BEAVERTON ASR 7

COOPER MOUNTAIN
RESEVOIR #2

BEAVERTON, OR PROJECT # 18-2258
PGE NET METERING AGREEMENT
PGENM-41341

WORK ORDER # WO-2110

WAPITI / 3R VALVE CONTACT INFORMATION:

UL CERTIFICATION #: E495685

PATENT#: 18/061, 658

Klarquist Ref. #: 10184-104051-03

ENGINEER
WAPITI CONSULTING
2207 W. DAKOTA AVE.
HAYDEN, ID 83835
CONTACT: MATT JOHNSON, P.E. (208) 651-1120

3R VALVE
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PROJECT CONTACT INFORMATION:

CITY OF BEAVERTON
1825 SW KEMMER RD.
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ENGINEER/ ARCHITECT
NAME
ADDRESS
CONTACT: TBD
PHONE: (---) ***-1234

CONTRACTOR
T.B.D.
-- (TBD)
--

COVER PAGE: BEAVERTON ASR 7
NO SCALE

PROFESSIONAL ENGINEER LICENSED 17734 MATTHEW F. JOHNSON STATE OF IDAHO EXP. 01/01/2026

3R VALVE

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NO.	DATE	REVISION	BY
1	--	SUBMITTAL	NK

DWG TITLE
CITY OF BEAVERTON COVER PAGE

ENGINEER MFJ	CHECKED BY MFJ
JOB NO WO-2110	DRAWN BY NEK
SCALE NO SCALE	DATE 11/20/2025
DWG NO COVER	
SHEET NO – OF –	

CAD DWG FILE

WAPITI CONSULTING ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
F1 / aD / 2	FLUORESCENT LUMINAIRE, RECESSED, SEE LUMINAIRE SCHEDULE FOR DETAILS (TYP) F1 = TYPE, PER LUMINAIRE SCHEDULE (TYP) 2 = CIRCUITING (TYP) a = SWITCHING (TYP) D = DIMMER BALLAST (TYP)
	FLUORESCENT LUMINAIRE, RECESSED, WITH EMERGENCY BATTERY PACK
	FLUORESCENT LUMINAIRE, SURFACE MOUNTED ON CEILING, OR SUSPENDED, WITH EMERGENCY BATTERY PACK
	FLUORESCENT LUMINAIRE, SURFACE MOUNTED ON CEILING
	FLUORESCENT STRIP LUMINAIRE, SURFACE MOUNTED
	FLUORESCENT STRIP LUMINAIRE, SURFACE MOUNTED WITH EMERGENCY BATTERY PACK
	METAL HALIDE DIRECTIONAL FLOOD, STANCHION MOUNTED
	VANITY FIXTURE
	FLUORESCENT LUMINAIRE, WALL MOUNTED
	FLUORESCENT LUMINAIRE, WALL MOUNTED WITH EMERGENCY BATTERY PACK
	INCANDESCENT, COMPACT FLURESCENT, OR H.I.D. LIGHTING FIXTURE, CEILING MOUNTED OR SUSPENDED
	INCANDESCENT, COMPACT FLURESCENT, OR H.I.D. LIGHTING FIXTURE ON EMERGENCY CIRCUIT, CEILING MOUNTED OR SUSPENDED
	EMERGENCY WALL PACK
	H.I.D. LIGHTING FIXTURE, POLE MOUNTED
	H.I.D. LUMINAIRE, POLE MOUNTED
	METAL HALIDE LENSED DOWN LIGHT, RECESSED
	COMPACT FLUORESCENT LUMINAIRE, RECESSED
	COMPACT FLUORESCENT LUMINAIRE, RECESSED, WITH EMERGENCY BATTERY PACK
	LIGHTED EXIT SIGN, BACK OR END MOUNTED. SHADED AREA INDICATES FACE. ARROW INDICATES DIRECTIONAL ARROW.
	INCANDESCENT, COMPACT FLUORESCENT OR H.I.D. LUMINAIRE, WALL MOUNTED
	SPECIAL PURPOSE RECEPTACLE - AS NOTED
Y	DUPLEX RECEPTACLE Y=NOTATIONS FOR ALL RECEPTACLE TYPES: G = GROUND FAULT CIRCUIT INTERRUPTER (GFCI) W = WEATHER PROOF COVER I = ISOLATED GROUND C = CEILING MOUNTED RECEPTACLE SW= SPLIT CIRCUITING +X"= INDICATES CENTERLINE MOUNTING HEIGHT ABOVE FINISHED FLOOR OR GRADE
	QUAD RECEPTACLE
	DUPLEX RECEPTACLE - FLUSH FLOOR MOUNTED
	QUAD RECEPTACLE - FLUSH FLOOR MOUNTED
DATA DUPLEX / DATA DUPLEX	FLUSH FLOOR BOX, 4 COMPARTMENT, COMBINATION DATA, PHONE, STANDARD DUPLEX RECEPTACLE
	SURFACE POWER/DATA RACEWAY.
	DATA OUTLET
T	THERMOSTAT
H	HUMIDISTAT
C	CABLE TV CONNECTION POINT
	PANELBOARD
	TERMINAL
	TERMINAL IN MCP
	TERMINAL REMOTE DEVICE OR PANEL

SYMBOL	DESCRIPTION
	CONDUIT EXPOSED
	CONDUIT UNDER FLOOR OR UNDERGROUND
EX	EXISTING CONDUIT ROUTED UNDERGROUND
P	UNDERGROUND PRIMARY POWER
	MC-HL CABLE WITH XP SEAL FITTINGS
	CONDUIT FLEXIBLE
	HEAT TAPE ON PIPING
	MANUFACTURERS CORD/CABLE
	CONDUIT TURNED UP OR TOWARD
	CONDUIT TURNED DOWN OR AWAY
	CONDUIT CAPPED
	CONDUIT SEALS. CLASS 1. DIV.1 EXPLOSION PROOF
L-7	CONDUIT HOME RUN 3/4"C, 2#12 & 1#12 GND. TO PANEL L, CKT. 7 UNLESS SHOWN OTHERWISE. IF NO HASH MARKS SHOWN, DEFAULT TO CONDUCTORS AS REQUIRED BY NEC
P1	CONDUIT HOME RUN - SEE SCHEDULE
HH1	HANDHOLE WITH DESIGNATION
VLT-1	VAULT WITH DESIGNATION
J	JUNCTION BOX
ST LSIG 30/2	CKT, BKR, RATING/NO. OF POLES WITH THERMAL MAGNETIC CIRCUIT BREAKER TRIP ST - SHUNT TRIP LSIG - LONG TIME, SHORT TIME, INSTANT., GROUND FAULT TRIP
	POWER CAPACITOR
FVNR 1	FULL VOLTAGE NON-REVERSING STARTER, NEMA SIZE 1 FVR = FULL VOLTAGE REVERSING
VFD	VARIABLE FREQUENCY DRIVE
SSS IC BP	SOLID STATE STARTER, REDUCED VOLTAGE WITH ISOLATION & BYPASS CONTACTORS
	FUSE
AM	AMMETER (WHM-WATT HOUR METER)
VM	VOLTMETER
AM AS	METER & SWITCH: A = AMP, V = VOLT
CR	CONTROL RELAY
RTM	RUN TIME METER
PE	PHOTO ELECTRIC CELL
M	PANEL HEATER WITH FAN AND THERMOSTAT
	CONDUCTORS NOT CONNECTED
	CONDUCTORS CONNECTED
	PULL OUT SWITCH/PLUG-RECEPTACLE CONNECTION
G	BLOWN FUSE INDICATOR
	NORMALLY OPEN CONTACT. (WHEN DE-ENERGIZED)
	NORMALLY CLOSED CONTACT. (WHEN DE-ENERGIZED)
	THERMAL OVERLOAD RELAY
SS OL	SOLID STATE OVERLOAD
M	EXHAUST FAN
	COOLING FAN
	GRAVITY LOUVER
	CABLE TRAY

SCHEMATIC	PLAN	DESCRIPTION
		GROUND ROD IN GROUND ROD BOX
	T	TRANSFORMER, PLAN VIEW SHOWN TO SCALE
3	CT	CURRENT TRANSFORMER, NUMBER INDICATES NUMBER OF C.T.'S. PLAN VIEW SHOWN TO SCALE
10	M	MOTOR, NUMBER INDICATES HORSEPOWER
	OT	OVERTEMPERATURE CUTOUT
CP H	XXXX	LOCAL EQUIPMENT CONTROL PANEL - MCP, LCP, FACP
SV	SV	SOLENOID VALVE
SS		MAGNETIC MOTOR STARTER (SS-SOLID STATE)
		MAGNETIC MOTOR STARTER W/ DISCONNECT
MS 2	MS	FULL VOLTAGE STARTER/NEMA SIZE MS = MOTOR STARTER CONTACT BP = BYPASS CONTACTOR IC = ISOLATION CONTACTOR
	HS	MAINTAINED ON/OFF SWITCH
	60A	DISCONNECT SWITCH, NON FUSED (60A) INDICATES AMPERAGE RATING
100AF 200AS	F 200/100	DISCONNECT SWITCH, FUSED 200 = SWITCH RATING, 100 = FUSE RATING
		TIME DELAYED CONTACTS (TIME DELAY TO OPEN) (TIME DELAY TO CLOSE)
R	R	INDICATING LIGHT: A = AMBER G = GREEN W = WHITE B = BLUE R = RED
A		PUSH TO TEST INDICATING LIGHT TRANSFORMER TYPE
	R	LIGHTED PUSHBUTTON
R	HOA	SELECTOR SWITCH: HOR = HAND/OFF/REMOTE AS = AMP SWITCH HOA = HAND/OFF/AUTO VS = VOLT SWITCH ROL = RMOTE/OFF/LOCAL RO = RUN/OFF
OFF HAND AUTO	EV	EV=ELECTRICAL VAULT, PV=POWER VAULT SV=SIGNAL VAULT
	HS	HAND SWITCH
	PB	PUSHBUTTON SWITCH. MOMENTARY ON
	ESS	EMERGENCY STOP SWITCH (PUSH/PULL)
	PS	PRESSURE SWITCH. NORMALLY CLOSED
	FS	FLOW SWITCH. NORMALLY CLOSED
	ZS	LIMIT SWITCH, NORMALLY CLOSED
	LS	LEVEL SWITCH, CLOSES ON RISING LEVEL
TS TC T		TS-TEMP. SWITCH, (SEE DWG. FOR OPERATION) TC-THERMOCOUPLE, T-THERMOSTAT
		POTENTIOMETER
LT	LT	LEVEL (T=TRANSMITTER, E=ELEMENT, S=SWITCH)
PT	PT	PRESSURE TRANSMITTER
SI	SI	SPEED INDICATOR
FT	FT	FLOW TRANSMITTER
	DS	DOOR SECURITY SWITCH
	WS	TORQUE SWITCH
VS	VS	VIBRATION SENSOR
	CS	CONTROL STATION, SINGLE OR MULTIPLE SWITCHES
	MS	MOISTURE SENSOR
	HTR	HEATER
	RTD	RESISTANCE TEMPERATURE DEVICE
		UNIT HEATER

ABBREVIATIONS

A,AMP -	AMPERE
AL -	ALARM
AC -	AIR COMPRESSOR
AF -	AMPERE FRAME
AFF -	ABOVE FINISHED FLOOR
AFG -	ABOVE FINISHED GRADE
AFS -	AMPERE FUSE
AI -	ANALOG INPUT POINT (PLC)
AIC -	AMPS INTERRUPTING CAPACITY
AIL -	AMBER INDICATING LIGHT
ALT -	ALTERNATOR
AO -	ANALOG OUTPUT POINT (PLC)
AS -	AMPERE SWITCH
AT -	AMPERE TRIP
ATS -	AUTOMATIC TRANSFER SWITCH
BC -	BATTERY CHARGER
BH -	BLOCK HEATER
BIL -	BLUE INDICATING LIGHT
BP -	BYPASS CONTACTOR
C -	CONDUIT (GRS)
CB -	CIRCUIT BREAKER
CGD -	COMBUSTIBLE GAS DETECTOR
CP -	CONTROL PANEL
CPT -	CONTROL POWER XFMR
CT -	CURRENT TRANSFORMER
CTL -	CONTROL
CV -	CHECK VALVE
DB -	DIRECT BURIED
DE -	DOUBLE END
D.E. -	DEAD END
DEM -	DEMAND
DF -	DEMAND FACTOR
DI -	AC DIGITAL INPUT POINT (PLC)
DO -	AC DIGITAL OUTPUT POINT (PLC)
EF -	EXHAUST FAN
ESD -	EMERGENCY SHUTDOWN
ESS -	EMERGENCY STOP SWITCH
EXIST -	EXISTING
GFI -	GROUND FAULT INTERRUPT
GND -	GROUND
GIL -	GREEN INDICATING LIGHT
GRS -	GALVANIZED RIGID STEEL
H -	HOT, HIGH
HH -	HAND HOLE
HMI -	HUMAN MACHINE INTERFACE
HOA -	HAND-OFF-AUTO
HS -	HAND SWITCH
HTR -	HEATER
I -	INTRUSION SWITCH
IC -	ISOLATION CONTACTOR
ISR -	INTRINSICALLY SAFE RELAY
KS -	KEY SWITCH
kVARH -	KILOVAR HOUR
kWH -	KILOWATT HOUR
L -	LOW
LCP -	LOCAL CONTROL PANEL
LS -	LIMIT SWITCH
N -	NEUTRAL
MCC -	MOTOR CONTROL CENTER
MCP -	MAIN CONTROL PANEL
MESR -	MASTER EMERGENCY STOP RELAY
MFGR -	MANUFACTURER
MOV -	MOTOR OPERATED VALVE
MTR -	MOTOR
OFE -	OWNER FURNISHED EQUIPMENT
OIT -	OPERATOR INTERFACE TERMINAL
ORD -	OXIDATION REDUCTION POTENTIAL
P -	PILOT LIGHT
PBL -	PUSH BUTTON - LIGHTED
PB -	PUSH BUTTON
PFR -	PHASE FAILURE RELAY
PS -	PRESSURE SWITCH
PT -	POTENTIAL TRANSFORMER
PTZ -	PAN, TILT, ZOOM
PVC -	POLY VINYL CHLORIDE (CONDUIT)
PWR -	POWER
RHP -	RADIANT HEAT PANEL
RIL -	RED INDICATING LIGHT
RR -	REMOTE RACK
RTM -	RUN TIME METER
SA -	SURGE ARRESTOR
SIG -	SIGNAL
SPC -	SHIELDED POWER CABLE
SSOL -	SOLID STATE OVERLOAD RELAY
SS -	SOLID STATE OR STAINLESS STEEL
SV -	SOLENOID VALVE
STP -	SHIELDED TWISTED PAIR
STT -	SHIELDED TWISTED THREE CONDUCTOR (TRIAD)
T -	THERMOSTAT
TC -	THERMOCOUPLE
TDOE -	TIME DELAY ON ENERGIZATION
TDOD -	TIME DELAY ON DE-ENERGIZATION
TR -	TRIP RELAY
TNI -	TELEPHONE NETWORK INTERFACE
TVSS -	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UH -	UNIT HEATER
UTP -	UNSHIELDED TWISTED PAIR
VFD -	VARIABLE FREQUENCY DRIVE
WIL -	WHITE INDICATING LIGHT
WP -	WEATHER PROOF
WS -	TORQUE SWITCH PROOF
XFMR -	TRANSFORMER
XP -	EXPLOSION PROOF

CIRCUIT BREAKER LEGEND

LS -	LONG TIME, SHORT TIME TRIP
LSI -	LONG TIME, SHORT TIME, INSTANTANEOUS TRIP
LSIG -	LONG TIME, SHORT TIME, INSTANTANEOUS GROUND FAULT TRIP

REFERENCE SYMBOLS

PV-1 — VAULT CALLOUT

AA — DUCT BANK CALLOUT

HW-P-355 N — EQUIPMENT CALLOUT
LOCATION
EQUIP. TYP.
EQUIP. NUMBER
N-NEW
E-EXISTING
F-FUTURE

CONDUIT IDENTIFICATION

U-1	UTILITY CONDUIT WIRE TAG, SEE SCHEDULE
F-1	POWER FEEDER CONDUIT & WIRE TAG, SEE SCHEDULE
P-1	POWER & CONTROL CONDUIT & WIRE TAG, SEE SCHEDULE
C-1	CONTROL CONDUIT & WIRE TAG SEE SCHEDULE
S-1	SIGNAL CONDUIT & WIRE TAG, SEE SCHEDULE
T-1	TELEPHONE CONDUIT & WIRE TAG
G-1	GROUND ELECTRODE SYSTEM
R-1	SPARE CONDUIT
XXXA	LETTER INDICATES CONTINUATION OF CONDUIT XXX. THE LETTER "N" SIGNIFIES MULTIPLE CONDUIT CONTINUATIONS.
N1	SHEET KEYED NOTE
XXXX	WIRING DIAGRAM DETAIL LOCATION
X	ADDENDUM NUMBER

DETAIL NUMBER OR SECTION LETTER
DETAIL/SECTION
SCALE
2 / XX
SHEET WHERE DETAIL IS TAKEN FROM

A / XX
SECTION LETTER
SHEET ON WHICH SECTION APPEARS

2 / XX
FIGURE OR PHOTO DETAIL NUMBER
SHEET WHERE DETAIL IS TAKEN FROM
IF PHOTO, ARROW DENOTES DIRECTION TAKEN

2 / XX
DETAIL NUMBER
DETAIL AREA
SHEET ON WHICH DETAIL APPEARS

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
^{X}	WALL MOUNTED TOGGLE SWITCH, SINGLE POLE, SINGLE THROW, MOUNTED AT 48" TO TOP OF PLATE UNLESS OTHERWISE NOTED X=NOTATIONS FOR SWITCHES: 2 = DOUBLE POLE 3 = 3-WAY 4 = 4-WAY D = DIMMER K = KEY OPERATED P = SWITCH WITH PILOT COVER WP = WEATHER PROOF COVER M = MOTION SENSOR SW = SPLIT CIRCUITING +X" = INDICATES MOUNTING HEIGHT TO TOP OF PLATE, ABOVE FINISHED FLOOR OR GRADE
$_{a}$ $_{b}$	INDICATES SWITCHES a & b MOUNTED IN SEPARATE BOXES WITH SEPARATE COVER PLATES.
$_{a, b, c}$	INDICATES MULTIPLE SWITCHES IN GANGED BOX WITH COMMON COVERPLATE. "a,b,c" INDICATES NUMBER OF INDIVIDUAL SWITCHES AND FIXTURES CONTROLLED.

GENERAL NOTES

1. THIS IS A STANDARD LEGEND SHEET. THEREFORE SOME ABBREVIATIONS OR SYMBOLS THAT APPEAR ON THIS SHEET MAY NOT BE USED ON THIS PROJECT.
2.
3.

SYMBOL	SECURITY	SYMBOL	FIRE PROTECTION
MD	MOTION DETECTOR	FACP	FIRE ALARM CONTROL PANEL
DC	DOOR CONTACTS	S	SMOKE DETECTOR, CEILING MOUNTED
EOL	END OF LINE RESISTOR	R	ADDRESSABLE FIRE ALARM SYSTEM RELAY
KP	KEYPAD		HEAT DETECTOR
	PTZ CAMERA	HS C	XX CD XX dBA
		S	XX CD FIRE ALARM STROBE
		F	FIRE ALARM PULL STATION
		H	FIRE ALARM HORN
		DS	DUCT SMOKE DETECTOR

3R VALVE

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NO.	DATE	REVISION	BY
1	--	SUBMITTALS	NK

DWG TITLE
ELECTRICAL LEGEND

ENGINEER MFJ | CHECKED BY MFJ
JOB NO WO-21** | DRAWN BY NEK
SCALE NO SCALE | DATE 05/20/2025
DWG NO EL
SHEET NO 3 OF 17

CAD DWG FILE

SITE ADDRESS
CITY OF BEAVERTON
1825 SW KEMMER RD.
BEAVERTON, OR
97007

NORTH

500 KVA
UTILITY
TRANSFORMER

TO: 500KVA UTILITY
TRANSFORMER

PGE POC &
METERING
ENCLOSURE
SERVICE ENTRANCE

N 13

N 5

(5) AC
DISCONNECT

GENERATOR
ENCLOSURE

PP-1100-12
PP-1100-13

P-MAIN-2

440"

GENERATOR CONTROL
PANEL LOCATED INSIDE
GENERATOR ENCLOSURE

GENERATOR MAIN
BREAKER (LOCATED
INSIDE GEN.
ENCLOSURE)

P-MAIN-2

P-GEN-2
P-GEN-3

B 02

PP-1100-12
PP-1100-13

ATS

N 11

ELECTRICAL
ROOM

INVERTER

P-P-1100-11

N 8

DC FUSE
BOX

P-P-1100-14

N 2

P-P-1100-10
P-P-1100-13

ATS

VFD

432"

EXISTING
SWITCHBOARD &
NEW BREAKER
LOCATION.

LP-100

3' MIN WORKING
SPACE PER NEC
TABLE 110.26(A)(1)

*COORDINATE
WITH ENGINEER

PROFESSIONAL ENGINEER
LICENSED
17734
EXP. 01/01/2026
STATE OF IDAHO
MATTHEW F. JOHNSON

3R VALVE

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DWG TITLE

ASR 7
GENERATOR
ENCLOSURE
PLAN VIEW

ENGINEER: MFJ	CHECKED BY: MFJ
JOB NO: WO-2110	DRAWN BY: NEK
SCALE: 3/16"=1'	DATE: 10/22/2025

DWG NO

PLAN

SHEET NO

- OF -

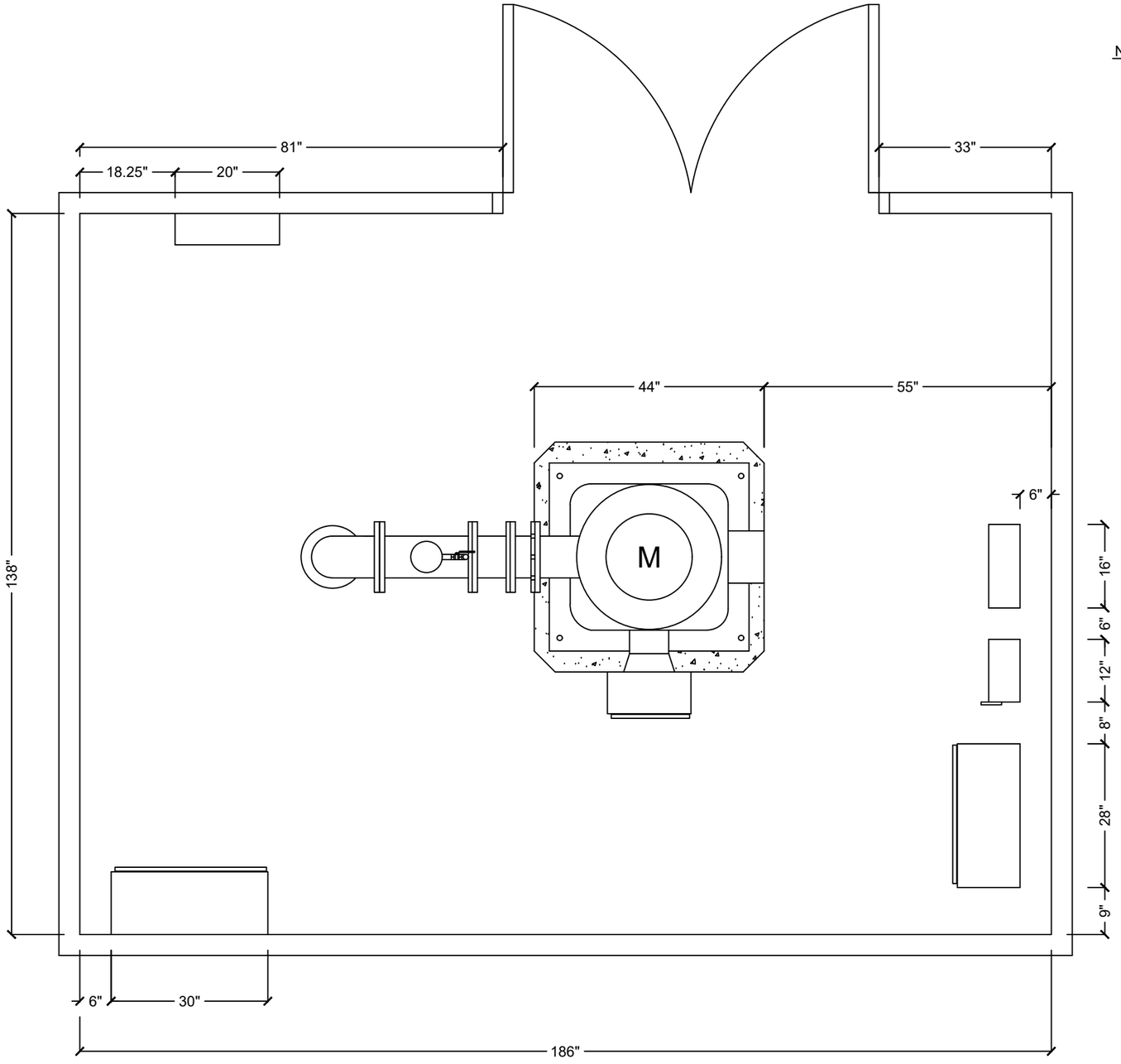
CAD DWG FILE

SITE ADDRESS

CITY OF BEAVERTON
1825 SW KEMMER RD.
BEAVERTON, OR
97007

NOTES:

* WELL PUMP MOTOR (AT SURFACE).
* WELL PUMP BOWEL IN WELL.



PLAN: WELL MOTOR / PUMP HOUSE
1/2 " =1'

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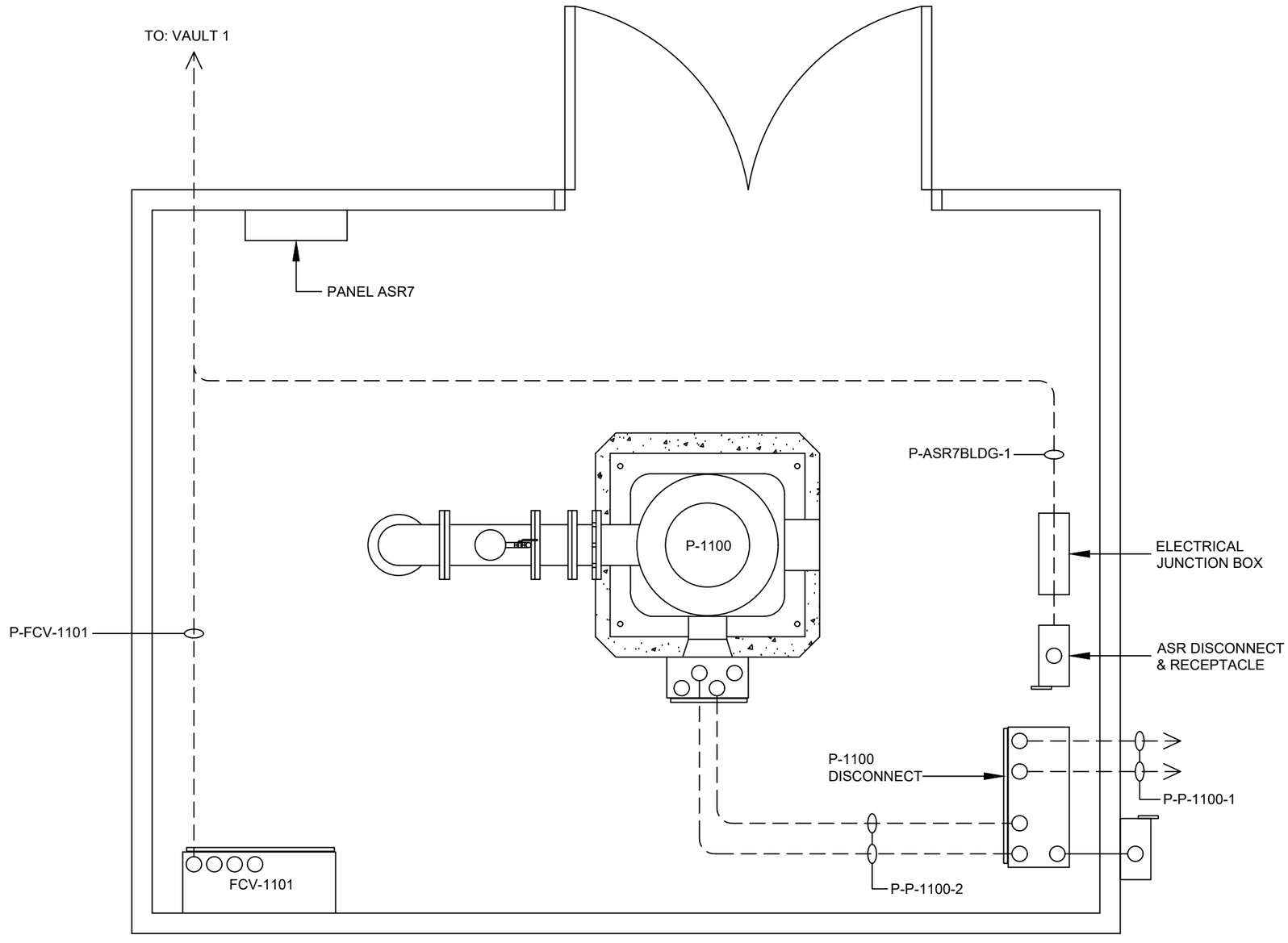
1	--	-	NK

DWG TITLE

ASR 7 MECHANICAL BUILDING PLAN VIEW

ENGINEER MFJ	CHECKED BY MFJ
JOB NO WO-2110	DRAWN BY NEK
SCALE 1/2"=1'	DATE 11/07/2025
DWG NO PLAN	
SHEET NO – OF –	

CAD DWG FILE



MECHANICAL BLDG. PANEL LAYOUT
1/2 " =1'

PROFESSIONAL ENGINEER
LICENSED
17734
EXP. 01/01/2028
STATE OF IDAHO
MATTHEW F. JOHNSON

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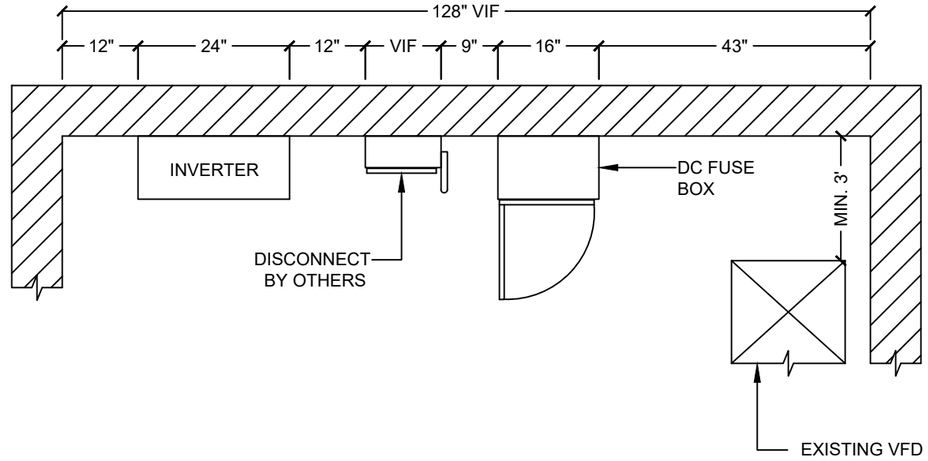
NO.	DATE	REVISION	BY
1	--	-	NK

DWG TITLE

ASR 7 MECHANICAL BUILDING PLAN VIEW

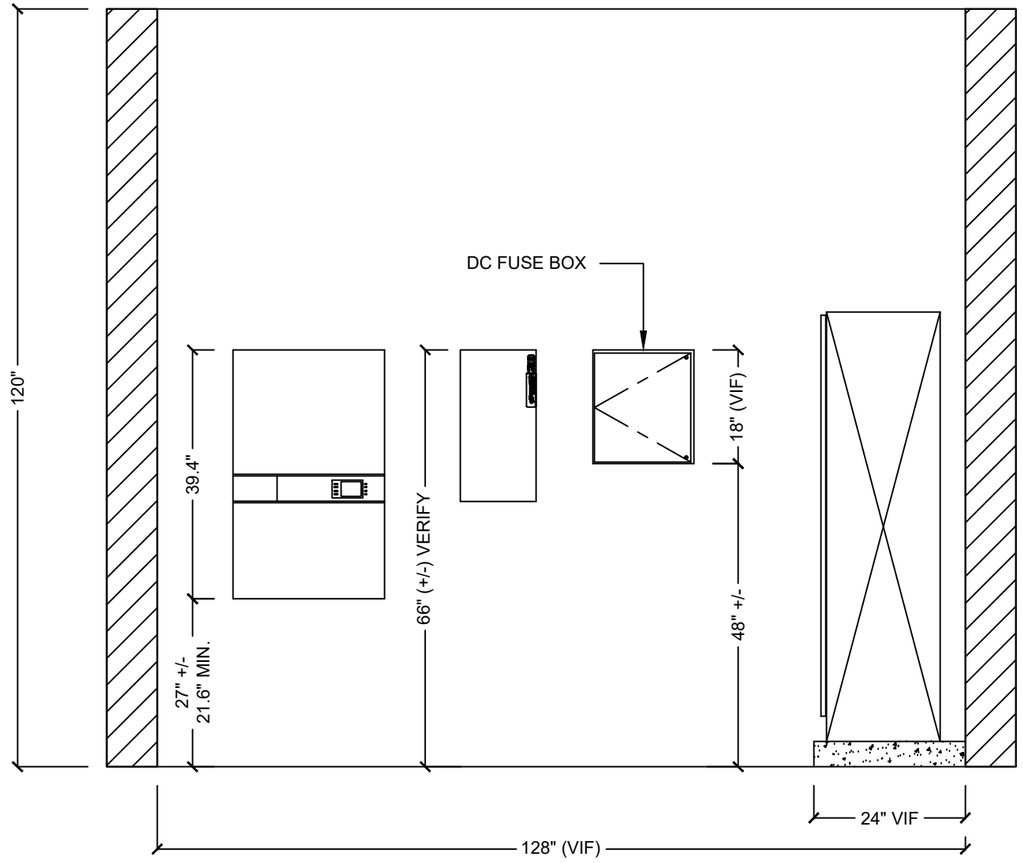
ENGINEER: MFJ	CHECKED BY: MFJ
JOB NO: WO-2110	DRAWN BY: NEK
SCALE: 1/2"=1'	DATE: 11/07/2025
DWG NO: MECH BLDG	
SHEET NO: - OF -	

CAD DWG FILE



B
02
PLAN: ASR-7 S.E. WALL
1/2 " =1'

NOTES:
* CONDUIT ROUTING IS AT THE DISCRETION FO THE ELECTRICAL CONTRACTOR AND SHALL BE ACCEPTABLE TO OWNER AND ENGINEER.
* DC FUSE BOX TO BE MOUNTED ABOVE AC FUSE BOX.



2
B
ELEV: ASR-7 S.E. WALL
1/2 " =1'

PROFESSIONAL ENGINEER
LICENSED
17734
EXP. 01/01/2026
STATE OF IDAHO
MATTHEW F. JOHNSON

3R VALVE

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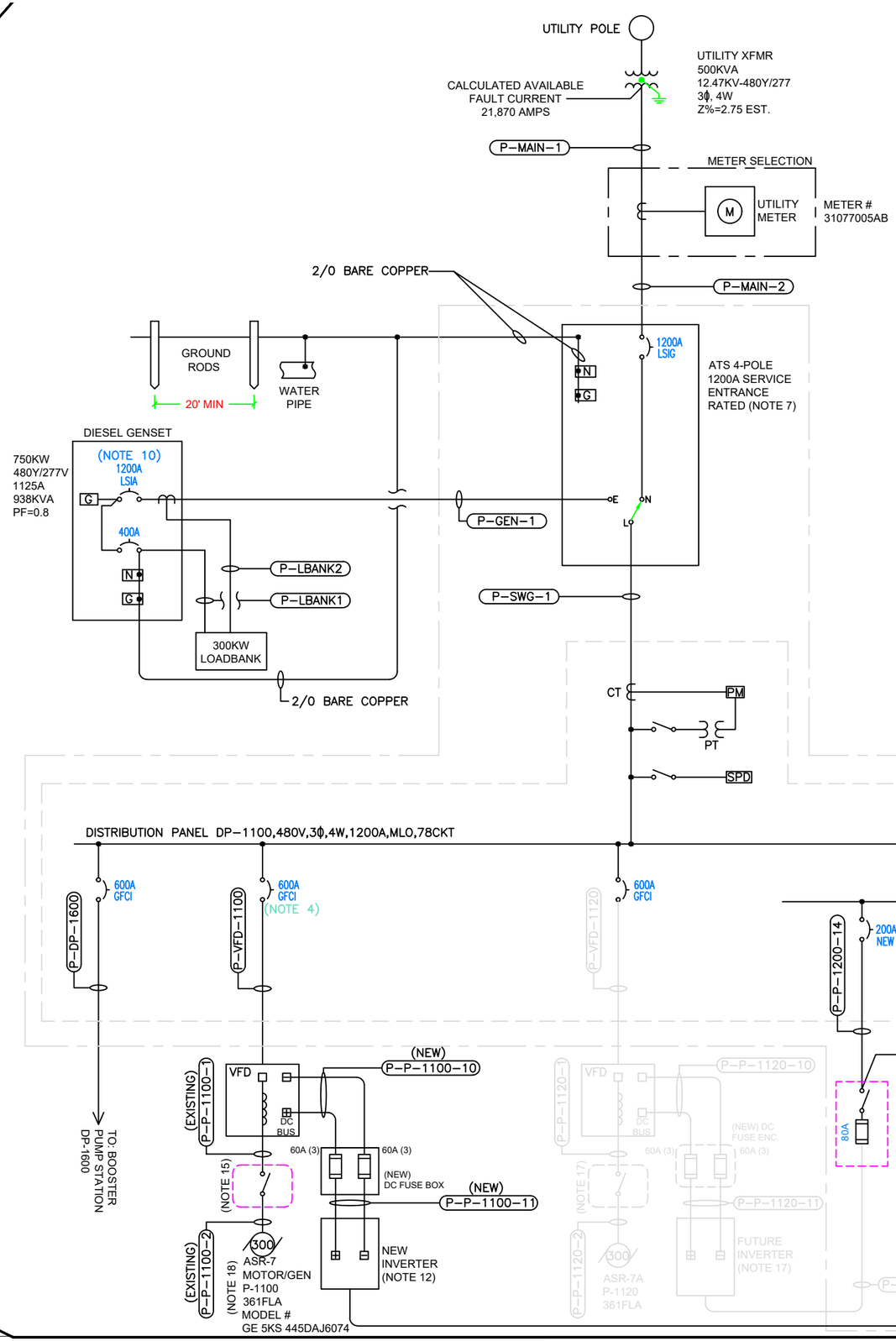
DWG TITLE
ASR 7 ELECTRICAL RM ELEVATION VIEW

ENGINEER MFJ	CHECKED BY MFJ
JOB NO WO-2110	DRAWN BY NEK
SCALE 1/2"=1'	DATE 03/23/2026
DWG NO B-02	
SHEET NO - OF -	

CAD DWG FILE



SITE ADDRESS
CITY OF BEAVERTON
1825 SW KEMMER RD.
BEAVERTON, OR
97007

NOTES:

1: VFD'S SHALL BE EITHER A MINIMUM OF A 12 PULSE DRIVE COMBINED W/ INPUT HARMONIC FILTERS OR AN 18 PULSE DRIVE.
2: INSTALL UTILITY TRANSFORMER ON OLDCASTLE PART# 9696-1554-TRANSPAD-PGE PAD. INSTALL TRANFORMER A MINIMUM OF 5' AND A MAXIMUM OF 15' FROM A MAINTAINED DRIVABLE AREA, 8' FROM ANY COMBUSTABLE BUILDING AND PROVIDE 10' OF CLEARANCE IN FRONT OF THE TRANSFORMER. CONTRACTOR SHALL PROVIDE & INSTALL (1) 4" PVC40 CONDUIT W/ FIBERGLASS 36" RADIUS ELBOWS & PULL CORDS FOR PRIMARY CONNECTIONS. INSTALL (5) 3" PVC40 CONDUITS W/ PULL CORDS FOR SECONDARY CONNECTIONS. ALL CONDUITS SHALL BE INSTALLED W/ 30" MIN. COVER AT TOP OF CONDUIT FROM FINAL GRADE. IF TRENCH IS SHARED W/ OTHER UTILITIES, ELECTRICAL CONDUITS SHALL MAINTAIN 12" VERTICLE & 24" HORIZONTAL CLEARANCE BETWEEN GAS & OTHER UTILITIES. PGE RESPONSIBLE FOR PROVIDING & INSTALLING THE PRIMARY & SECONDARY CONDUCTORS.
3: PROVIDE 3Φ NON-FUSED SWITCHES FOR ITEMS SHOWN ON SINGLE LINE & ON PLAN DRAWINGS. DISCONNECTS SHALL BE SIZED PER EQUIPMENT NAMEPLATE RATING, MIN. 30A.
4: OVERCURRENT PROTECTIVE DEVICES OR DISCONNECTS FOR SURGE PROTECTION DEVICE (SPD), POWER MONITORING (PM) & VARIABLE FREQUENCY DRIVES (VFD) SHALL BE SIZED BY SWITCHGEAR MANUFACTURER.
5: UNIT HEATER TO BE CONTROLLED BY CONTACTOR CC-2. SEE SHEET ASR-E-6 FOR HVAC EQUIPMENT WIRING DIAGRAMS.
6: UNIT HEATER IS CONTROLLED BY THERMOSTAT W/ A PLC OVERRIDE DIGITAL OUTPUT SIGNAL.
7: ATS SHALL BE NEMA 1 W/ INTEGRAL OVER-CURRENT PROTECTION ON SOURCE 1 (NORMAL) SIDE ONLY.
8: PROVIDE 600A, 30 NON-FUSED DISCONNECT SWITCH W/ AUXILLARY MAKE BEFORE BREAK DPDT SWITCHES FOR ASR 7 PUMP.
9: TREAT TRASNFORMER AS A SEPERATELY DERIVED SYSTEM.
10: CIRCUIT BREAKERS TO BE 100% RATED.
11: FUTURE TURBINE PUMPS TO BE INTERLOCKED W/ FUTURE ASR-7A PUMP, TO LOCK -OUT OR SHUTDOWN THE PUMP IF THE FUTRE TURBINE PUMPS 1640, OR 1650 ARE RUNNING. LOADS TO BE NON-COINCIDENTAL.
12: UL 1741, SA & SB, INPUT: 200-950VDC, OUTPUT: 480VAC, 3Φ, 60KW
13: FUTURE DISCONNECT: LOCATED ON EXTERIOR OF BUILDING.
14: GENERATION DISCONNECT, 480VAC, 3 PHASE.
15: EXISTING DISCONNECT LOCATED AT PUMP HOUSE.
16: NEW DISCONNECT LOCATED ON EXTERIOR SIDE OF BUILDING.
17: FUTURE VFD, DISCONNECT SWITCH, DC FUSE ENCLOSURE (ENC), INVERTER, & BREAKERS.
18: MOTOR / PUMP IS A VERTICLE LINE SHAFT. THE MOTOR IS A T THE SURFACE WITH AN ATTATCHED SHAFT TO PUMP BOWELS DOWN IN THE WELL. DURING INJECTION WE ALLOW THE MOTOR TO RUN IN REVERSE AS A GENERATOR. (PAST INSTALLATIONS HAVE SHOWN A 50% (MAX) HP RETURN.

PROFESSIONAL ENGINEER
LICENSED
17734
EXP. 01/01/2026
STATE OF IDAHO
MATTHEW F. JOHNSON

WAPITI CONSULTING
2207 W. DAKOTA | Hayden, ID 83835
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NO.	DATE	REVISION	BY
1	--	SUBMITTAL	NK

DWG TITLE
ASR MECHANICAL BLDG. ONE LINE DIAGRAM

ENGINEER: MFJ	CHECKED BY: MFJ
JOB NO: WO-2110	DRAWN BY: NEK
SCALE: NO SCALE	DATE: 11/05/2025

DWG NO: E-01-A
SHEET NO: 7 OF 17
CAD DWG FILE

SITE ADDRESS
CITY OF BEAVERTON
1825 SW KEMMER RD.
BEAVERTON, OR
97007

ASR MECHANICAL BUILDING

SWITCHBOARD NEMA 1 GASKETED, 480V, 1200A,3ϕ,4W,65KAIC

FROM: E-01-A (CONTINUED)

15A 15A 15A 15A 15A 15A 15A 15A 15A 15A 225A 15A 15A 15A 100A 30A

P-UHC-2-1 P-UHC-3-1 P-UHC-4-1 P-UHC-5-1 P-UHC-6-1 P-P-1110-1 P-P-1103-1 P-FV-1113-1 P-FV-1104-1 P-FV-1114-1 P-DP-1900 P-XFMR-18

P-UHC-2-2 P-UHC-3-2 P-UHC-4-2 P-UHC-5-2 P-UHC-6-2 P-P-1110-2 P-P-1103-2 P-FV-1113-2 P-FV-1104-2 P-FV-1114-2 (NOTE 3) TYP OF 10 P-DP-1500 P-CP-1225 P-CP-1325 P-CP-1425

HTR ELEC HEATER UHC-2 3KW

HTR ELEC HEATER UHC-3 3KW

HTR ELEC HEATER UHC-4 3KW

HTR ELEC HEATER UHC-5 3KW

HTR ELEC HEATER UHC-6 3KW

VFD 0.5 SAMPLE PUMP P-1110

MOV FV-1103

MOV FV-1113 FUTURE

MOV FV-1104

MOV FV-1114 FUTURE

OPERATIONS BUILDING

CP-1225 CHEM FEED CONTROL PANEL

CP-1325 CHEM FEED CONTROL PANEL

CP-1425 CHEM FEED CONTROL PANEL

STORAGE BUILDING

DP-1900 100A PANEL, 100A MCB 480V, 3ϕ, 30W, 18CKT

P-XFMR-19

XFMR-19 30KVA 480-208Y/120 3ϕ, 4W

P-LP-190

LP-190 NOTE 9 225A PANEL, 100A MCB 208Y/120V 3ϕ,4W,30CKT GND EGC

RES NO.1 CHECK VALVE VAULT

XFMR-18 10KVA 480-240/120 1ϕ, 3W

P-LP-180

LP-180 NOTE 9 100A PANEL, 100A MCB 240/120V, 1ϕ,3W,18CKT GND EGC

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3R VALVE

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NO.	DATE	REVISION	BY
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DWG TITLE
ASR MECHANICAL BLDG. ONE LINE DIAGRAM

ENGINEER MPJ	CHECKED BY MPJ
JOB NO WO-2110	DRAWN BY NEK
SCALE NO SCALE	DATE 11/05/2025

DWG NO
E-01-B

SHEET NO
7 OF 17

CAD DWG FILE

BOOSTER PUMP BUILDING CONNECTED LOAD SUMMARY DP-1600					SERVICE VOLTS	480 V
QTY.	DESCRIPTION	LOAD TYPE	KVA	AMPS	KVA	AMPS
	MOTOR LOADS		PER UNIT	PER UNIT	COMBINED TOTALS	
	OTHER LOADS					
5	BLDG HEATER	3 KW	3.8 KVA	4.6 AMPS	19.0 KVA	23.0 AMPS
1	DISTRIBUTION XFMR	30 KVA	30.0 KVA	36.1 AMPS	30.0 KVA	36.1 AMPS
1	MISC 120V LOADS (PART OF XFMR ABOVE)					
	FUTURE LOADS					
2	TURBINE PUMPS 1640, 1650	75 HP	62.7 KVA	96.0 AMPS	125.4 KVA	192.0 AMPS
2	TURBINE PUMPS 1620, 1630	25 HP	21.8 KVA	34.0 AMPS	43.6 KVA	68.0 AMPS
1	TURBINE PUMP 1610	7.5 HP	6.9 KVA	11.0 AMPS	6.96 KVA	11.0 AMPS
	ADDITIONAL CALCULATIONS					
LARGEST MOTOR X 25% (FUTURE)					15.7 KVA	18.9 AMPS
NON-MOTOR LOADS X 25%					12.3 KVA	14.7 AMPS
SPARE CAPACITY (10%)					4.9 KVA	5.9 AMPS
			CURRENT TOTAL		66.2 KVA	79.6 AMPS
			FUTURE COMBINED TOTAL		257.7 KVA	310.0 AMPS

NOTES:

1: RUN CABLES SIZED FOR A 600A SWITCHGEAR TO BE INSTALLED IN THE FUTURE.
2: PROVIDE 3ϕ NON-FUSED DISCONNECT SWITCHES FOR ITMES SHOWN ON SINGLE LINE & ON PLAN DRAWINGS. DISCONNECTS SHALL BE SIZED PER EQUIPMENT NAMEPLATE RATING, MINIMUM 30A.
3: UNIT HEATER TO BE CONTROLLED BY CONTACTOR CD-2. SEE SHEET BPS-E-3 FOR HVAC EQUIPMENT WIRING DIAGRAMS.
4: TREAT TRANSFORMER AS A SEPARATELY DERIVED SYSTEM.
5: FUTURE TURBINE PUMPS TO BE INTERLOCKED W/ FUTURE ASR-7A PUMP, TO LOCK-OUT OR SHUTDOWN THE PUM IF THE FUTURE TURBINE PUMPS 1640 OR 1650 ARE RUNING. LOADS TO BE NON-COINCIDENTAL.

SITE ADDRESS
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BOOSTER PUMP STATION BUILDING

DISTRIBUTION PANEL DP-1600,480VAC,600A,3ϕ,3W,42CKT

(NOTE 1)
FEED FROM SWG-1
GEN-E-3

P-DP-1600

600A

15A P-UHD-1-1 (NOTE 2) TYP OF 5 P-UHD-1-2 HTR ELEC UNIT HEATER UHD-1 3KW
15A P-UHD-2-1 P-UHD-2-2 HTR ELEC UNIT HEATER UHD-2 3KW
15A P-UHD-3-1 P-UHD-3-2 HTR ELEC UNIT HEATER UHD-3 3KW
15A P-UHD-4-1 P-UHD-4-2 HTR ELEC UNIT HEATER UHD-4 3KW
15A P-UHD-5-1 P-UHD-5-2 HTR ELEC UNIT HEATER UHD-5 3KW
50A P-XFMR-16 P-LP-160 XFMR-16 30KVA 480-208/120 3ϕ,4W LP-160 BPS-E-6 NOTE 4 EN3 EG3 225A PANEL, 100A MCB 208Y/120V 3ϕ,4W,30CKT
200A VFD 75 TURBINE PUMP 1650 75HP
200A VFD 75 TURBINE PUMP 1640 75HP
50A VFD 25 TURBINE PUMP 1630 25HP
50A VFD 25 TURBINE PUMP 1620 25HP
20A VFD 7.5 TURBINE PUMP 1610 7.5HP
15A SPARE
50A SPARE
50A SPARE

PROFESSIONAL ENGINEER LICENSED 17734 MATTHEW F. JOHNSON STATE OF IDAHO EXP. 01/01/2026

3R VALVE

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NO.	DATE	REVISION	BY
1	--	SUBMITTAL	NK

DWG TITLE

ASR
MECHANICAL BLDG.
ONE LINE
DIAGRAM

ENGINEER MPJ	CHECKED BY MPJ
JOB NO WO-2110	DRAWN BY NEK
SCALE NO SCALE	DATE 11/05/2025
DWG NO E-01-C	
SHEET NO 7 OF 17	

CAD DWG FILE

FEED FROM SWG-1
GEN-E-3

P-DP-1500

OPERATIONS PUMP BUILDING CONNECTED LOAD SUMMARY DP-1500					SERVICE VOLTS	480 V
QTY.	DESCRIPTION	LOAD TYPE	KVA	AMPS	KVA	AMPS
	MOTOR LOADS		PER UNIT	PER UNIT	COMBINED TOTALS	
2	SAMPLE PUMP	2 HP	1.7 KVA	3.4 AMPS	3.4 KVA	6.8 AMPS
2	EXHAUST / SUPPLY FAN	0.75 HP	0.9 KVA	1.6 AMPS	1.8 KVA	3.2 AMPS
	OTHER LOADS					
2	MOTORIZED VALVES	0.5KW	0.7 KVA	0.8 AMPS	1.4 KVA	1.6 AMPS
1	DISTRIBUTION XFMR	30 KVA	30.0 KVA	36.1 AMPS	30.0 KVA	36.1 AMPS
1	MISC. 120V LOADS (PART OF XFMR ABOVE)					
	ADDITIONAL CALCULATIONS					
LARGEST MOTOR X 25% (FUTURE)					0.4 KVA	0.5 AMPS
NON-MOTOR LOADS X 25%					7.9 KVA	9.4 AMPS
SPARE CAPACITY (10%)					3.7 KVA	4.4 AMPS
				TOTAL	48.5 KVA	58.4 AMPS

NOTES:
1: PROVIDE 30A, 3Φ NON-FUSED DISCONNECT SWITCHES FOR MOTOR OPERATED VALVES (MOV).
2: EXHAUST FAN AND SUPPLY FAN CONTROLLED BY SAME TOGGLE DPST HAND SWITCH. SEE SHEET VLT-E-3 FOR HVAC EQUIPMENT WIRIGN DIAGRAMS.
3: NOT USED.
4: TREAT TRANSFORMER AS A SEPARATELY DERIVED SYSTEM.

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1825 SW KEMMER RD.
BEAVERTON, OR
97007

OPERATIONS BUILDING

DISTRIBUTION PANEL DP-1500,480VAC,600A,3Φ,3W,42CKT

225A
50A
15A SPARE
15A
15A
15A
15A
15A
15A
50A SPARE
50A SPARE
15A SPARE
15A SPARE
15A SPARE

P-XFMR-15
XFMR-15
30KVA
480-208/120
3Φ,4W
P-LP-150
LP-150
VLT-E-6
NOTE 4
225A PANEL,
100A MCB
208Y/120V
3Φ,4W,30CKT

P-EFB-1-1
3A
COMBINATION STARTER
CPT
M
M AUX
OL
P-EFB-1-2
P-MDB-3
3/4
EXHAUST FAN EFB-1
X
EXHAUST LOUVER ACTUATOR MDB-3

P-SFB-1-1
3A
COMBINATION STARTER
CPT
M
M AUX
OL
P-SFB-1-2
P-MDB-1
3/4
EXHAUST FAN EFB-1
X
EXHAUST LOUVER ACTUATOR MDB-3

P-P-1313
VFD
2
SAMPLE PUMP P-1313

P-P-1323
VFD
2
SAMPLE PUMP P-1323

P-FV-1502-1
(NOTE 2) TYP OF 2
P-FV-1502-2
MOV
FV-1502

P-FV-1552-1
P-FV-1552-2
MOV
FV-1552

PROFESSIONAL ENGINEER
LICENSED
17734
EXP. 01/01/2026
STATE OF IDAHO
MATTHEW F. JOHNSON

3R VALVE

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DWG TITLE
OPERATIONS BUILDING ONE LINE DIAGRAM

ENGINEER MFJ	CHECKED BY MFJ
JOB NO WO-2110	DRAWN BY NEK
SCALE NO SCALE	DATE 11/05/2025

DWG NO
E-01-D

SHEET NO
7 OF 17

CAD DWG FILE

C&W SCHEDULE

ABBREVIATIONS: **CAB**-CABLE **CTL**-CONTROL **DISC**-DISCONNECT **JB**-JUNCTION BOX **LEV**-LEVEL **MFG**-MANUFACTURER **MTR**-MOTOR **PRESS**-PRESSURE **PR**-PAIR **PWR**-POWER **RCPT**-RECEPTACLE

SIG-SIGNAL **SPC**-SHIELDED POWER CABLE **STP**-SHIELDED TWISTED PAIR CABLE **SW**-SWITCH **XMITTER**-TRANSMITTER **(2-7C)**-INDICATES TWO-SEVEN CONDUCTOR CABLES

CONDUIT TAG	SERVICE	ROUTING		CONDUIT		CONDUCTORS		REMARKS OR REFERENCE DRAWING
		FROM	TO	QTY	SIZE	(QTY) & SIZE	GROUND SIZE	
P-P-1100-10	VFD DC BUS FUSING	EXISTING VFD DC BUS	NEW DC FUSE BOX	3	1"	(2) 8 AWG EACH	10 AWG	2,000 DC VOLT RATED CABLE : PRIORITY WIRE DLO CABLE OR EQUAL
P-P-1100-11	INVERTER DC FEED	NEW DC FUSE BOX	NEW INVERTER	3	1"	(2) 8 AWG EACH	10 AWG	2,000 DC VOLT RATED CABLE : PRIORITY WIRE DLO CABLE OR EQUAL
P-P-1100-12	UTILITY AC DISCONNECT	NEW INVERTER	NEW AC FUSED DISCONNECT FOR P-1100	1	1-1/4"	(4) 4 AWG	8 AWG	MOUNTED ON EXTERIOR OF BUILDING NEAR METER
P-P-1100-13	UTILITY AC DISCONNECT	NEW AC FUSED DISCONNECT FOR P-1100	NEW AC FUSED DISCONNECT FOR P-1120	1	2"	(4) 3/0 AWG	6 AWG	
P-P-1100-14	SWITCHBOARD FEED	NEW AC FUSED DISCONNECT FOR P-1120	EXISTING SWITCHBOARD	1	2"	(4) 3/0 AWG	6 AWG	
S-S-1100-10	INVERTER COMUNICATIONS	NEW INVERTER	EXISTING LOCAL CONTROL PANEL (VIA VFD)	1	1"	CAT 5E	-	

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NO.	DATE	REVISION	BY
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DWG TITLE

CONDUIT & WIRE SCHEDULE

ENGINEER	CHECKED BY
MFJ	MFJ
JOB NO WO-2110	DRAWN BY NEK
SCALE NO SCALE	DATE 11/05/2025

DWG NO

E-01-E

SHEET NO

- OF -

CAD DWG FILE

BEAVERTON ASR 7 LABELING STANDARD:

PER 2022 CEC ARTICLE 690 & 705, THE POWER REGEN.
SHALL HAVE THE FOLLOWING LABELING:

LOCATED AT GENTERATOR ENCLOSURE, ELECTRICAL ROOM,
& ASR7 MECHANICAL BUILDING.

WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES. TOTAL RATING OF ALL OVER CURRENT DEVICES EXCLUDING MAIN SUPPLY OVER CURRENT DEVICE SHALL NOT EXCEED AMPACITY OF BUSS BAR.

WARNING
ELECTRICAL SHOCK HAZARD

IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED

MULTIPLE POWER SOURCES:

TYPES: SWITCHBOARD, PANEL BOARD, VFD, & DISCONNECTS
PER 2022CEC ARTICLE 705, EACH SERVICE EQUIPMENT
SHALL BE LABELED AS:

LOCATED AT ATS & POWER REGEN. BACKFEED DISCONNECT

WARNING

POWER SOURCE OUTPUT CONNECTION-
DO NOT RELOCATE THIS OVERCURRENT DEVICE.

CAUTION
MULTIPLE SOURCES OF POWER

ALL POWER SOURCES LISTED INCLUDING THE MOST UPSTREAM DISCONNECTION MEANS.

PROFESSIONAL ENGINEER
LICENSED
17734
EXP. 01/01/2026
STATE OF IDAHO
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3R VALVE

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NO.	DATE	REVISION	BY
1	--	SUBMITTAL	NK

DWG TITLE
ASR 7 LABELING STANDARDS SHEET

ENGINEER: MFJ	CHECKED BY: MFJ
JOB NO: WO-2110	DRAWN BY: NEK
SCALE: NO SCALE	DATE: 12/15/2025
DWG NO: L.S.	
SHEET NO: – OF –	

CAD DWG FILE