC	AMPERES–INTERRUPTING CAPACITY
AL	ALUMINUM
AM	AMMETER
AO	ANALOG OUTPUT
AT	BREAKER TRIP (SETTING IN AMPS)
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BATT	BATTERY
BKR	BREAKER
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CST	CONTROL STATION
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DISCRETE INPUT
DIST	DISTRIBUTION
DO	DISCRETE OUTPUT
DTWV	DISCHARGE–TO–WASTE VALVE
EIOM	EXTENDED I/O MODULE
ETC	ELAPSED TIME/COUNTER METER
ETM	ELAPSED TIME METER
ENCL	ENCLOSURE
EXIST	EXISTING
FDR	FEEDER
FLA	FULL LOAD AMPS
FU	FUSE
FVNR	FULL VOLTAGE NON REVERSING
FVR	FULL VOLTAGE REVERSING
FY	FLOW COMPUTATION
G	GROUND CONDUCTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
H	HORN
HA	HAND–AUTO
HIM	HUMAN INTERFACE MODULE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND–OFF–AUTO
HOR	HAND–OFF–REMOTE
HP	HORSEPOWER
JCXXX	JUNCTION BOX, CONTROL
JPXXX	JUNCTION BOX, POWER
JSXXX	JUNCTION BOX, SIGNAL
kA	KILOAMPERES
kAIC	KILOAMPERES–INTERRUPTING CAPACITY
kCM	THOUSAND CIRCULAR MILLS
kV	KILOVOLT
kVA	KILOVOLT–AMPERE
kVAh	KILOVOLT–AMPERE HOUR
kVAR	KILOVAR (REACTIVE KILOVOLT–AMPERE)
KVARh	KILOVAR–HOUR
kW	KILOWATT
kWh	KILOWATT–HOUR
LA	LIGHTNING ARRESTOR
LAN	LOCAL AREA NETWORK
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LINE	POWER LINE/POWER BLOCK
LV	LOW VOLTAGE
M	MAGNETIC CONTACTOR
mA	MILLIAMPERES
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MILLS
MCP	MOTOR CIRCUIT PROTECTOR
MOV	METAL OXIDE VARISTOR
MS	MOTOR STARTER
MSDS	MOTOR SAFETY DISCONNECT SWITCH
MTS	MANUAL TRANSFER SWITCH
MTU	MASTER TELEMETRY UNIT
mV	MILLIVOLT
MW	MEGAWATT
N	NEUTRAL CONDUCTOR
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRIC MANUFACTURERS ASSOC.
NESC	NATIONAL ELECTRICAL SAFETY CODE
NFPA	NATIONAL FIRE PROTECTION AGENCY
OCPD	OVERCURRENT PROTECTION DEVICE
OE	OVERHEAD ELECTRIC
OIU	OPERATOR INTERFACE UNIT
OL	OVERLOAD, THERMAL
OLR	OVERLOAD RELAY
P	POLE
PF	POWER FACTOR
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROL
PMR	PHASE MONITOR RELAY
PMU	POWER MONITOR UNIT
POT	POTENTIOMETER
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE CONDUIT
PVC–RGS	PVC COATED RGS
RGS	RIGID GALVANIZED STEEL CONDUIT
RVSS	REDUCED–VOLTAGE SOFT START
RTU	REMOTE TELEMETRY UNIT
s	SECOND
SHD	SHIELDED
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
SUSE	SUITABLE FOR USE AS A SERVICE ENTRANCE
TB	TERMINAL BLOCK
TDAD	TIME DELAY AFTER DE–ENERGIZATION
TDAE	TIME DELAY AFTER ENERGIZATION
TQS	TORQUE SWITCH
TP	TWISTED PAIR
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRIAD
TT	TWISTED TRIAD
T/M	THERMAL MAGNETIC
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLT
VA	VOLT–AMPERE
VFD	VARIABLE FREQUENCY DRIVE
VMR	VOLTAGE MONITORING RELAY
W	WATT
WAN	WIDE AREA NETWORK
Wh	WATT–HOUR
WP	WEATHER PROOF
XFMR	POWER TRANSFORMER

SYMBOL LEGEND

PLAN SYMBOLS

- CONDUIT DOWN
- CONDUIT UP
- CONDUIT STUB UP/END CAP
- DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- COMMUNICATION OUTLET
- TELEPHONE OUTLET
- SPECIAL OUTLET
- SIMPLEX RECEPTACLE
- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE (HIDDEN)
- QUAD RECEPTACLE
- QUAD RECEPTACLE (HIDDEN)
- FLOOR MOUNTED RECEPTACLE
- OR — LED LIGHT POLES (SINGLE / DUAL)
- #12 AWG GROUND CONDUCTOR
- #12 AWG NEUTRAL CONDUCTOR
- #12 AWG BRANCH CONDUCTOR
- CROSSMARKS INDICATE QUANTITY AND USE OF CONDUCTORS
- LIGHT SWITCH, X = 3 = 3–WAY K = KEY; 4 = 4–WAY M = MOTION
- SEAL OFF
- MOTOR X = HORSE POWER
- XX= CV CHECK VALVE; FE FLOW ELEMENT; FI FLOW INDICATOR; FIT FLOW INDICATOR/TRANSMITTER; FS FLOW SWITCH; FT FLOW TRANSMITTER; HD HEAT DETECTOR; IS INTRUSION SWITCH; J JUNCTION BOX; L LIMIT SWITCH; LE LEVEL ELEMENT; LI LEVEL INDICATOR; LIT LEVEL INDICATOR/TRANSMITTER; LS LEVEL SWITCH/FLOAT; LT LEVEL TRANSDUCER; MDT MOTION DETECTOR; MFM MAGNETIC FLOW METER; MOV MOTOR OPERATOR VALVE; PC PHOTO CELL; PE PRESSURE ELEMENT; PI PRESSURE INDICATOR; PIT PRESSURE INDICATOR TRANSMITTER; PS PRESSURE SWITCH; PT PRESSURE TRANSMITTER; SD SMOKE DETECTOR; SV SOLENOID VALVE; T THERMOSTAT

ELEMENTARY WIRING DIAGRAM SYMBOLS

- CONNECTION POINT
- TERMINAL POINT
- SCREW TERMINAL
- MOUNTED ON OUTER DOOR
- MOUNTED ON INNER DOOR
- LOCKABLE DEVICE
- NC CONTACT
- NC CONTACTOR
- NO CONTACT
- NO CONTACTOR
- SOLID STATE CONTACTOR
- ALTERNATING RELAY
- CONTROL RELAY
- CONTACTOR
- "BYPASS" CONTACTOR
- "ISOLATION" CONTACTOR
- SOLID STATE CONTACT RELAY
- MOTOR RELAY
- TIME DELAY RELAY (TDAE)
- TIME DELAY RELAY (TDAD)
- LIGHT EMITTING DIODE
- OR — DIODE
- LIGHT FIXTURE; X = REFERENCE LIGHTING SCHEDULE IF APPLICABLE
- "PUSH TO TEST" LED PILOT LIGHT; A = AMBER, B = BLUE, G = GREEN, R = RED, W = WHITE
- SELECTOR SWITCHES (OR)
- HAND–OFF–AUTO SWITCHES (OR)
- ON–OFF–RESET SWITCH

ELEMENTARY WIRING DIAGRAM SYMBOLS (cont.)

- GFCI DUPLEX OUTLET
- DUPLEX OUTLET
- FUSE
- FUSED SWITCH W/ LED
- N.O. TOGGLE SPST SWITCH
- N.C. TOGGLE SPST SWITCH
- N.O. TEMPERATURE SWITCH
- N.C. TEMPERATURE SWITCH
- N.O. PRESSURE SWITCH
- N.C. PRESSURE SWITCH
- N.O. LIMIT SWITCH
- N.C. LIMIT SWITCH
- N.O. FLOW SWITCH
- N.C. FLOW SWITCH
- N.O. FLOAT SWITCH
- N.C. FLOAT SWITCH
- N.O. DIFFERENTIAL PRESSURE SWITCH
- N.C. DIFFERENTIAL PRESSURE SWITCH
- N.O. PUSHBUTTON
- N.C. PUSHBUTTON
- N.O. MUSHROOM PUSHBUTTON
- N.C. MUSHROOM PUSHBUTTON
- TDAE, N.O., TIME DELAY CLOSE, INSTANTANEOUS RE–OPEN
- TDAE, N.C., TIME DELAY OPEN, INSTANTANEOUS RE–CLOSE
- TDAD, N.O., INSTANTANEOUS CLOSE, TIME DELAY RE–OPEN
- TDAD, N.C., INSTANTANEOUS OPEN, TIME DELAY RE–CLOSE
- GROUND EQUIPMENT/CHASSIS
- GROUND, ISOLATED
- RESISTOR
- POTENTIOMETER
- SOLENOID VALVE COIL
- METAL OXIDE VARISTOR (MOV)
- TRANSFORMER WINDING/ REACTOR/CHOKE

ONE LINE SYMBOLS

- CAPACITOR
- REACTOR/CHOKE
- M — CIRCUIT BREAKER, MAGNETIC ONLY
- T/M — CIRCUIT BREAKER, THERMAL–MAGNETIC
- CONNECTION POINT
- CONTACTOR
- CURRENT TRANSFORMER
- FUSE
- FUSIBLE DISCONNECT
- AM — ANALOG AMMETER
- THERMAL OVERLOAD RELAY
- GROUND EQUIPMENT/CHASSIS
- S/N — SOLID NEUTRAL
- TRANSFORMER

GENERAL SYMBOLS

- XXXXX — CONDUIT
- XX XXXX XX — TAG LABEL
- GFCI — GFCI PANELBOARD CIRCUIT
- X — AREA ID TAG
- DEMOLITION (DEMO)
- INTRINSICALLY SAFE AREA
- CLEARANCE AREA

LINETYPES

- EXPOSED CONDUIT
- UNDERGROUND (BURIED) CONDUIT
- GROUNDING ELECTRODE CONDUCTORS
- EMBEDDED CONDUIT (WALLS, CONCRETE, ETC.)

NOTE: UNLESS NOTED OTHERWISE.

NOTE:
THIS IS A GENERAL LEDGER SHEET. ALL SYMBOLS MAY NOT APPLY.

GENERAL ELECTRICAL NOTES:

SITE AND BUILDING PLANS:

1. CONDUIT ROUTING IS SHOWN FOR CLARITY. ACTUAL ROUTING MAY BE MORE DIRECT AND IS LEFT TO THE CONTRACTOR FOLLOWING SPECIFICATIONS 16130. NON–ELECTRICAL BURIED PIPING HAS ROUTING PRIORITY OVER ELECTRICAL BURIALS.
2. ALL TRENCHING SHALL BE PER ELECTRICAL TRENCHING DETAIL, REFERENCE ED–SHEETS.
3. THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO PROTECT EXISTING UTILITIES.

GENERAL CONTROL PANEL NOTES:

1. UNLESS SPECIFICALLY NOTED OTHERWISE ON THE CONTROL PANEL DETAILS, THE FOLLOWING NOTES APPLY.

   1.1 ALL ENCLOSURES SHALL BE PROVIDED WITH AN ENGRAVED NAMEPLATE CORRESPONDING TO THE ASSOCIATED TAG ID NUMBER AND TAG DESCRIPTION.

   TAG DESCRIPTION ← 1/4" TEXT
   [TAG NUMBER] ← 3/16" TEXT

   NOTE: MOTOR STARTER NAMEPLATES SHALL BE BLACK WITH WHITE LETTERING, REFERENCE MCC PANEL DOOR NAMEPLATE SCHEDULE.

   1.2 WHERE PANELS CONTAIN POWER FROM MULTIPLE SOURCES, PROVIDE A YELLOW SAFETY STICKER, APPROXIMATELY 2" x 3", AS SHOWN BELOW.

   CAUTION
   THIS DEVICE IS POWERED FROM SEVERAL SOURCES
   THE DISCONNECT SWITCH WILL NOT SHUT OFF ALL SOURCES OF ELECTRICAL ENERGY

INDOOR INSTALLATIONS:

1. ALL EXPOSED PORTIONS OF CONDUITS FROM UNDERGROUND SHALL BE RGS.
2. EXCEPT FOR INSTRUMENTATION ("S" CONDUITS) ALL PORTIONS OF CONDUITS IN THE ATTIC SHALL BE EMT.
3. PANELS MOUNTED ON INTERIOR WALLS SHALL BE SUPPORTED TO THE WALL WITH 1/2–INCH (MINIMUM) GALVANIZED UNISTRUT.

OUTDOOR INSTALLATIONS:

1. ALL MOUNTING FASTENERS (NUTS, BOLTS SCREWS, WASHERS, ETC.) SHALL BE 316 STAINLESS STEEL.
2. ALL MOUNTING BRACKETS AND BRACING SHALL BE 316L STAINLESS STEEL.
3. ALL CONNECTIONS INTO ENCLOSURES SHALL BE WATERTIGHT, MADE INTO THE BOTTOM OF THE PANELS. TOP AND SIDE CONNECTIONS, WHERE NECESSARY, SHALL USE MYERS–TYPE HUBS. REFERENCE SPECIFICATION 16130.
4. PANELS MOUNTED ON VERTICAL WALLS SHALL BE SUPPORTED TO THE WALL WITH 1/2–INCH (MINIMUM) 316L STAINLESS STEEL UNISTRUT.
5. ENCLOSURE SHALL INCLUDE WELDED MOUNTING TABS. HOLES SHALL NOT BE DRILLED THROUGH ENCLOSURE SURFACES FOR MOUNTING PURPOSE.

CABLE AND CONDUIT NOTES:

1. REFERENCE SPECIFICATION 16120 FOR CONDUCTORS, INSTRUMENTATION, COMMUNICATION, AND OTHER SPECIAL CABLES AND CONDUCTORS.
2. REFERENCE SPECIFICATION 16130 FOR RACEWAYS, BOXES, AND JUNCTION BOX TYPES, AND HANDHOLE, PULLBOX, AND VAULT CONDUIT INSTALLATION METHODS.
3. CONDUIT NUMBERS ARE FORMATTED AS:

   TAANN(S) WHERE: T = TYPE (P=POWER; C=CONTROL; S=SIGNAL/INSTRUMENTATION)
   AA= AREA NUMBER (01–99)
   NN= CONDUIT NUMBER WITHIN THE AREA (01–99)
   S = SPARE CONDUIT (~ "TILDE") (IF APPLICABLE)

   P0319~ = AREA 03 POWER CONDUIT NO. 19, SPARE
   C0112 = AREA 01 CONTROL CONDUIT NO. 12
   S0521~ = AREA 05 INSTRUMENTATION CONDUIT NO. 21, SPARE

4. CABLE AND CONDUIT SCHEDULES:

   4.1. THE CABLE AND CONDUIT SCHEDULE PROVIDES CONDUIT NUMBER, SOURCE, DESTINATION, AND SIZE AS WELL AS CONDUCTOR AND CABLE REQUIREMENTS. REFERENCE SPECIFICATION 16130 FOR CONDUIT COMPOSITION AND COATING.

   4.2. CONDUITS MARKED WITH "* n" (WHERE n = 1, 2, OR 3) SHALL BE 100% CONTINUOUS PER SPECIFICATION 16130.

   SPECIFICALLY, CONDUITS MARKED WITH:

   "* 1" NOT USED
   "* 2" NOT USED
   "* 3" DENOTE INSTRUMENTATION CIRCUITS THAT ARE NOT INTRINSICALLY SAFE. IF THESE CONDUITS ENTER A PULLBOX, THEN THEY MUST CONNECT TO A "TYPE 3" J–BOX INSIDE THE PULLBOX.

5. REGARDLESS OF THE TYPE OF CONDUIT BEING ROUTED TO A MOTOR, THE LAST 18 INCHES OF THE CONDUIT CONNECTING TO THE MOTOR SHALL BE LFMC.

ENVIRONMENT DETERMINATION:

1. THE INSIDE OF THE BUILDING, BELOW THE FINISHED CEILING SHALL BE CONSIDERED "WET"; ABOVE THE FINISHED CEILING SHALL BE CONSIDERED "DRY".
2. REFERENCE DIVISION 16 SPECIFICATIONS FOR REQUIREMENTS OF INSTALLATIONS IN WET AND DRY AREAS.

SHEET LIST

DEVICE TAG LIST

TAG ID#	TAG DESCRIPTION	VINTAGE
01 AD 01	AUTODIALER	NEW
01 ATS 01	AUTOMATIC TRANSFER SWITCH AND SERVICE DISCONNECT (SUSE)	NEW
01 CPX 01	CONTROL PANEL, WELL NO. 1 BUILDING	EXISTING
01 EF 01	EXHAUST FAN	NEW
01 GADP 01	GENERATOR AUXILIARY DEVICE PANEL	NEW
01 GCB 01	GENERATOR CIRCUIT BREAKER, PRIMARY	NEW
01 GCB 02	GENERATOR CIRCUIT BREAKER, SECONDARY	NEW
01 GCP 01	GENERATOR CONTROL PANEL	NEW
01 GEN 01	GENERATOR, STANDBY	NEW
01 HT 01	ROOM HEATER	NEW
01 IS 01	INTRUSION SWITCH, ROOF VENT	NEW
01 IS 02	INTRUSION SWITCH, ROOF HATCH	NEW
01 IS 03	INTRUSION SWITCH, LADDER GUARD	NEW
01 LS 01	LEVEL SWITCH, RESERVOIR HIGH LEVEL	NEW
01 LS 02	LEVEL SWITCH, OFF	NEW
01 LS 03	LEVEL SWITCH, ON	NEW
01 LS 04	LEVEL SWITCH, LOW ALARM	NEW
01 MB 01	UTILITY METER BASE	NEW
01 MD 01	MOTORIZED DAMPER NO. 1	NEW
01 MD 02	MOTORIZED DAMPER NO. 2	NEW
01 MFM 01	MAGNETIC FLOW METER	NEW
01 MTR 01	MOTOR, BOOSTER PUMP NO. 1	NEW
01 MTR 02	MOTOR, BOOSTER PUMP NO. 2	NEW
01 MTR 03	MOTOR, BOOSTER PUMP NO. 3 (HIGH FLOW)	ADDITIVE
01 PB 01	PANELBOARD, 480/277 V, 3 PH, 100 A BUS, 18 CKT	NEW
01 PB 02	PANELBOARD, 208/120 V, 3 PH	NEW
01 PBX 01	PANELBOARD, WELL NO. 1 BUILDING	EXISTING
01 PCP 01	PUMP CONTROL PANEL	NEW
01 PT 01	PRESSURE TRANSDUCER, SUCTION	NEW
01 PT 02	PRESSURE TRANSDUCER, DISCHARGE	NEW
01 RES 01	RESERVOIR	EXISTING
01 SD 01	SMOKE DETECTOR	NEW
01 SPD 01	SURGE PROTECTION DEVICE	NEW
01 T 01	THERMOSTAT, EXHAUST FAN	NEW
01 UT 01	UTILITY TRANSFORMER BANK, POLE MOUNTED	NEW
01 XFMR 01	TRANSFORMER, 480–208/120 3PH	NEW
01 XFMR 02	TRANSFORMER, 480–240/120 3PH	NEW

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No.	REVISION	DATE	APPD

JASON E. NEWQUIST — STATE OF WASHINGTON — 45511 — REGISTERED PROFESSIONAL ENGINEER — 11/20/23

MASON COUNTY PUD #1
WASHINGTON
MASON COUNTY
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 – BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

ELECTRICAL SYMBOLS AND ABBREVIATIONS

SHEET: E–1
OF: 11
JOB NO.: 20275
DWG:E_SYM_ABBR_PH3

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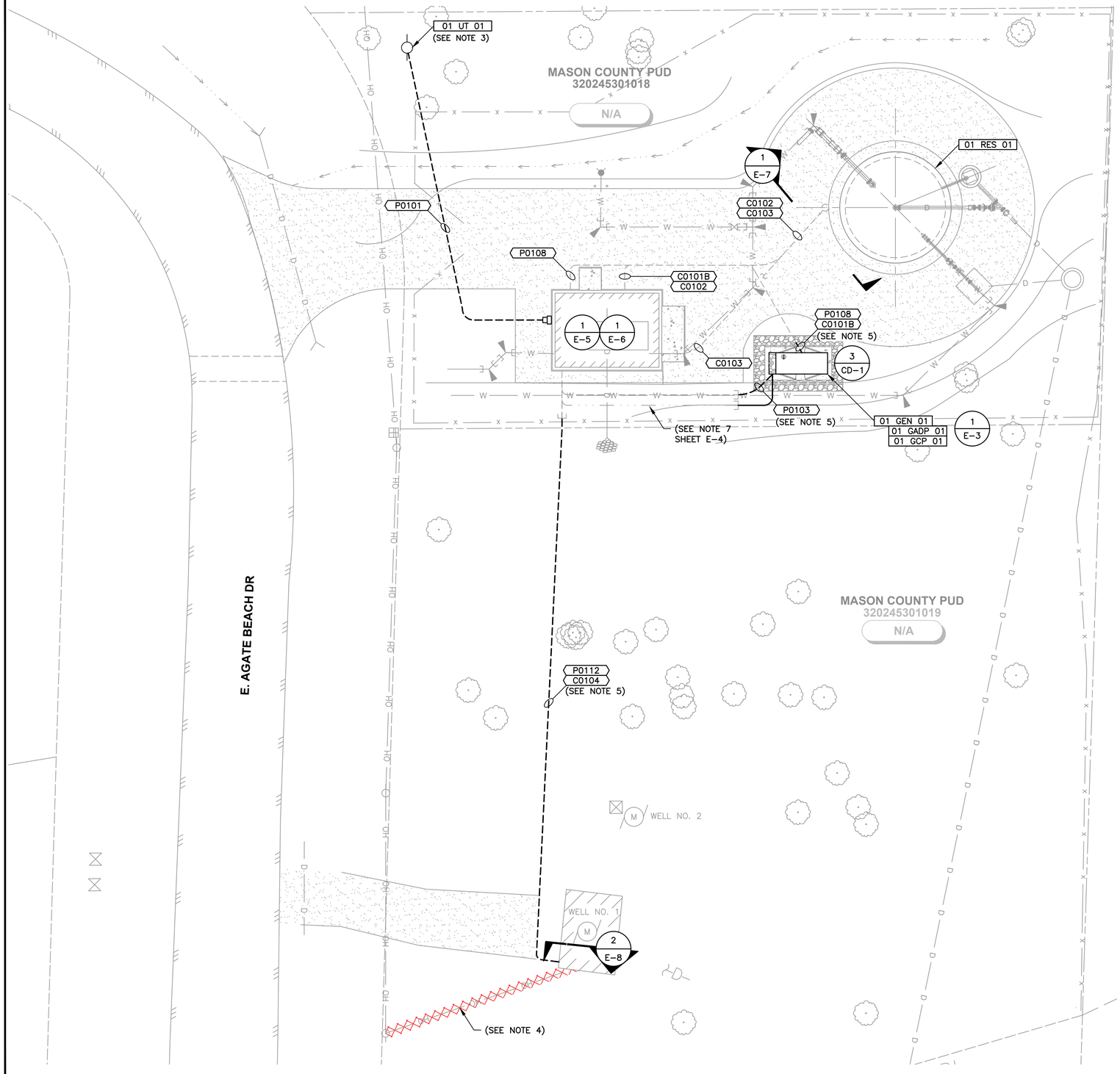

SITE ELECTRICAL PLAN

SCALE: 1"=10'-0"

0 1" 2"

TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

OVERVIEW OF WORK

THIS SUMMARY OF ELECTRICAL WORK IS INCLUDED AS A COURTESY AND IS INTENDED TO PROVIDE A GENERAL UNDERSTANDING OF ELECTRICAL DESIGN INTENT AND MAJOR ELECTRICAL CONSTRUCTION TASKS. IT IS NOT PROVIDED AS A COMPLETE LIST OF WORK AND SHALL NOT BE USED FOR BIDDING PURPOSES. REFER TO ALL PLANS AND SPECIFICATIONS.

1. THIS PROJECT ADDS A SKID BASED BOOSTER SYSTEM TO THE EXISTING BUILDING SHELL. IT ALSO ADDS ELECTRICAL AND MECHANICAL TO THE BUILDING SHELL.
2. INSTRUMENTATION, CONTROLS AND MONITORING WILL BE ADDED TO THE RESERVOIR SHELL.
3. EMERGENCY GENERATOR WILL BE PART OF THIS PROJECT.
4. THE NEW DISTRIBUTION WILL ALSO FEED WELL NO. 1, AN EXISTING FACILITY LOCATED ON THE ADJACENT LOT TO THE SOUTH. THE EXISTING UTILITY FEED TO WELL NO. 1 WILL BE DEMOLISHED AT THE END.
5. MOTOR [01 MTR 03] AND HIGH FLOW BOOSTER PUMP NO. 3 WILL BE PART OF ADDITIVE BID ITEM NO. 1.

NOTES:

1. SITE GROUNDING NOT SHOWN, REFERENCE SHEET E-4.
2. APPLICATION FOR NEW SERVICE HAS BEEN MADE BY OWNER. CONTRACTOR IS RESPONSIBLE FOR SECONDARY TRENCHING TO THE PUD'S POINT OF SERVICE. POLE NOTED HERE IS FOR BIDDING PURPOSES ONLY. EXACT SITE LOCATION TBD BY MASON COUNTY PUD NO. 3.
3. LOCATION OF NEW POLE AND TRANSFORMER BANK IS APPROXIMATE. REFERENCE SPECIFICATION 16210 FOR ADDITIONAL INFORMATION AND SCOPE.
4. COORDINATE WITH PUD#3 TO DEMOLISH EXISTING SERVICE AFTER TRANSITION TO NEW FEED FROM BOOSTER BUILDING.
5. EXTEND CONDUIT FROM EXISTING STUB UP LOCATIONS. PULL CONDUCTORS AND MAKE CONNECTIONS AS SHOWN IN CABLE AND CONDUIT SCHEDULES.

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No.	REVISION	DATE	APPD

JASON R. NEWQUIST — STATE OF WASHINGTON — 45311 — REGISTERED PROFESSIONAL ENGINEER — 11/20/23

MASON COUNTY PUD #1
MASON COUNTY
WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

ELECTRICAL SITE PLAN

SHEET: E-2
OF: 11

JOB NO.: 20275
DWG:E_SP_PH3

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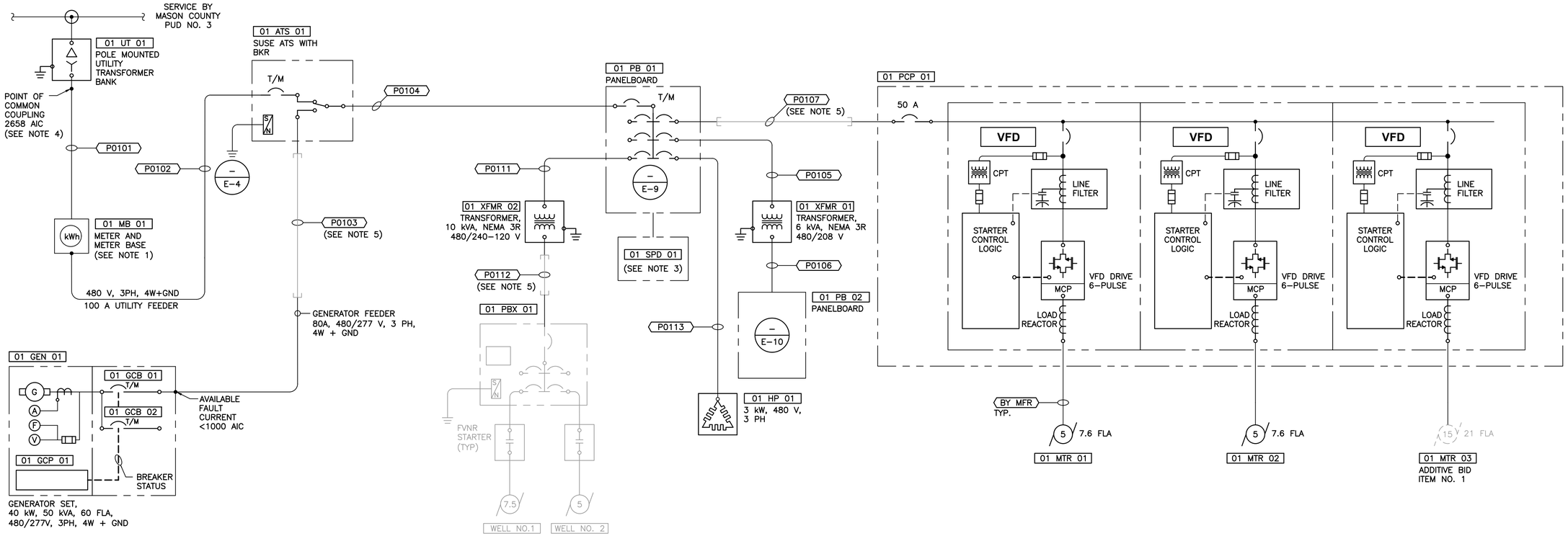

LOAD SUMMARY

(CALCULATIONS BASED ON 480 V) — D.F. = DEMAND FACTOR

LOAD DESCRIPTION	CONNECTED LOADS STARTER	HP	kVA	UTILITY LOAD DEMAND D.F.	kVA	GENERATOR LOADS D.F	kVA
[01 MTR 01], MOTOR, BOOSTER PUMP NO. 1	VFD	5.0	6.1	100%	6.1	100%	6.1
[01 MTR 02], MOTOR, BOOSTER PUMP NO. 2	VFD	5.0	6.1	0%	0.0	0%	0.0
[01 MTR 03], MOTOR, HIGH FLOW, BOOSTER PUMP, ADDITIVE BID ITEM NO. 1.	VFD	15.0	16.7	100%	16.7	100%	16.7
[01 HT 01], ROOM HEATER			3.0	100%	3.0	100%	3.0
[01 PB 02], PANELBOARD, BOOSTER			3.8	80%	3.0	80%	3.0
[01 PCP 01], PUMP CONTROL PANEL (1PH)			1.0	100%	1.0	100%	1.0
[01 XFMR 02], TRANSFORMER, 480-240/120 3PH (WELL BLDG.)			10.0	80%	8.0	80%	8.0
TOTAL kVA:			46.6		37.8		37.8
RESULTING AMPACITY AT 480 VAC, 3 PH:			56.1		45.5		45.5
SYSTEM SIZED AT: 100 A			SPARE CAPACITY:		34.5 A / 80 A*, 43.2%		
					* SYSTEM DERATED BY 25%		

POWER DEVICE SIZING

TAG NUMBER	RATED VOLTAGE	OPERATING VOLTAGE	POLES/ PHASES	AMPACITY	MIN. INTERRUPT AND WITHSTAND RATING	ENCLOSURE TYPE	NOTES
01 ATS 01	600 V	480 V	3	100 A	10 kAIC	NEMA 12	INCLUDES 100A SUSE RATED SERVICE DISCONNECT BREAKER
01 GCB 01	600 V	480 V	3	60 A	10 kAIC	IN [01 GEN 01]	
01 GCB 02	600 V	480 V	3	60 A	10 kAIC	IN [01 GEN 01]	
01 MB 01	600 V	480 V	3	100 A	10 kAIC	NEMA 3R	
01 SDS 01	600 V	480 V	3	30 A	10 kAIC	NEMA 12	

1 — MODIFIED ONE LINE DIAGRAM

ELECTRICAL POWER SOURCE

NOTES:

1. REVENUE METER IS PROVIDED BY THE POWER UTILITY COMPANY. METER BASE SHALL BE PROVIDED BY THE CONTRACTOR PER POWER UTILITY COMPANY'S SPECIFICATIONS.
2. GENERATOR CIRCUIT BREAKER [01 GCB 01] SHALL BE PROVIDED WITH A LOCKABLE HANDLE. REFERENCE SPECIFICATIONS.
3. [01 SPD 01] SHALL BE 120 kA PER PHASE/60 kA PER MODE, FULL MODE, WITH NEUTRAL, WITH FILTER AND SHALL INCLUDE INTERNAL DISCONNECT WITH OVERCURRENT PROTECTION AND A FORM C CONTACT THAT OPENS WHEN THE UNIT IS FAULTED. REFERENCE SPECIFICATION 16280. SPD SHALL BE ALLOWED TO BE SUBMITTED AS AN INTEGRAL PART OF [01 PB 01].
4. THREE PHASE SHORT CIRCUIT BOLTED FAULT CALCULATIONS ARE BASED ON INFINITE UTILITY CONTRIBUTION, +10% VARIANCE IN UTILITY VOLTAGE, -10% VARIANCE IN TRANSFORMER IMPEDANCE, AND A 45 KVA TRANSFORMER BANK WITH 2.94% ASSUMED IMPEDANCE. FAULT CALCULATIONS ALSO INCLUDE 385 AIC MOTOR REGENERATIVE CONTRIBUTION FROM ALL 3 MOTORS ADDED TO EACH FAULT POINT. ALL CALCULATIONS ARE BASED ON 480 V.
5. EXTEND CONDUIT FROM EXISTING STUB UP LOCATIONS. PULL CONDUCTORS AND MAKE CONNECTIONS AS SHOWN IN CABLE AND CONDUIT SCHEDULES.

0 1" 2"
TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

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No.	REVISION	DATE	APPD

JASON R. NEWQUIST — STATE OF WASHINGTON — 15511 — REGISTERED PROFESSIONAL ENGINEER — 10/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
ONE LINE DIAGRAM

SHEET: E-3
OF: 11
JOB NO.: 20275
DWG:E_OLD_PH3

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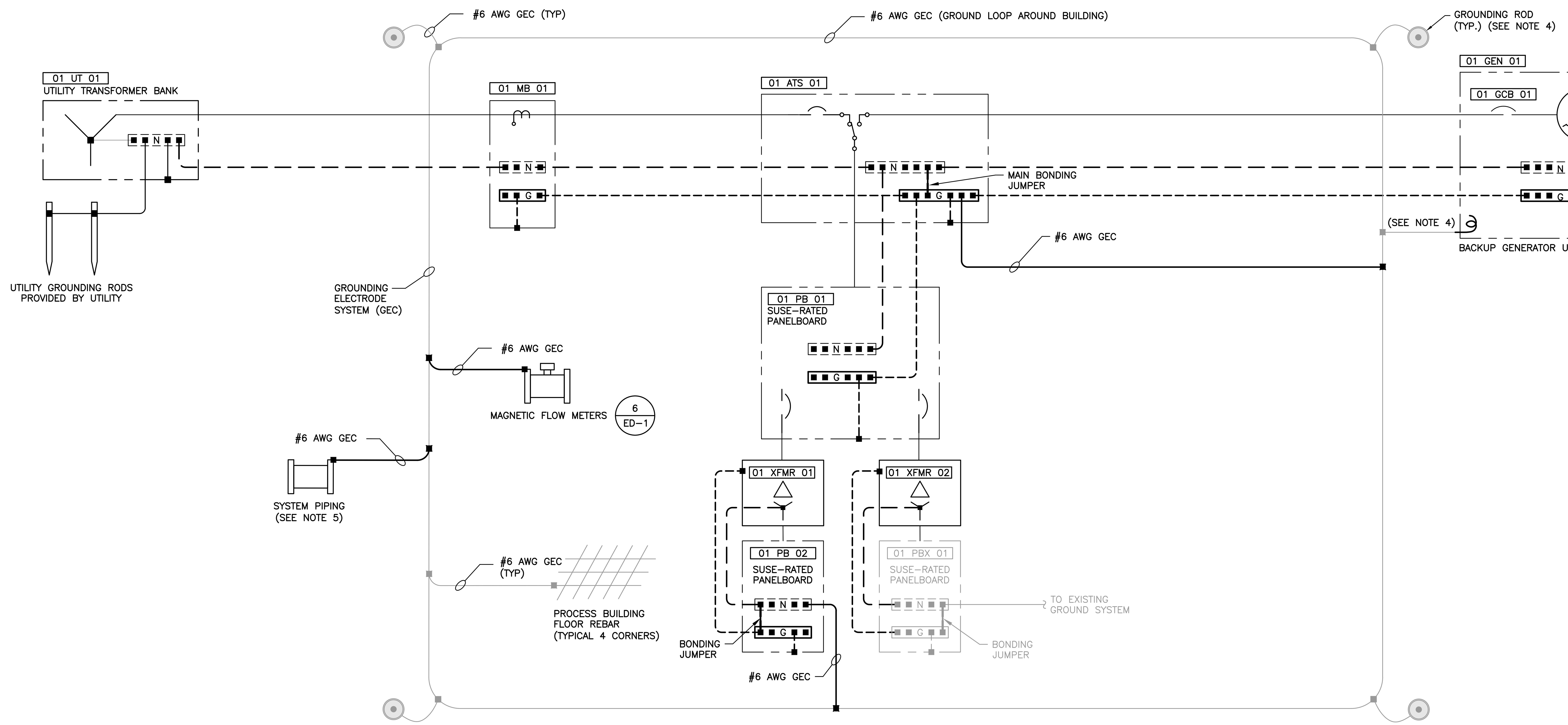

NOTES:

1. REFERENCE SPECIFICATION 16060. FADED ITEMS ARE EXISTING.
2. ALL POWER TRANSFORMERS ARE CONSIDERED SEPARATELY DERIVED SOURCES AND SHALL BE GROUNDED APPROPRIATELY. SMALL CONTROL TRANSFORMERS DEDICATED TO DRIVES AND CONTROLS ARE NOT CONSIDERED SEPARATELY DERIVED. GROUND SEPARATELY–DERIVED SOURCE [01 XFMR 01] TO THE GROUND LOOP USING AN INSULATED, GREEN, #6 AWG GEC.
3. NEUTRALS ARE NOT SWITCHED IN THE ATS UNITS.
4. BARE COPPER GROUND STUB OUT BEYOND BUILDING IS EXISTING. EXTEND TO THE GROUND LOOP JUST UNDER GENERATOR CIRCUIT BREAKER [01 GCB 01]. CONNECT TO GENERATOR GROUND BUS IF REQUIRED BY L&I INSPECTOR.

GROUNDING LEGEND

Symbol	Description
(solid thin line)	POWER CONDUCTORS
(long dash line)	NEUTRAL CONDUCTORS
(short dash line)	EQUIPMENT GROUND CONDUCTORS
(solid heavy line)	GROUNDING ELECTRODE CONDUCTORS (GEC)
(tap symbol)	GROUNDING ELECTRODE TAP
■ ■ N ■ ■	NEUTRAL BUS
■ ■ G ■ ■	GROUND BUS
(rod box symbol)	GROUNDING ROD BOX W/ 10' X ¾" GROUNDING ROD

GROUNDING ONE LINE DIAGRAM

1 / –

NOT TO SCALE

0 1" 2"

TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

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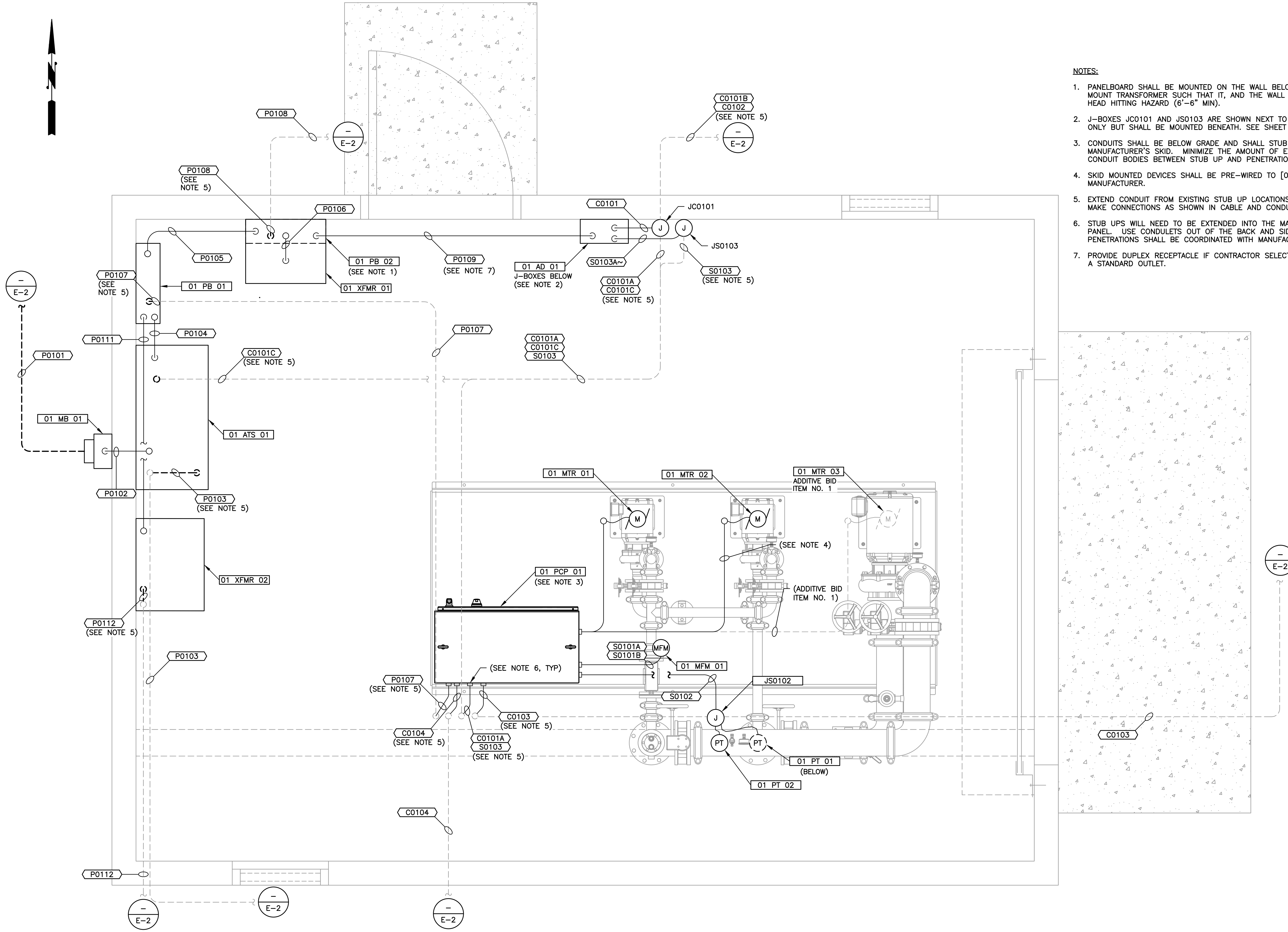
JASON R. NEWQUIST — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — 45311 — 11/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

GROUNDING ONE LINE DIAGRAM

SHEET: E-4
OF: 11
JOB NO.: 20275
DWG:E_OLD_PH3



1 / –

BOOSTER STATION POWER, CONTROL, AND INSTRUMENTATION PLAN

SCALE: 1"=1'–0"

NOTES:

1. PANELBOARD SHALL BE MOUNTED ON THE WALL BELOW THE TRANSFORMER. MOUNT TRANSFORMER SUCH THAT IT, AND THE WALL BRACKET, ARE NOT A HEAD HITTING HAZARD (6'–6" MIN).
2. J–BOXES JC0101 AND JS0103 ARE SHOWN NEXT TO AUTODIALER FOR CLARITY ONLY BUT SHALL BE MOUNTED BENEATH. SEE SHEET E–11 FOR REQUIREMENTS.
3. CONDUITS SHALL BE BELOW GRADE AND SHALL STUB UP NEXT TO THE MANUFACTURER'S SKID. MINIMIZE THE AMOUNT OF EXPOSED CONDUIT AND CONDUIT BODIES BETWEEN STUB UP AND PENETRATION INTO THE PANEL.
4. SKID MOUNTED DEVICES SHALL BE PRE–WIRED TO [01 PCP 01] BY SKID MANUFACTURER.
5. EXTEND CONDUIT FROM EXISTING STUB UP LOCATIONS. PULL CONDUCTORS AND MAKE CONNECTIONS AS SHOWN IN CABLE AND CONDUIT SCHEDULES.
6. STUB UPS WILL NEED TO BE EXTENDED INTO THE MANUFACTURER'S CONTROL PANEL. USE CONDULETS OUT OF THE BACK AND SIDES, LOCATION OF PENETRATIONS SHALL BE COORDINATED WITH MANUFACTURER'S DOCUMENTATION.
7. PROVIDE DUPLEX RECEPTACLE IF CONTRACTOR SELECTED AUTODAILER REQUIRES A STANDARD OUTLET.

0 1" 2"

TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
1130 RAINIER AVENUE SOUTH, SUITE 300
SEATTLE, WASHINGTON 98144 • (206) 284–0860

DATE:	NOV 2023
DRAWN:	PEB
CHECKED:	PAM
APPROVED:	JRN

No.	REVISION	DATE	APPD

JASON R. NEWQUIST · STATE OF WASHINGTON · 45311 · REGISTERED PROFESSIONAL ENGINEER · 11/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
BUILDING POWER, CONTROL AND INSTRUMENTATION PLAN

SHEET: **E-5**
OF: **11**
JOB NO.: 20275
DWG:E_BLDG_PH3

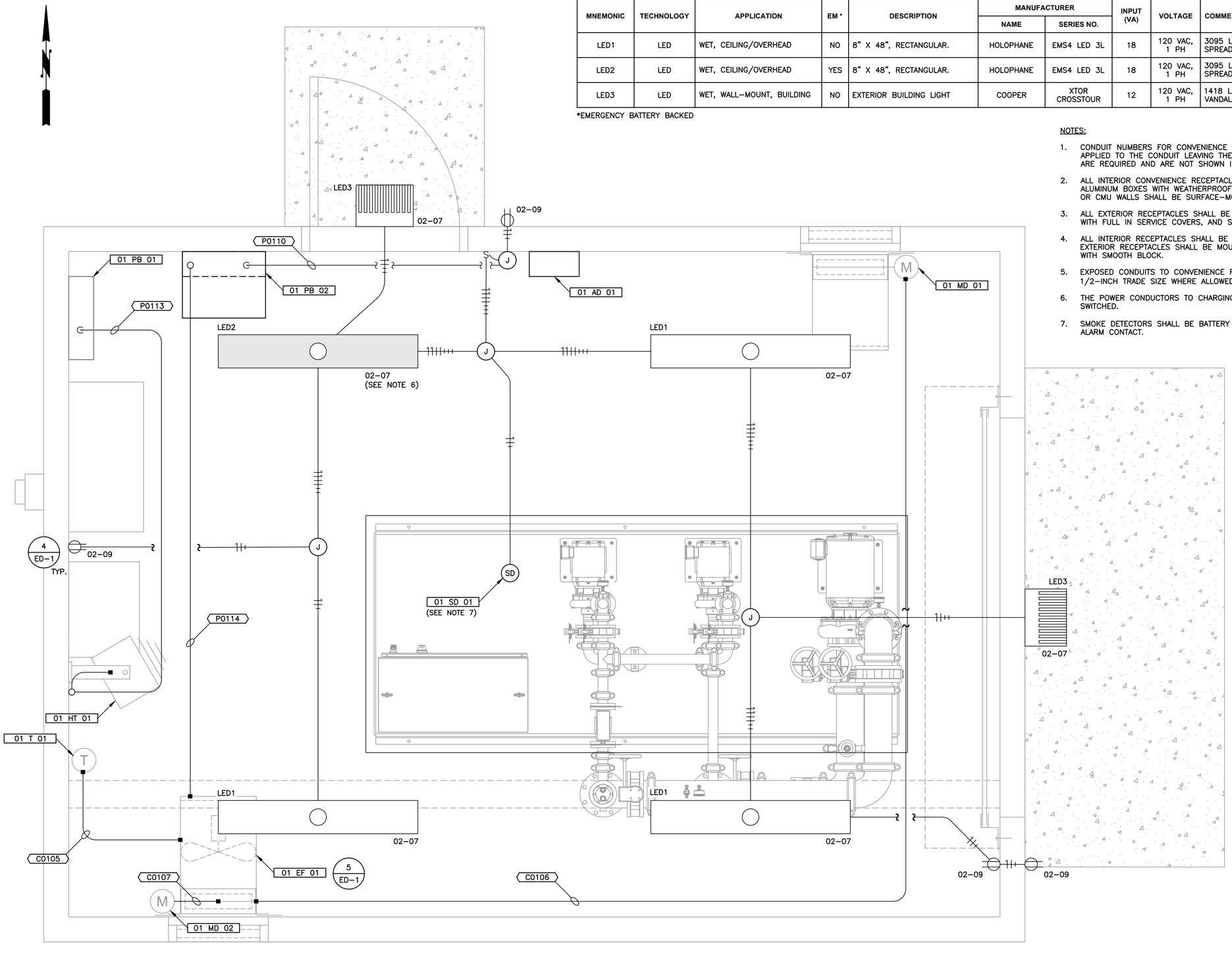
LIGHTING SCHEDULE

MNEMONIC	TECHNOLOGY	APPLICATION	EM *	DESCRIPTION	MANUFACTURER		INPUT (VA)	VOLTAGE	COMMENTS
					NAME	SERIES NO.			
LED1	LED	WET, CEILING/OVERHEAD	NO	8" X 48", RECTANGULAR.	HOLOPHANE	EMS4 LED 3L	18	120 VAC, 1 PH	3095 LUMENS, 4000 K, ANNEALED GLASS, SYMMETRIC, SPREAD DISTRIBUTION.
LED2	LED	WET, CEILING/OVERHEAD	YES	8" X 48", RECTANGULAR.	HOLOPHANE	EMS4 LED 3L	18	120 VAC, 1 PH	3095 LUMENS, 4000 K, ANNEALED GLASS, SYMMETRIC, SPREAD DISTRIBUTION, EMERGENCY BATTERY BACKUP.
LED3	LED	WET, WALL-MOUNT, BUILDING	NO	EXTERIOR BUILDING LIGHT	COOPER	XTOR CROSSTOUR	12	120 VAC, 1 PH	1418 LUMENS, 5000 K COLOR, WITH PHOTOCELL AND VANDAL GUARD.

*EMERGENCY BATTERY BACKED

NOTES:

1. CONDUIT NUMBERS FOR CONVENIENCE RECEPTACLE AND LIGHTING CIRCUITS ARE ONLY APPLIED TO THE CONDUIT LEAVING THE POWER SOURCE. CONDUITS BETWEEN DEVICES ARE REQUIRED AND ARE NOT SHOWN IN THE CABLE AND CONDUIT SCHEDULE.
2. ALL INTERIOR CONVENIENCE RECEPTACLES SHALL BE 20A, WHITE, DUPLEX, IN CAST ALUMINUM BOXES WITH WEATHERPROOF COVERS. RECEPTACLES MOUNTED TO CONCRETE OR CMU WALLS SHALL BE SURFACE-MOUNTED.
3. ALL EXTERIOR RECEPTACLES SHALL BE 20A, WHITE, DUPLEX, IN CAST ALUMINUM BOXES WITH FULL IN SERVICE COVERS, AND SURFACE-MOUNTED.
4. ALL INTERIOR RECEPTACLES SHALL BE MOUNTED 42 INCHES ABOVE THE FLOOR. EXTERIOR RECEPTACLES SHALL BE MOUNTED AT 24 INCHES ABOVE GRADE AND ALIGNED WITH SMOOTH BLOCK.
5. EXPOSED CONDUITS TO CONVENIENCE RECEPTACLES AND LIGHT SWITCHES MAY BE 1/2-INCH TRADE SIZE WHERE ALLOWED BY CODE.
6. THE POWER CONDUCTORS TO CHARGING CIRCUITS OF EMERGENCY LIGHTS SHALL NOT BE SWITCHED.
7. SMOKE DETECTORS SHALL BE BATTERY BACKED, 120 VAC POWERED WITH FORM C (DRY) ALARM CONTACT.



1 — **BOOSTER STATION LIGHTING, RECEPTACLES, HVAC AND SECURITY PLAN**
SCALE: 1"=1'-0"

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
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1130 RANIER AVENUE SOUTH, SUITE 300
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JASON R. NEWQUIST — STATE OF WASHINGTON — 43511 — REGISTERED PROFESSIONAL ENGINEER — 11/20/23

MASON COUNTY PUD #1
MASON COUNTY
WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
BUILDING LIGHTING, RECEPTACLE, HVAC AND SECURITY PLAN

SHEET: E-6
OF: 11
JOB NO.: 20275
DWG:E_BLDG_PH3

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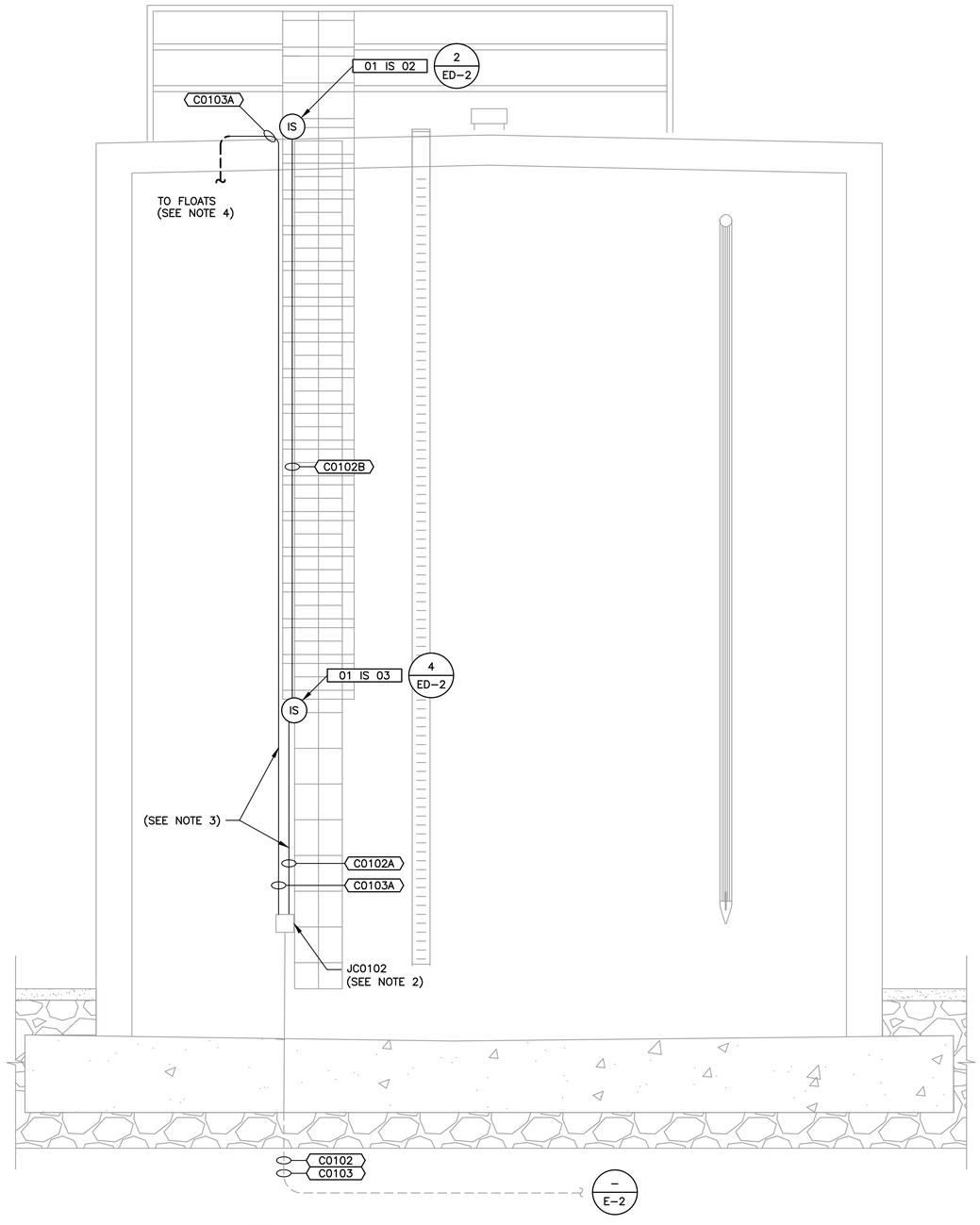
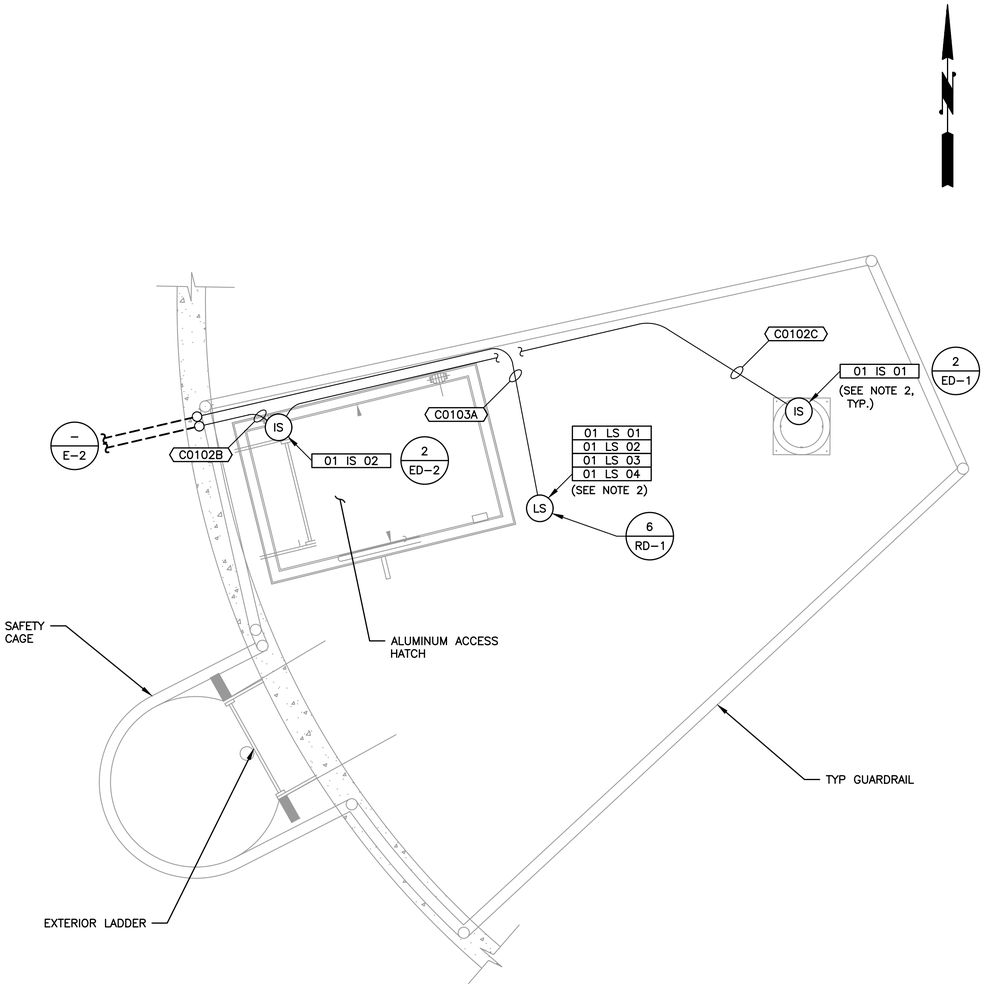


NOTES:

1. FOR CLARITY, NOT ALL ITEMS SHOWN IN EXACT LOCATION.
2. JC0102 IS EXISTING NEMA 4X SS.
3. SUPPORT CONDUITS PER (5 / ED–2).
4. REFERENCE R–SHEETS FOR MOUNTING DETAIL.

(1 / –) **RESERVOIR ELECTRICAL ELEVATION**
SCALE: 1/2"=1'–0"



NOTES:

1. [01 IS 03] NOT SHOWN HERE.
2. J–BOXES ASSOCIATED WITH TRANSITIONS FROM MANUFACTURER'S CABLES TO FIELD WIRING ARE NOT SHOWN HERE. REFERENCE INSTALLATION DETAILS. SPLICING SHALL BE ALLOWED IN THE J–BOXES. (1 / ED–2)

(2 / –) **RESERVOIR ROOF ENLARGED ELECTRICAL DETAIL**
SCALE: 3/4"=1'–0"

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
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SEATTLE, WASHINGTON 98144 • (206) 284–0860

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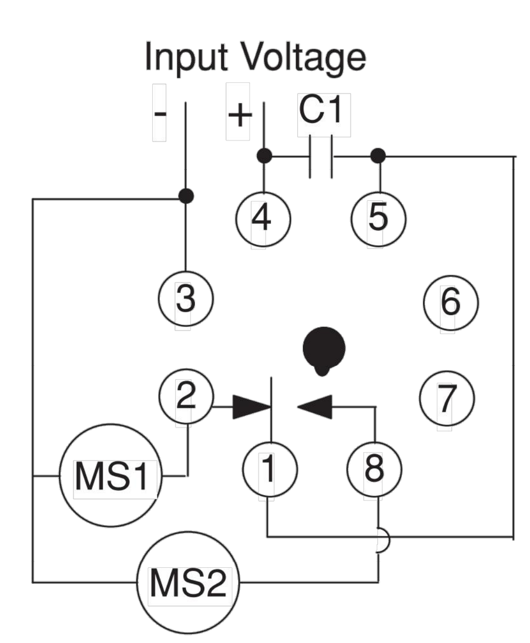
MASON COUNTY PUD #1
MASON COUNTY, WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
RESERVOIR ELECTRICAL PLAN

SHEET: E-7
OF: 11
JOB NO.: 20275
DWG:E_RES_PH3



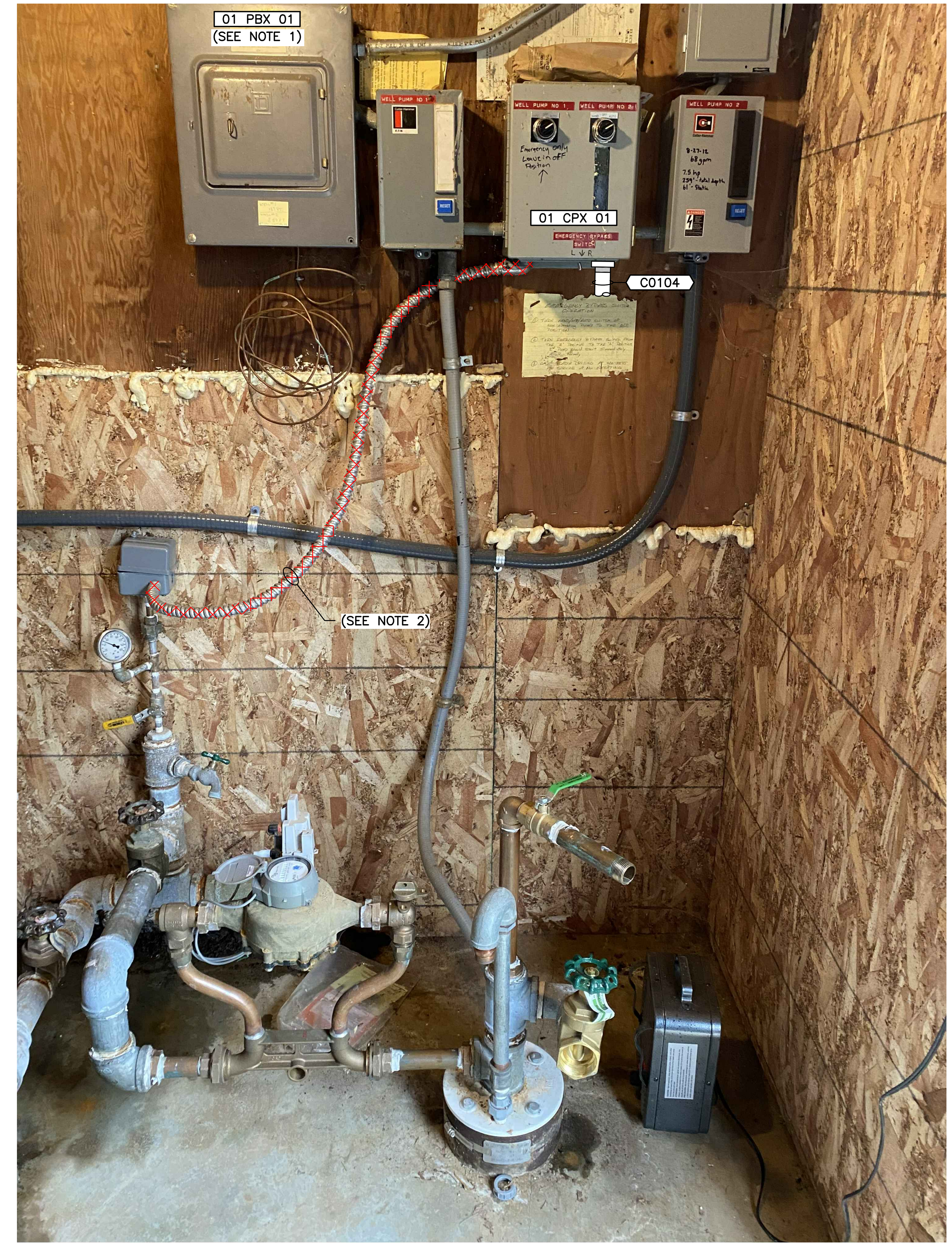
(SEE NOTE 1)

NOTES:

1. FIELD VERIFY CALL TO RUN CONTACTS ARE TERMINALS 4 AND 5 OF THE RELAY SOCKET.
2. DEMOLISH EXISTING CALL AND REPLACE WITH NEW CALL FROM BOOSTER CONTROL PANEL.

1 – ALTERNATING WELL CONTROLS

NOT TO SCALE



NOTES:

1. NEW FEED INTO BACK OF [01 PBX 01] NOT SHOWN. VERIFY HIGH LEG AND PHASING BEFORE REMOVAL OF EXISTING SERVICE. ADD ADDITIONAL LABELING ON THE FRONT OF THE PANELBOARD WARNING OF HIGH LEG.
2. DEMOLISH EXISTING CALL TO RUN SIGNAL.

2 – EXISTING WELL BUILDING ELEVATION

NOT TO SCALE

0 1" 2"
TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

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JASON R. NEWQUIST
STATE OF WASHINGTON
45311
REGISTERED PROFESSIONAL ENGINEER
11/20/23

MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

WELL BUILDING MODIFICATIONS PLAN

SHEET: E-8
OF: 11

JOB NO.: 20275
DWG:E_EX_WELL PH3

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PANELBOARD [01 PB 01] SCHEDULE

CKT. NO.	DIRECTORY	PHASE A		PHASE B		PHASE C		LOAD TYPE	BKR AMPS	BUS	BKR AMPS	LOAD TYPE	PHASE A		PHASE B		PHASE C		DIRECTORY	CKT. NO.
		VA	A	VA	A	VA	A						VA	A	VA	A	VA	A		
1	[01 PCP 01], PUMP CONTROL PANEL	10,167	38.3					M	3/50	A	3/20	Z	2,000	7.2					[01 XFMR 01], TRANSFORMER, 480–208/120 3PH	2
3	[01 PCP 01], PUMP CONTROL PANEL			10,167	38.3			M	|	B	|	Z			2,000	7.2			[01 XFMR 01], TRANSFORMER, 480–208/120 3PH	4
5	[01 PCP 01], PUMP CONTROL PANEL					10,167	38.3	M	|	C	|	Z					2,000	7.2	[01 XFMR 01], TRANSFORMER, 480–208/120 3PH	6
7	[01 XFMR 02], TRANSFORMER, 480–240/120 3PH	3,333	12.0					Z	3/20	A	3/15	H	1,000	3.6					[01 HT 01], ROOM HEATER	8
9	[01 XFMR 02], TRANSFORMER, 480–240/120 3PH			3,333	12.0			Z	|	B	|	H			1,000	3.6			[01 HT 01], ROOM HEATER	10
11	[01 XFMR 02], TRANSFORMER, 480–240/120 3PH					3,333	12.0	Z	|	C	|	H					1,000	3.6	[01 HT 01], ROOM HEATER	12
13	SPARE BREAKER	–	–					Z	1/20	A	3/30	Z	–	–					[01 SPD 01], SURGE PROTECTION DEVICE	14
15	SPARE BREAKER			–	–			Z	1/20	B	|	Z			–	–			[01 SPD 01], SURGE PROTECTION DEVICE	16
17	SPARE BREAKER					–	–	Z	1/20	C	|	Z					–	–	[01 SPD 01], SURGE PROTECTION DEVICE	18
	SUM OF PHASE LOADS	13,500	50.3	13,500	50.3	13,500	50.3						3,000	10.8	3,000	10.8	3,000	10.8	**SUM OF PHASE LOADS**	

[01 PB 01] ELECTRICAL AND CONSTRUCTION SPECIFICATIONS:

CONFIGURATION:	480/277 VAC, 3 PH, 60 Hz
POWER BUS:	100 A, COPPER
NEUTRAL BUS:	100 A (100% OF POWER BUS), ISOLATED FROM GROUND, SOLDERLESS CONNECTIONS
GROUND BUS:	PROVIDE PER UL 67
BUS BRACING:	14 kAIC, MINIMUM
MAIN BREAKER:	100 AT, 100 AF, 3 PH, 3 P, 14 kAIC, MOLDED CASE, VERTICAL MOUNTING
DISTRIBUTION BREAKERS:	BOLT–ON, MOLDED CASE, 14 kAIC, MINIMUM
GROUND BONDING:	GROUND AND NEUTRAL SEPARATED
ENCLOSURE:	NEMA 12
NUMBER OF CIRCUITS:	18
UNCOMMITTED CIRCUITS:	FILL WITH SPARE 14 kAIC BREAKERS AS SHOWN IN THE SCHEDULE
POWER DERIVED FROM:	[01 ATS 01], AUTOMATIC TRANSFER SWITCH AND SERVICE DISCONNECT (SUSE)
BUS BREAKERS:	3 POLE BREAKERS, 1x 50 A, 14 kAIC
	3 POLE BREAKERS, 1x 30 A, 14 kAIC
	3 POLE BREAKERS, 2x 20 A, 14 kAIC
	3 POLE BREAKERS, 1x 15 A, 14 kAIC
	1 POLE BREAKERS, 3x 20 A, 14 kAIC

NOTES:

1. THE CONTRACTOR SHALL PROVIDE A TYPED PANELBOARD SCHEDULE FOR ALL ACTUAL LOAD ASSIGNMENTS.
2. AIC RATING OF BRANCH CIRCUIT BREAKERS MAY BE REDUCED WHEN SUBMITTED TO ENGINEERING IF THEY ARE SHOWN TO BE PART OF A TESTED AND LISTED COMBINATION WITH MAIN PANELBOARD BREAKER AND COMPLIANT TO NEC 240.86 AND MARKED PER NEC 110.22. BRANCH BREAKERS SHALL BE NO LESS THAN 10 kAIC.

LEGEND:

GFCI DENOTES GFCI PANELBOARD CIRCUIT BREAKER.

LOAD DISTRIBUTION:	AMPS	VA	%
BY PHASE:			
TOTAL LOAD, PHASE A:	61.1 A	16,500 VA	33.3%
TOTAL LOAD, PHASE B:	61.1 A	16,500 VA	33.3%
TOTAL LOAD, PHASE C:	61.1 A	16,500 VA	33.3%
BY LOAD TYPE:			
TOTAL LIGHTING (L):		0 VA	0.0%
TOTAL MOTOR (M):		30,500 VA	61.6%
TOTAL HVAC (H):		3,000 VA	6.1%
TOTAL RECEPTACLE (R):		0 VA	0.0%
TOTAL OTHER (Z):		16,000 VA	32.3%
TOTAL CONNECTED LOAD:		49.50 kVA	100.0%
CALCULATED DEMAND LOAD:		57.13 kVA	

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
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DATE: NOV 2023 | DRAWN: PEB | CHECKED: PAM | APPROVED: JRN

No.	REVISION	DATE	APPD

JASON R. NEWQUIST — STATE OF WASHINGTON — 21511 — REGISTERED PROFESSIONAL ENGINEER

MASON COUNTY PUD #1
MASON COUNTY, WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
PANELBOARD [01 PB 01] SCHEDULE, SPECIFICATIONS AND LOAD DISTRIBUTION

SHEET: **E-9**
OF: **11**
JOB NO.: 20275
DWG:E_01PB01_318 PH3

PANELBOARD [01 PB 02] SCHEDULE

CKT. NO.	DIRECTORY	PHASE A VA	PHASE A A	PHASE B VA	PHASE B A	PHASE C VA	PHASE C A	LOAD TYPE	BKR AMPS	BUS	BKR AMPS	LOAD TYPE	PHASE A VA	PHASE A A	PHASE B VA	PHASE B A	PHASE C VA	PHASE C A	DIRECTORY	CKT. NO.
1	MAIN BREAKER, HORIZONTAL	–	–					Z	3/60	A	1/20	Z	250	2.1					[01 AD 01], AUTODIALER	2
3	MAIN BREAKER, HORIZONTAL			–	–			Z	|	B	1/20	M			667	5.8			[01 EF 01], EXHAUST FAN	4
5	MAIN BREAKER, HORIZONTAL					–	–	Z	|	C	2/30	Z					1,000	9.6	[01 GADP 01], GENERATOR AUXILIARY DEVICE PANEL	6
7	LIGHTING	96	0.8					L	1/20	A	|	Z	1,000	9.6					[01 GADP 01], GENERATOR AUXILIARY DEVICE PANEL	8
GFCI 9	CONVENIENCE RECEPTACLES			720	6.0			R	1/20	B	1/20	Z			–	–			SPARE BREAKER	10
11	[01 SD 01], SMOKE DETECTOR					50	0.4	Z	1/20	C	1/20	Z					–	–	SPARE BREAKER	12
13	SPARE BREAKER	–	–					Z	1/20	A	1/20	Z	–	–					SPARE BREAKER	14
15	SPARE BREAKER			–	–			Z	1/20	B	1/20	Z			–	–			SPARE BREAKER	16
17	SPARE BREAKER					–	–	Z	1/20	C	1/20	Z					–	–	SPARE BREAKER	18
	SUM OF PHASE LOADS	96	0.8	720	6.0	50	0.4						1,250	11.7	667	5.8	1,000	9.6	**SUM OF PHASE LOADS**	

[01 PB 02] ELECTRICAL AND CONSTRUCTION SPECIFICATIONS:

CONFIGURATION:	208/120 VAC, 3 PH, 60 Hz
POWER BUS:	100 A, COPPER
NEUTRAL BUS:	100 A (100% OF POWER BUS), ISOLATED FROM GROUND, SOLDERLESS CONNECTIONS
GROUND BUS:	PROVIDE PER UL 67
BUS BRACING:	10 kAIC, MINIMUM
MAIN BREAKER:	60 AT, 60 AF, 3 PH, 3 P, 10 kAIC, MOLDED CASE, PART OF DISTRIBUTION BREAKERS
DISTRIBUTION BREAKERS:	STAB-TYPE, 10 kAIC, MINIMUM
GROUND BONDING:	SUITABLE FOR SERVICE ENTRY
ENCLOSURE:	NEMA 12
NUMBER OF CIRCUITS:	18
UNCOMMITTED CIRCUITS:	FILL WITH SPARE 10 kAIC BREAKERS AS SHOWN IN THE SCHEDULE
POWER DERIVED FROM:	[01 XFMR 01], TRANSFORMER, 480-208/120 3PH
BUS BREAKERS:	3 POLE BREAKERS, 1x 60 A, 10 kAIC
	2 POLE BREAKERS, 1x 30 A, 10 kAIC
	1 POLE BREAKERS, 13x 20 A, 10 kAIC

NOTES:

1. THE CONTRACTOR SHALL PROVIDE A TYPED PANELBOARD SCHEDULE FOR ALL ACTUAL LOAD ASSIGNMENTS.

LEGEND:

GFCI DENOTES GFCI PANELBOARD CIRCUIT BREAKER.

LOAD DISTRIBUTION:	AMPS	VA	%
BY PHASE:			
TOTAL LOAD, PHASE A:	12.5 A	1,346 VA	36.4%
TOTAL LOAD, PHASE B:	11.8 A	1,387 VA	34.4%
TOTAL LOAD, PHASE C:	10.0 A	1,050 VA	29.2%
BY LOAD TYPE:			
TOTAL LIGHTING (L):		96 VA	2.5%
TOTAL MOTOR (M):		667 VA	17.6%
TOTAL HVAC (H):		0 VA	0.0%
TOTAL RECEPTACLE (R):		720 VA	19.0%
TOTAL OTHER (Z):		2,300 VA	60.8%
TOTAL CONNECTED LOAD:		3.78 kVA	100.0%
CALCULATED DEMAND LOAD:		3.97 kVA	
XFMR LOADING (CONNECTED) =	3.8 kVA / 6 kVA =		63.1 %
XFMR LOADING (NEC) =	4.0 kVA / 6 kVA =		66.2 %

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

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DATE: NOV 2023 | DRAWN: PEB | CHECKED: PAM | APPROVED: JRN

No.	REVISION	DATE	APPD

JASON R. NEWQUIST — STATE OF WASHINGTON — 21511 — REGISTERED PROFESSIONAL ENGINEER

MASON COUNTY PUD #1
MASON COUNTY
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
PANELBOARD [01 PB 02] SCHEDULE, SPECIFICATIONS AND LOAD DISTRIBUTION

SHEET: **E-10**
OF: **11**
JOB NO.: 20275
DWG:E_01PB02_318 PH3

M:\Mason County PUD 1\20275.00 Agate Beach Water System Improvements\01 Design\Planset PH3\Electrical\E_01PB02_318 PH3.dwg, 11/20/2023 1:21 PM, JASON NEWQUIST

DISCRETE TERMINATIONS IN JC0101

TERMINALS	TAG NUMBER	TAG DESCRIPTION	I/O FUNCTION
0, 1	01 ATS 01	AUTOMATIC TRANSFER SWITCH/MAIN SERVICE DISCONNECT	TRUE = ATS IN UTILITY POSITION
2, 3	01 ATS 01	AUTOMATIC TRANSFER SWITCH/MAIN SERVICE DISCONNECT	TRUE = ATS IN GENERATOR POSITION
4, 5	01 ATS 01	AUTOMATIC TRANSFER SWITCH/MAIN SERVICE DISCONNECT	TRUE = ATS FAULT
6, 7	– – – –	SPARES	
8, 9	01 GCP 01	GENERATOR CONTROL PANEL	TRUE = RUNNING
10, 11	01 GCP 01	GENERATOR CONTROL PANEL	TRUE = GENERAL ALARM
12,13	01 GCP 01	GENERATOR CONTROL PANEL	TRUE = GENERATOR FAIL
14, 15	01 GCP 01	GENERATOR CONTROL PANEL	TRUE = LOW BATTERY
16, 17	01 GCP 01	GENERATOR CONTROL PANEL	TRUE = LOW OIL PRESSURE
18, 19	01 GCP 01	GENERATOR CONTROL PANEL	TRUE = HIGH COOLANT TEMP
20, 21	01 GCP 01	GENERATOR CONTROL PANEL	TRUE = LOW FUEL ALARM
22, 23	01 GCP 01	GENERATOR CONTROL PANEL	TRUE = FUEL TANK LEAK
24, 25	– – – –	SPARE	
26, 27	01 LS 01	LEVEL SWITCH, HIGH	TRUE = ALARM
28, 29	01 LS 04	LEVEL SWITCH, LOW	TRUE = ALARM
30, 31	01 SD 01	SMOKE DETECTOR	TRUE = ALARM
32, 33	01 IS 01	INTRUSION SWITCH, ROOF VENT	FALSE = ALARM
34, 35	01 IS 02	INTRUSION SWITCH, ROOF HATCH	FALSE = ALARM
36, 37	01 IS 03	INTRUSION SWITCH, LADDER GUARD	FALSE = ALARM
38, 39	– – – –	SPARE	
40, 41	01 PCP 01	PUMP CONTROL PANEL	TRUE = POWER FAILURE
42, 43	01 PCP 01	PUMP CONTROL PANEL	TRUE = PLC FAILURE
44, 45	01 PCP 01	PUMP CONTROL PANEL	TRUE = PUMP NO. 1 FAIL
46, 47	01 PCP 01	PUMP CONTROL PANEL	TRUE = PUMP NO. 2 FAIL
48, 49	01 PCP 01	PUMP CONTROL PANEL	TRUE = PUMP NO. 3 FAIL (ADDITIVE BID ITEM NO. 1)
50, 51	01 PCP 01	PUMP CONTROL PANEL	TRUE = LOW PRESSURE ALARM

ANALOG TERMINATION IN JS0103 (SEE NOTE 4)

TERMINALS	TAG NUMBER	TAG DESCRIPTION	I/O FUNCTION
A0, A1, S1	01 PT 01	PRESSURE TRANSDUCER, SUCTION	4 MA = 0 PSI, 20 MA = 150 PSI
A0, A1, S1	01 PT 02	PRESSURE TRANSDUCER, DISCHARGE	4 MA = 0 PSI, 20 MA = 150 PSI
A2, A3, S2	01 MFM 01	MAGNETIC FLOW METER	4 MA = 0 GPM, 20 MA = 300 GPM
A4, A5, S3	– – – –	SPARE	
A6, A7, S4	– – – –	SPARE	

AUTODIALER ALARM CONDITIONS (SEE NOTE 3)

CHANNEL NO.	CHANNEL ADDRESS	TAG NUMBER	TAG DESCRIPTION	I/O FUNCTION
0	DO:00	01 AD 01	AUTODIALER	FIRE ALARM
1	DO:01	01 AD 01	AUTODIALER	TANK INTRUSION
2	DO:02	01 AD 01	AUTODIALER	GENERATOR MAJOR ALARM
3	DO:03	01 AD 01	AUTODIALER	GENERATOR MINOR ALARM
4	DO:04	01 AD 01	AUTODIALER	PUMP CONTROL PANEL MAJOR ALARM
5	DO:05	01 AD 01	AUTODIALER	PUMP CONTROL PANEL MINOR ALARM
6	DO:06	01 AD 01	AUTODIALER	RESERVOIR HIGH LEVEL
7	DO:07	01 AD 01	AUTODIALER	RESERVOIR LOW LEVEL
8	DO:08	01 AD 01	AUTODIALER	RESERVOIR PRESSURE ALARM
9	DO:09	– – – –	SPARE	
10	DO:10	– – – –	SPARE	
11	DO:11	– – – –	SPARE	

NOTES:

1. PROVIDE TWO 12"x12"x4" (MINIMUM) NEMA 12 METALLIC JUNCTION BOXES BELOW THE AUTODIALER AND LABEL AS JC0101 AND JS0103. DESIGN INTENT IS TO BRING MULTIPLE DISCRETE SIGNALS TO TERMINAL STRIPS MOUNTED IN JC0101 SUCH THAT THE MAY BE JUMPERED IN ANY COMBINATION TO EASILY MODIFY THE ALARMS GOING TO THE AUTODIALER. SIMILARLY, DESIGN INTENT IS TO BRING MULTIPLE ANALOG SIGNALS TO TERMINAL STRIPS MOUNTED IN JS0103 SUCH THAT PROCESS SIGNALS MAY BE EASILY INTEGRATED INTO A SCADA SYSTEM AT A LATER TIME.
2. TERMINAL NUMBERS USED ABOVE ARE FOR CLARITY ONLY, RECORD DOCUMENTATION SHALL LIST TERMINAL NUMBERS AND THE ASSOCIATED SIGNALS AS LABELED IN THE FIELD BY CONTRACTOR.
3. SEVERAL AUTODIALER ALARMS ARE DERIVED FROM A COMBINATION OF SIGNALS. JUMPER THE TERMINALS OF SIGNALS IN JC0101 AS NECESSARY TO CREATE THE FOLLOWING FUNCTIONALITY:
   A. TANK INTRUSION SWITCHES SHALL BE NORMALLY CLOSED, WIRED IN SERIES SUCH THAT ANY INTRUSION GENERATES A LOSS OF SIGNAL TO THE AUTODIALER.
   B. GENERATOR MAJOR ALARM SHALL BE NORMALLY OPEN, WIRED IN PARALLEL SUCH THAT [GENERATOR GENERAL ALARM] OR [GENERATOR FAIL] OR [LOW FUEL ALARM] OR [HIGH COOLANT TEMP] WILL GENERATE AN INPUT TO THE AUTODIALER.
   C. GENERATOR MINOR ALARM SHALL BE NORMALLY OPEN, WIRED IN PARALLEL SUCH THAT [LOW BATTERY] OR [LOW OIL PRESSURE] OR [FUEL TANK LEAK] WILL GENERATE AN INPUT TO THE AUTODIALER.
   D. PUMP MAJOR ALARM SHALL BE NORMALLY CLOSED, HELD OPEN, AND WIRED IN PARALLEL SUCH THAT [PLC FAIL] OR [POWER FAILURE] WILL GENERATE AN INPUT TO THE AUTODIALER,
   E. PUMP MINOR ALARM SHALL BE NORMALLY OPEN, WIRED IN PARALLEL SUCH THAT [PUMP NO.1 FAIL] OR [PUMP NO. 2 FAIL] WILL GENERATE AN INPUT TO THE AUTODIALER.
4. PUMP CONTROL PANEL MANUFACTURER SHALL PROVIDE 4–20MA ANALOG OUTPUTS WHICH ARE IDENTICAL TO THE SIGNAL THE PUMP CONTROL PANEL RECEIVES FROM THE TANK TRANSDUCER AND SKID PRESSURE TRANSDUCER. THESE SHALL BE EXTENDED TO JS0103 BUT NOT EXTENDED TO THE AUTODIALER AT THIS TIME. EACH ANALOG SIGNAL SHALL BE PROVIDED WITH A THIRD ASSOCIATED TERMINAL FOR TERMINATION OF SHIELDED TWISTED PAIR DRAIN WIRE.
5. AUTODAILER SHALL BE 120VAC. MODULAR DESIGN TO ACCEPT ADDITIONAL INPUT CARDS. PROVIDE WITH A MINIMUM OF 12 DISCRETE INPUTS INITIALLY. UNIT SHALL BE CAPABLE OF ACCEPTING ANALOG INPUT CARDS AND DISCRETE OUTPUT CARDS BUT NEITHER ARE REQUIRED AT THIS TIME. COORDINATE WITH OWNER TO PROVIDE MODEL COMPATIBLE WITH OWNER'S PREFERRED CELLULAR PROVIDER. PROVIDING SERVICE (SIM CARD) SHALL BE THE RESPONSIBILITY OF THE OWNER BUT PROGRAMMING OF ALARMS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. RACO VERBATIM WITH CELLULARM OPTION OR EQUAL

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS
1130 RAINIER AVENUE SOUTH, SUITE 300
SEATTLE, WASHINGTON 98144 • (206) 284-0860

DATE: NOV 2023 | DRAWN: PEB | CHECKED: PAM | APPROVED: JRN

No.	REVISION	DATE	APPD

JASON R. NEWQUIST — STATE OF WASHINGTON — 45311 — REGISTERED PROFESSIONAL ENGINEER — 11/20/23

MASON COUNTY PUD #1
WASHINGTON
MASON COUNTY
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
I/O AND ALARMING

SHEET: **E-11**
OF: **11**
JOB NO.: 20275
DWG:E_PLCIO PH3

POWER CABLE AND CONDUIT SCHEDULE

NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
P0101	[01 UT 01], UTILITY TRANSFORMER BANK, POLE MOUNTED	[01 MB 01], UTILITY METER BASE	2"	3X #3 AWG XHHW-2; 1X #8 AWG XHHW-2 N		OVERSIZED CONDUIT AND GROUND
P0102	[01 MB 01], UTILITY METER BASE	[01 ATS 01], AUTOMATIC TRANSFER SWITCH AND SERVICE DISCONNECT (SUSE)	2"	3X #2 AWG XHHW-2; 1X #8 AWG XHHW-2 N; 1X #6 AWG XHHW-2 G		OVERSIZED CONDUIT AND GROUND, UPSIZED FOR DERATING
P0103	[01 ATS 01], AUTOMATIC TRANSFER SWITCH AND SERVICE DISCONNECT (SUSE)	[01 GEN 01], GENERATOR, STANDBY	1-1/4"	3X #4 AWG XHHW-2; 1X #8 AWG XHHW-2 N; 1X #8 AWG XHHW-2 G; 4X #14 AWG XHHW-2		INCLUDES CALL 2 RUN AND 2 SPARES. PARTIALLY EXISTING CONDUIT, NEW CONDUCTORS
P0104	[01 ATS 01], AUTOMATIC TRANSFER SWITCH AND SERVICE DISCONNECT (SUSE)	[01 PB 01], PANELBOARD, 480/277 V, 3 PH, 100 A BUS, 18 CKT	1-1/4"	3X #2 AWG XHHW-2; 1X #8 AWG XHHW-2 N; 1X #6 AWG XHHW-2 G		OVERSIZED GROUND, UPSIZED FOR DERATING
P0105	[01 PB 01], PANELBOARD, 480/277 V, 3 PH, 100 A BUS, 18 CKT	[01 XFMR 01], TRANSFORMER, 480-208/120 3PH	3/4"	3X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
P0106	[01 XFMR 01], TRANSFORMER, 480-208/120 3PH	[01 PB 02], PANELBOARD, BOOSTER	1-1/4"	3X #3 AWG XHHW-2; 1X #8 AWG XHHW-2 N; 1X #8 AWG XHHW-2 G		
P0107	[01 PB 01], PANELBOARD, 480/277 V, 3 PH, 100 A BUS, 18 CKT	[01 PCP 01], PUMP CONTROL PANEL	1"	3X #6 AWG XHHW-2; 1X #10 AWG XHHW-2 N; 1X #10 AWG XHHW-2 G		
P0108	[01 PB 02], PANELBOARD, BOOSTER	[01 GADP 01], GENERATOR AUXILIARY DEVICE PANEL	1"	2X #10 AWG XHHW-2; 1x #10 N; 1X #10 AWG XHHW-2 G		PARTIALLY EXISTING CONDUIT, NEW CONDUCTORS
P0109	[01 PB 02], PANELBOARD, BOOSTER	[01 AD 01], AUTODIALER	1/2"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		
P0110	[01 PB 02], PANELBOARD, BOOSTER	LIGHTING, CONVENIENCE RECEPTACLES, AND SMOKE DETECTOR	3/4"	3X #12 AWG XHHW-2; 3X #12 AWG XHHW-2 N; 3X #12 AWG XHHW-2 G		
P0111	[01 PB 01], PANELBOARD, 480/277 V, 3 PH, 100 A BUS, 18 CKT	[01 XFMR 02], TRANSFORMER, 480-240/120 3PH	3/4"	3X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
P0112	[01 XFMR 02], TRANSFORMER, 480-240/120 3PH	[01 PBX 01], PANELBOARD, WELL NO. 1 BUILDING	1"	3X #6 AWG XHHW-2; 1X #10 AWG XHHW-2 N; 1X #10 AWG XHHW-2 G		USE EXTREME CAUTION TO VERIFY HIGH LEG FROM SOURCE AND AT DESTINATION. PARTIALLY EXISTING CONDUIT, NEW CONDUCTORS
P0113	[01 PB 01], PANELBOARD, 480/277 V, 3 PH, 100 A BUS, 18 CKT	[01 HT 01], HEATER	3/4"	3X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
P0114	[01 PB 02], PANELBOARD, BOOSTER	[01 EF 01], EXHAUST FAN	3/4"	1X #12 AWG XHHW-2; 1X #12 AWG XHHW-2 N; 1X #12 AWG XHHW-2 G		

CONTROL CABLE AND CONDUIT SCHEDULE

NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
C0101	[01 AD 01], AUTODIALER	J-BOX JC0101	1-1/4"	20X #14 AWG XHHW-2		INCLUDES 4 SPARES
C0101A	J-BOX JC0101	[01 PCP 01], PUMP CONTROL PANEL	1"	14X #14 AWG XHHW-2		INCLUDES 4 SPARES
C0101B	J-BOX JC0101	[01 GCP 01], GENERATOR CONTROL PANEL	1"	16X #14 AWG XHHW-2		PARTIALLY EXISTING CONDUIT, NEW CONDUCTORS
C0101C	J-BOX JC0101	[01 ATS 01], AUTOMATIC TRANSFER SWITCH AND SERVICE DISCONNECT (SUSE)	3/4"	8X #14 AWG XHHW-2		INCLUDES 2 SPARES
C0102	J-BOX JC0101	J-BOX JC0102 (BASE OF RESERVOIR)	1"	6X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		PARTIALLY EXISTING CONDUIT, NEW CONDUCTORS
C0102A	J-BOX JC0102 (BASE OF RESERVOIR)	[01 IS 03], INTRUSION SWITCH, LADDER GUARD	3/4"	6X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0102B	[01 IS 03], INTRUSION SWITCH, LADDER GUARD	[01 IS 02], INTRUSION SWITCH, ROOF HATCH	1/2"	4X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0102C	[01 IS 02], INTRUSION SWITCH, ROOF HATCH	[01 IS 01], INTRUSION SWITCH, ROOF VENT	1/2"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0103	[01 PCP 01], PUMP CONTROL PANEL	J-BOX JC0102 (BASE OF RESERVOIR)	3/4"	12X #14 AWG XHHW-2		TANK LEVEL SWITCH, INCLUDES SPARES. COIL SPARES IN JC0102. PARTIALLY EXISTING CONDUIT, NEW CONDUCTORS
C0103A	J-BOX JC0102 (BASE OF RESERVOIR)	LEVEL SWITCHES TERMINATION BOX	1/2"	8X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		SPLICE TO MFR CABLES FROM FLOATS
C0104	[01 PCP 01], PUMP CONTROL PANEL	[01 CPX 01], CONTROL PANEL, WELL NO. 1 BUILDING	3/4"	4X #14 AWG XHHW-2		WELL NO. 1 CALL TO RUN. INCLUDES 2 SPARES
C0105	[01 EF 01], EXHAUST FAN	[01 T 01], THERMOSTAT, EXHAUST FAN	1/2"	MANUFACTURER'S RECOMMENDED CABLE		
C0106	[01 EF 01], EXHAUST FAN	[01 MD 01], MOTORIZED DAMPER NO. 1	1/2"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		
C0107	[01 EF 01], EXHAUST FAN	[01 MD 01], MOTORIZED DAMPER NO. 2	1/2"	2X #14 AWG XHHW-2; 1X #12 AWG XHHW-2 G		

INSTRUMENTATION CABLE AND CONDUIT SCHEDULE

NUMBER	SOURCE	DESTINATION	SIZE	CONDUCTORS	E-1	NOTES
S0101A	[01 PCP 01], PUMP CONTROL PANEL	[01 MFM 01] MAGNETIC FLOW METER	3/4"	2X #14 AWG XHHW-2; 1X #14 AWG XHHW-2 G	* 3	METER POWER
S0101B	[01 PCP 01], PUMP CONTROL PANEL	[01 MFM 01] MAGNETIC FLOW METER	3/4"	2X 2-C, 1-TP, #18 AWG, OS	* 3	FLOW AND TOTALIZING PULSE
S0102	[01 PCP 01], PUMP CONTROL PANEL	J-BOX JS0102	3/4"	2X 2-C, 1-TP, #18 AWG, OS	* 3	
S0102A	J-BOX JS0102	[01 PT 01], PRESSURE TRANSDUCER, SUCTION	1/2"	1X 2-C, 1-TP, #18 AWG, OS	* 3	
S0102B	J-BOX JS0102	[01 PT 02], PRESSURE TRANSDUCER, DISCHARGE	1/2"	1X 2-C, 1-TP, #18 AWG, OS	* 3	
S0103	[01 PCP 01], PUMP CONTROL PANEL	J-BOX JS0103	1"	4X 2-C, 1-TP, #18 AWG, OS	* 3	
S0103A~	J-BOX JS0103	[01 AD 01], AUTODIALER	1-1/2"	PULL WIRE	* 3	SPARE CONDUIT.

CABLES AND CONDUITS:

1. REFERENCE SPECIFICATION 16130 AND OUTDOOR INSTALLATION NOTES ON E-1 FOR CONDUIT COMPOSITION AND COATING.
2. REFERENCE CONDUCTOR SPECIFICATION 16120 FOR INSTRUMENTATION, COMMUNICATION, AND OTHER SPECIAL CABLES AND CONDUCTORS.

0 1" 2"
TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

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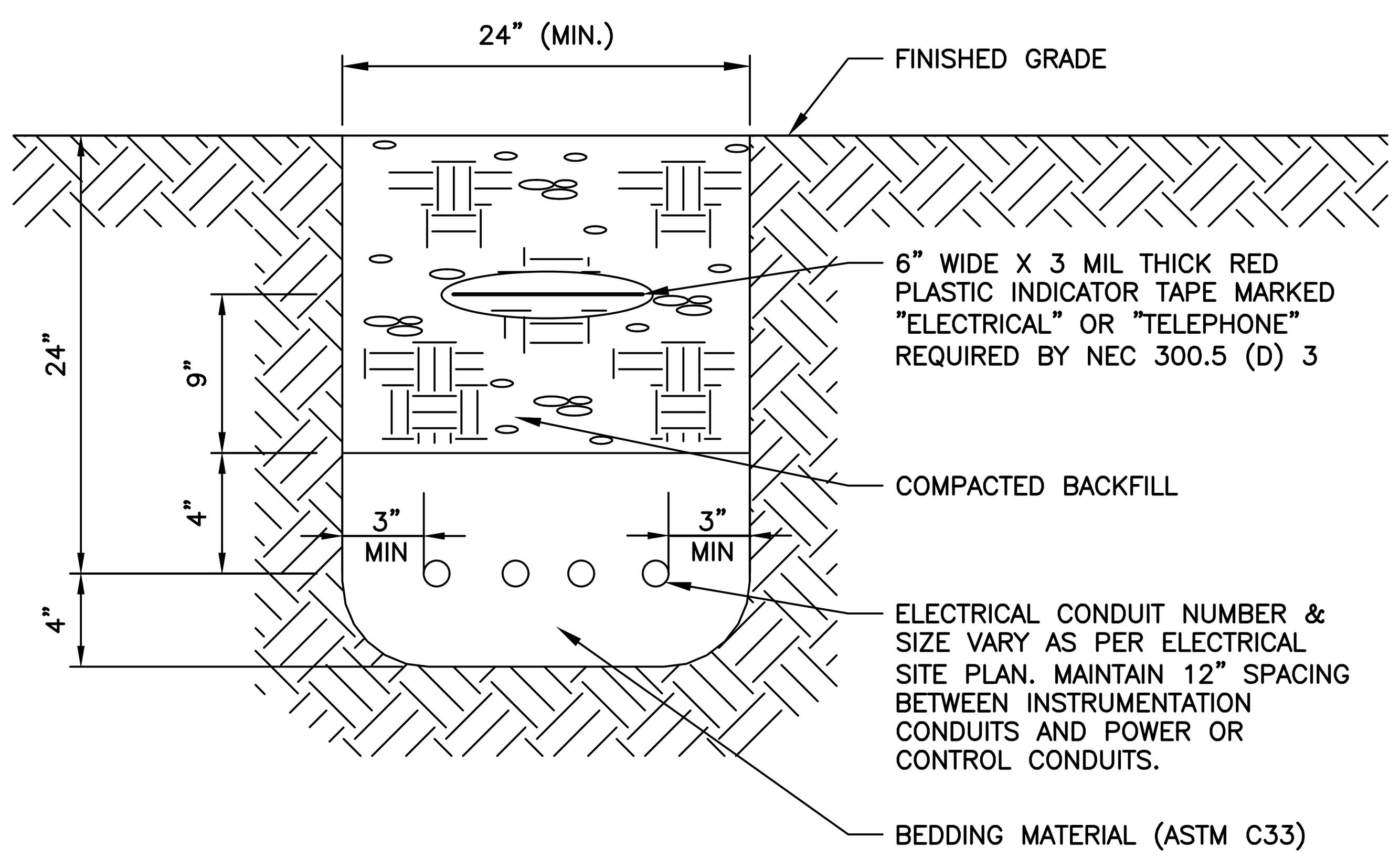
MASON COUNTY PUD #1
MASON COUNTY
WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

CABLE AND CONDUIT SCHEDULES

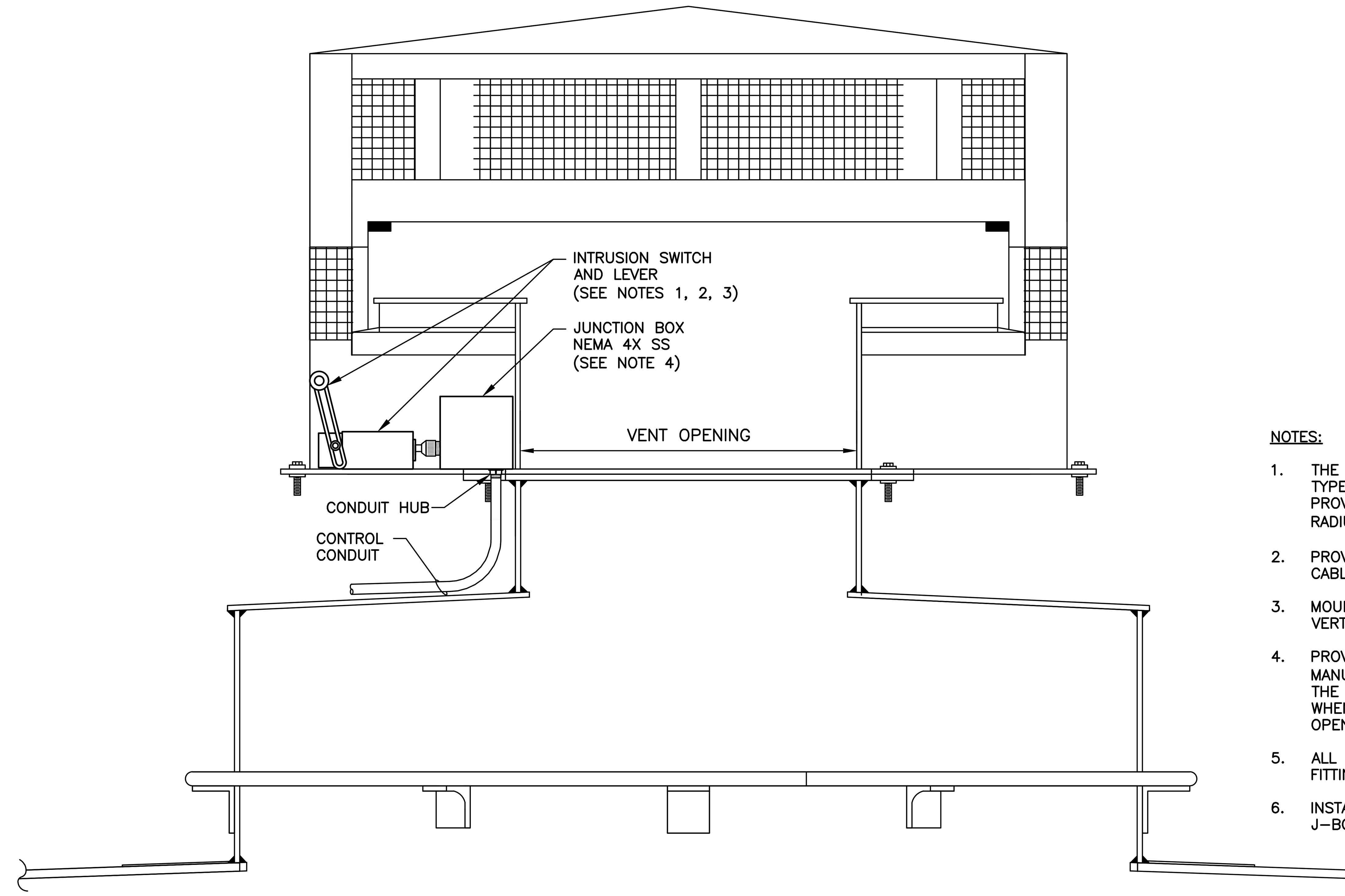
SHEET: **EC-1**
OF: **1**
JOB NO.: 20275
DWG:E_CCS PH3



NOTE:

1. SPACING BETWEEN CONDUITS AND OTHER UTILITIES SHALL BE IN COMPLIANCE WITH THE UTILITIES OR 24 INCHES MINIMUM, WHICHEVER IS THE GREATER.

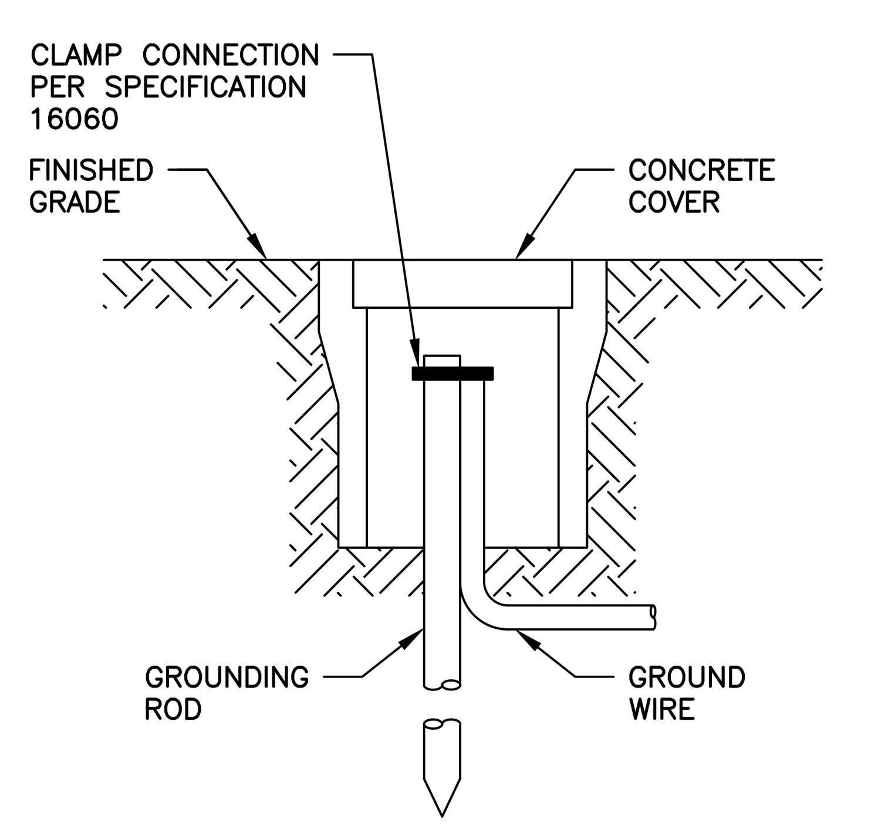
1 / TYP **ELECTRICAL TRENCHING DETAIL**
NOT TO SCALE



2 / TYP **TOP VENT INTRUSION SWITCH DETAIL**
NOT TO SCALE

NOTES:

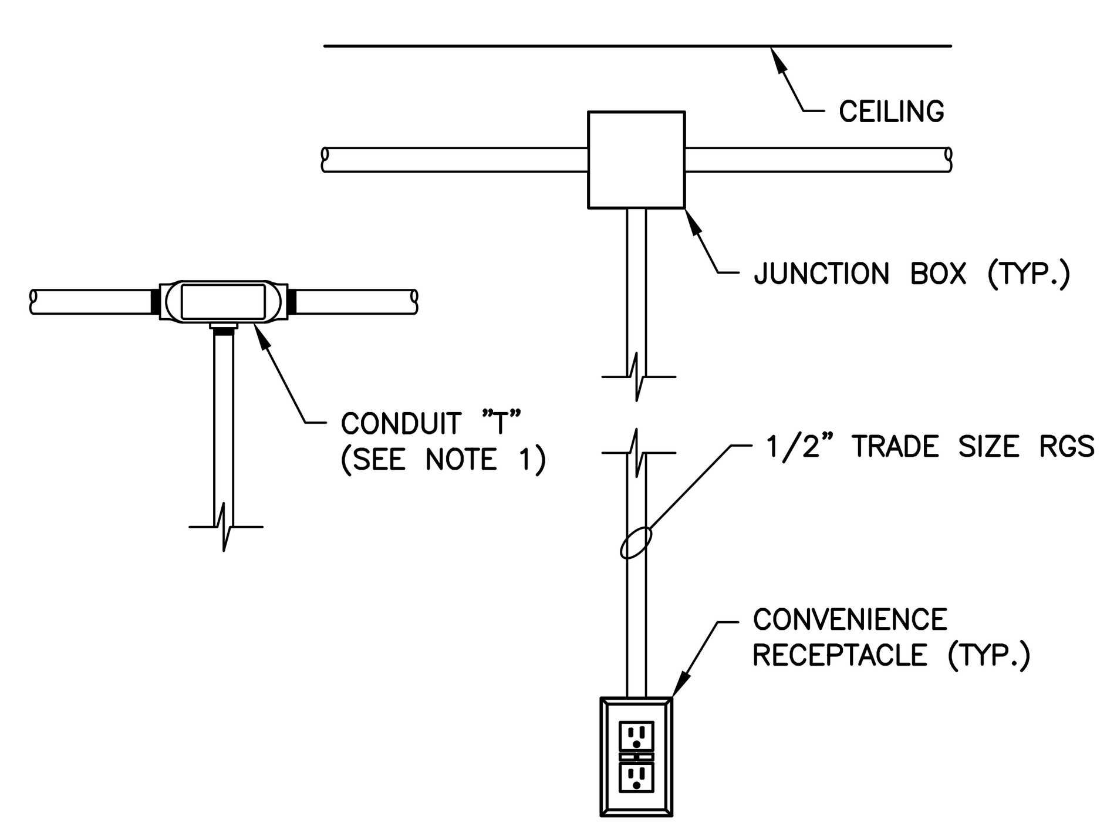
1. THE INTRUSION SWITCH SHALL BE EATON E50 HEAVY DUTY, LEVER TYPE, SPRING RETURN, NEMA 4, 2 CIRCUIT, FACTORY SEALED. PROVIDE WITH A 1-INCH WIDE ADJUSTABLE LEVER, 1.19 TO 3-INCH RADIUS WITH 3/4-INCH NYLATRON ROLLER, EATON E50HL537.
2. PROVIDE THE SWITCH WITH SUFFICIENT LENGTH OF MANUFACTURER'S CABLE TO REACH THE J-BOX WITHOUT SPLICING.
3. MOUNT THE INTRUSION SWITCH ON UNISTRUT TO PROVIDE EASY VERTICAL ADJUSTMENT OR REPLACEMENT.
4. PROVIDE A TERMINAL STRIP IN THE J-BOX FOR CONNECTING THE MANUFACTURER'S CABLE TO THE CONTROL CONDUCTORS BACK TO THE MAIN CONTROL PANEL. CONNECT THE SWITCH TO BE OPEN WHEN THE SHROUD IS CLOSED, CLOSED WHEN THE SHROUD IS OPEN.
5. ALL CONDUITS IN ROOF HATCH SHALL BE PVC-RGS. ALL CONDUIT FITTINGS IN ROOF HATCH SHALL BE 316 STAINLESS STEEL.
6. INSTALL SUCH SO THAT NEITHER THE INTRUSION SWITCH NOR THE J-BOX MAY BE ACCESSED FROM OUTSIDE THE SHROUD.



NOTES:

1. GROUND ROD BOX SHALL BE FOGTITE GROUND ROD BOX WITH ROAD RATING EQUAL TO THE DEVICE OR STRUCTURE IT SUPPORTS (H20 MINIMUM).

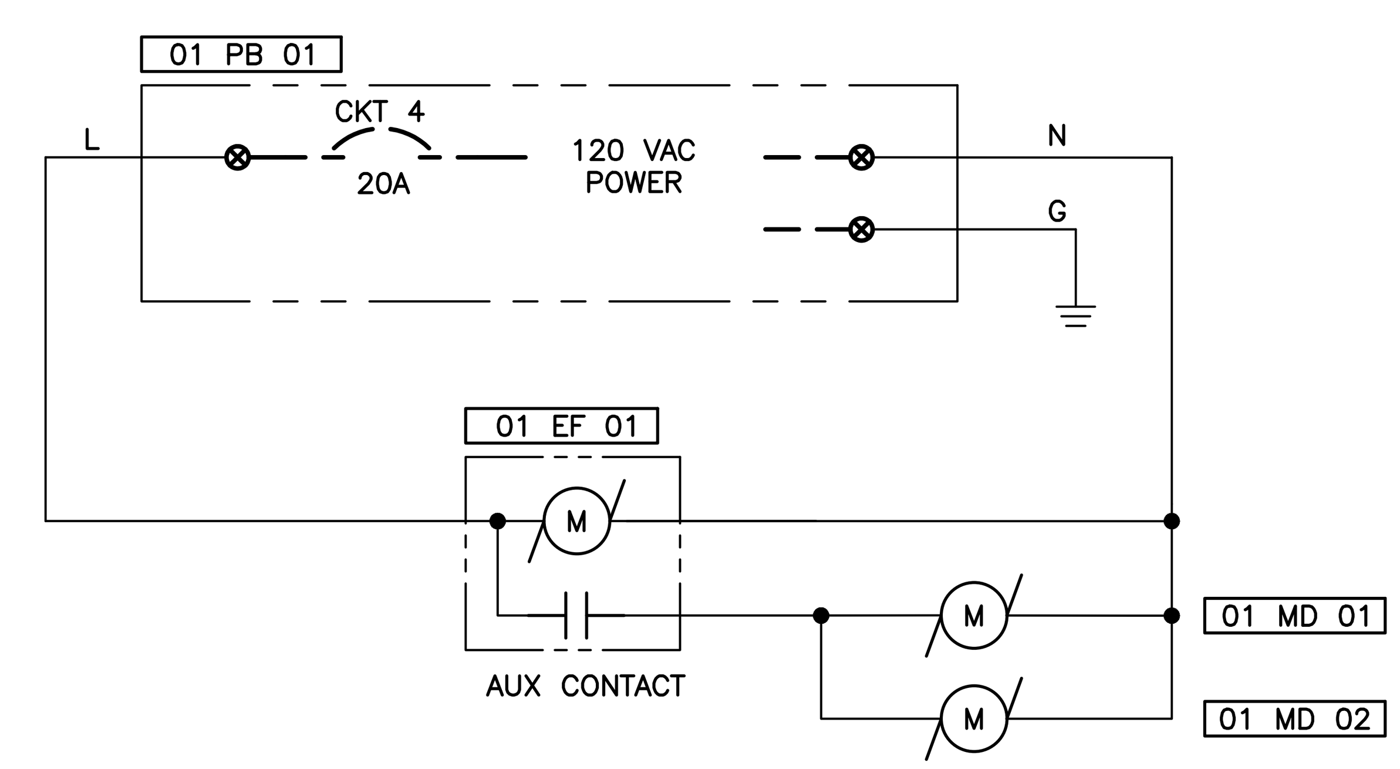
3 / TYP **GROUND ROD BOX DETAIL**
NOT TO SCALE



NOTES:

1. WHERE SPLICING FOR CONVENIENCE RECEPTACLE IS PERFORMED IN A CONDUIT BODY THE CONDUIT BODY SHALL BE SIZED PER THE NEC AND HAVE ITS VOLUME MARKED BY THE MANUFACTURER COMPLIANT TO NEC 314.16(C).

4 / TYP **JUNCTION BOX AND RECEPTACLE DETAIL**
NOT TO SCALE



NOTES:

1. DAMPERS ARE SHOWN AS SINGLE DEVICES, BUT EACH DEVICE MAY HAVE SEVERAL SMALL ASSOCIATED MOTORS DEPENDING ON MANUFACTURER. FULLY CONNECT ALL DEVICES.
2. CONTRACTOR SHALL VERIFY THAT AUX CONTACT IS RATED FOR THIS WIRING METHOD IF THE MOTOR DAMPERS OR FAN ARE ANYTHING OTHER THAN THE MODELS CALLED ON SHEET H-2.

5 / – **MOTORIZED DAMPERS ELEMENTARY WIRING DIAGRAM**
NOT TO SCALE

0 1" 2"
TWO INCHES AT FULL SCALE. IF NOT, SCALE ACCORDINGLY

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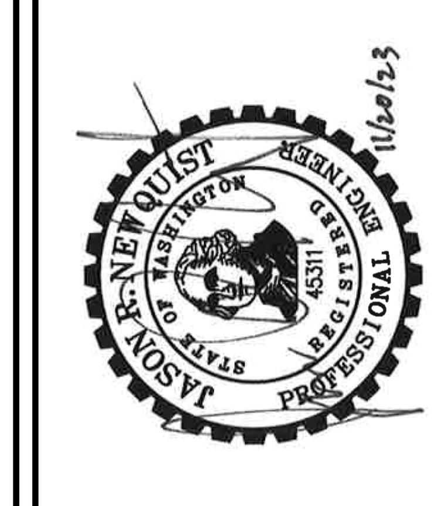
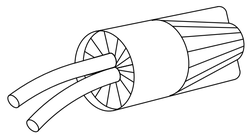


MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL

ELECTRICAL DETAILS

SHEET: **ED-1**
OF: **2**
JOB NO.: 20275
DWG:E_DET_PH3

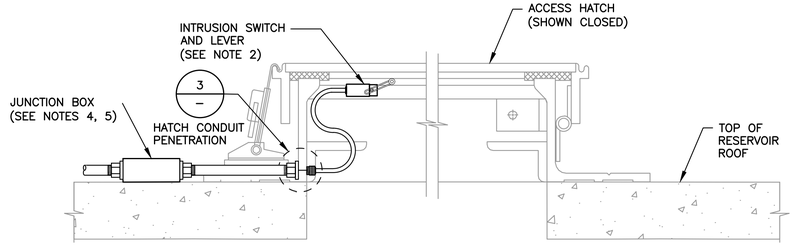


NOTES:

1. PROVIDE WATER–TIGHT CONNECTOR FOR CONTROL AND INSTRUMENTATION CONDUCTOR SPLICING. INCLUDE A STRAIN RELIEF ON CONTROL CONDUCTOR SPLICE CONNECTORS. REFERENCE SPECIFICATION 16120 FOR SPECIFIC REQUIREMENTS.
2. SUBMERGE THE SPLICE AND TEST FOR WATER–TIGHT INTEGRITY.

1 TYP — CONTROL AND INSTRUMENTATION CONDUCTOR WATER-TIGHT SPLICE DETAIL

NOT TO SCALE



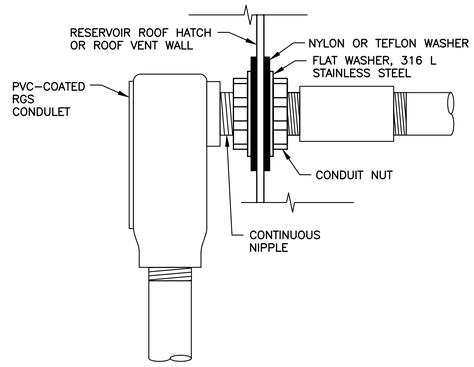
NOTES:

1. THE INTRUSION SWITCH SHALL BE ALLEN BRADLEY #802M, LEVER TYPE, SPRING RETURN, NEMA 4, 2 CIRCUIT, FACTORY SEALED. PROVIDE WITH A 1–INCH WIDE ADJUSTABLE LEVER, 1.19 TO 3–INCH RADIUS WITH 3/4–INCH NYLON ROLLER, ALLEN BRADLEY #802T–W2D.
2. ALL CONDUIT FITTINGS ASSOCIATED WITH THE ROOF HATCH PVC–COATED RGS. ALL CONDUIT CONNECTIONS TO J–BOXES SHALL BE THROUGH MYERS–TYPE HUBS.
3. ALL MOUNTING HARDWARE SHALL BE 316L STAINLESS STEEL.
4. PROVIDE 6" X 6" x 2" 316L STAINLESS STEEL J–BOX WITH TAMPER–RESISTANT SCREWS.
5. CONNECT THE MANUFACTURER'S CABLES TO FIELD WIRING WITH A WATER–TIGHT SPLICE.

1 –

2 TYP — CONCRETE RESERVOIR ACCESS HATCH INTRUSION SWITCH DETAIL

NOT TO SCALE

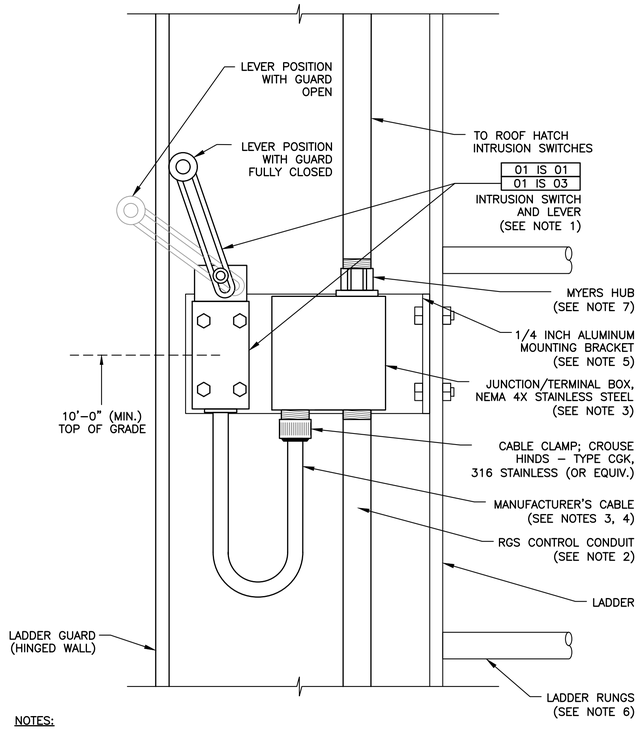


NOTES:

1. WITH THE EXCEPTION OF THE CONTINUOUS NIPPLE, DEVICES ON EITHER SIDE OF THE RESERVOIR WALL ARE TYPICAL FOR BOTH SIDES.
2. THIS RESERVOIR ELECTRICAL PENETRATION DETAIL IS PROVIDED FOR ROOF HATCHES AND ROOF VENTS AND SHALL NOT BE USED IN PORTIONS OF THE RESERVOIR THAT ARE BELOW THE HIGHEST POSSIBLE WATER LINE.

3 TYP — RESERVOIR ROOF HATCH AND ROOF VENT CONDUIT PENETRATION DETAIL

NOT TO SCALE

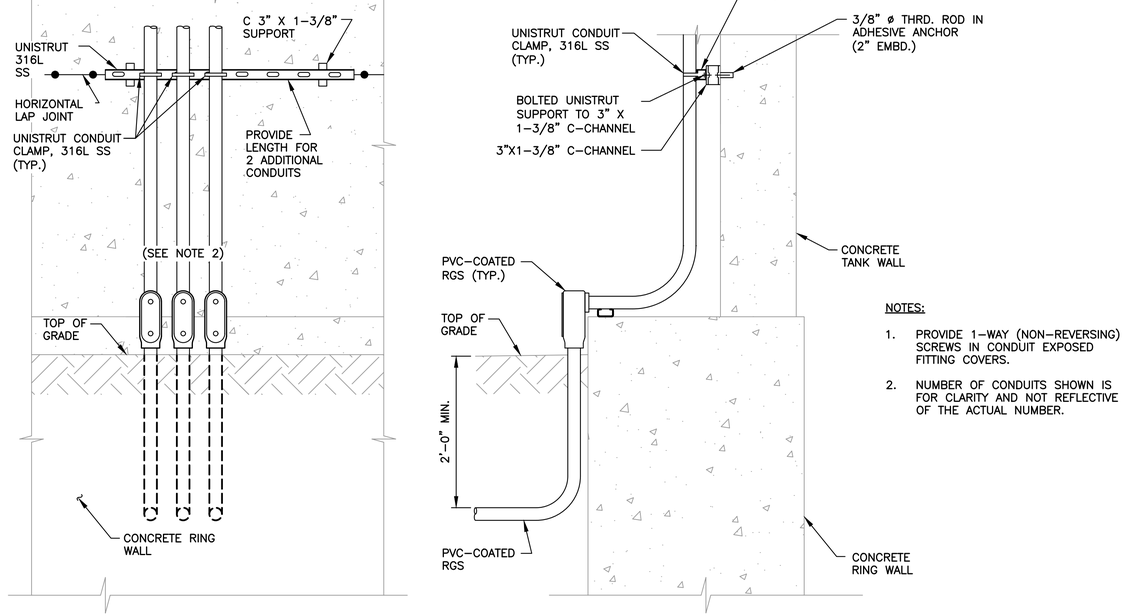


NOTES:

1. THE INTRUSION SWITCH SHALL BE ALLEN BRADLEY #802M, LEVER TYPE, SPRING RETURN, NEMA 4, 2 CIRCUIT, FACTORY SEALED. PROVIDE WITH A 1–INCH WIDE ADJUSTABLE LEVER, 1.19 TO 3–INCH RADIUS WITH 3/4–INCH NYLON ROLLER, ALLEN BRADLEY #802T–W2D.
2. PROVIDE A 3/4–INCH RGS CONDUIT MOUNTED TO THE LADDER SUPPORTS INSIDE, AND ON THE HINGED SIDE, OF THE LADDER GUARD. SET THE HEIGHT OF THE INTRUSION SWITCH A MINIMUM OF 10'–0" ABOVE GRADE.
3. CONNECT THE INTRUSION SWITCH MANUFACTURER'S CABLE TO #14 AWG CONTROL CONDUCTORS IN THE JUNCTION BOX USING DIN–RAIL TERMINAL STRIPS (DO NOT SPLICE). BOTH THE CONDUIT AND MANUFACTURER'S CABLE SHALL ENTER THE J–BOX FROM THE BOTTOM. MAKE ALL CONNECTIONS WATERTIGHT.
4. MOUNT THE INTRUSION SWITCH WITH A MAXIMUM OF 12–INCHES OF EXPOSED MANUFACTURER'S CABLE.
5. LADDER, RUNGS, BRACKETS AND ALL OTHER DEVICES SHOWN IN THIS DETAIL ARE PROVIDED TO SHOW THE INTENT OF THE INSTALLATION. ACTUAL DIMENSIONS AND DETAILS ARE LEFT TO THE CONTRACTOR.
6. ALL SUPPORT HARDWARE ASSOCIATED WITH THE LADDER GUARD SHALL BE 316L STAINLESS STEEL.
7. ALL CONDUIT PENETRATIONS SHALL BE MADE FROM THE BOTTOM OF ENCLOSURES. WHERE THIS IS NOT POSSIBLE, PENETRATE THE ENCLOSURES USING MYERS HUBS. ALL CONNECTIONS SHALL BE WATERTIGHT.

4 TYP — LADDER GUARD INTRUSION SWITCH

NOT TO SCALE



NOTES:

1. PROVIDE 1–WAY (NON–REVERSING) SCREWS IN CONDUIT EXPOSED FITTING COVERS.
2. NUMBER OF CONDUITS SHOWN IS FOR CLARITY AND NOT REFLECTIVE OF THE ACTUAL NUMBER.

5 TYP — CONCRETE RESERVOIR CONDUIT MOUNTING DETAIL

SCALE: 1"=1'–0"

0 1" 2"

TWO INCHES AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

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MASON COUNTY PUD #1
MASON COUNTY WASHINGTON
AGATE BEACH WATER SYSTEM IMPROVEMENTS PHASE 3 - BOOSTER PUMP EQUIPMENT/HVAC/ AND ELECTRICAL
ELECTRICAL DETAILS

SHEET: **ED-2**
OF: **2**
JOB NO.: 20275
DWG:E_DET_PH3