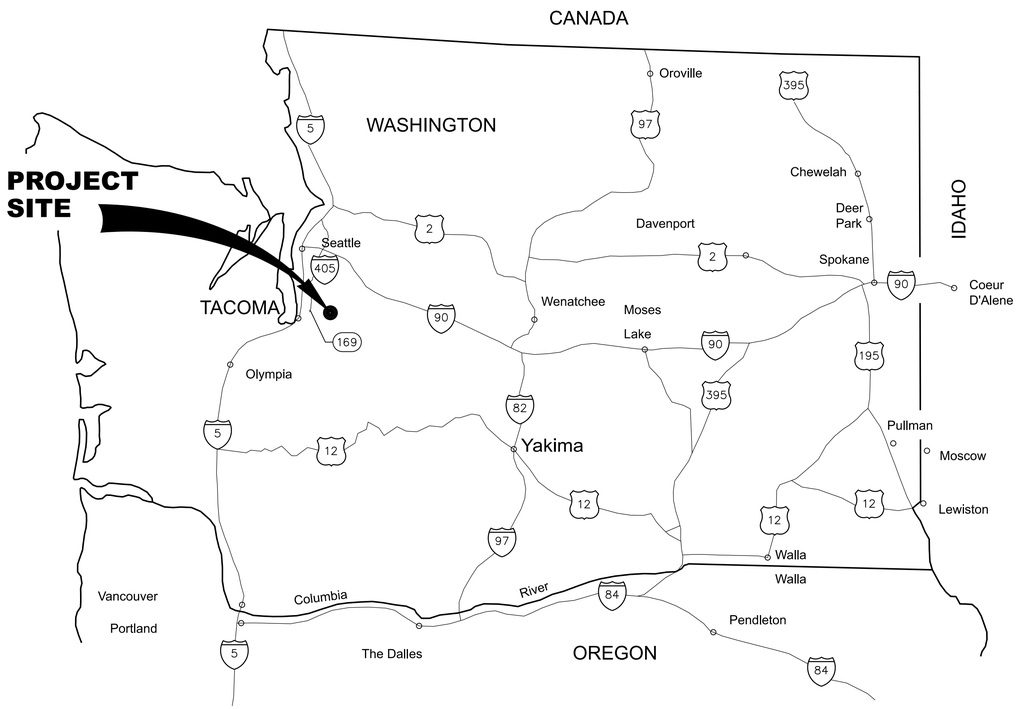
PART 2

DRAWINGS
(BOUND SEPARATELY)

CITY OF TACOMA
DEPARTMENT OF PUBLIC UTILITIES

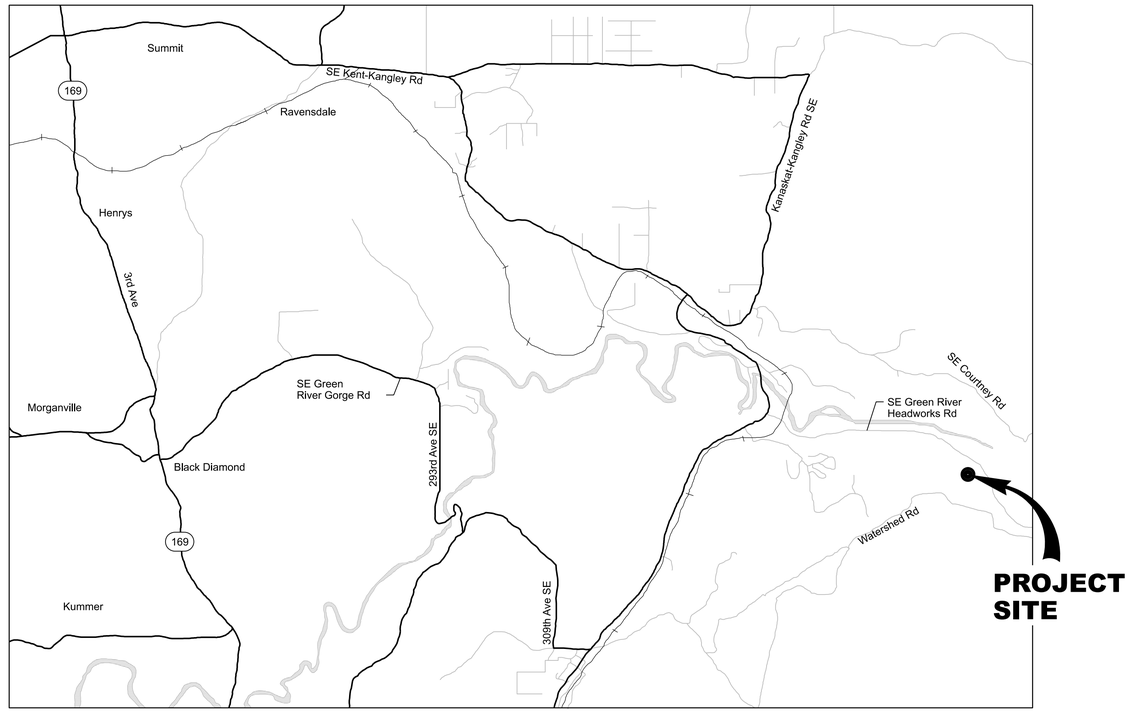
GREEN RIVER FILTRATION FACILITY
OZONE EQUIPMENT REPLACEMENT

CONSTRUCTION DOCUMENTS
DECEMBER 2025



N

VICINITY MAP
NTS



N

LOCATION MAP
NTS

FILENAME: 01-G-101_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 02:21

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	T YOUNG	DR A.KOT CHK A.GAO	APVD	J.KENNEDY

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

GENERAL

COVER SHEET

CONSTRUCTION DOCUMENTS

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-101
SHEET	1

DRAWING INDEX

SHEET NO.	DWG NO.	DRAWING TITLE
		01 - GENERAL
1	01-G-101	COVER SHEET
2	01-G-102	DRAWING INDEX
3	01-G-103	ABBREVIATIONS 1
4	01-G-104	ABBREVIATIONS 2
5	01-G-105	GENERAL LEGEND
6	01-G-106	BASIS OF DESIGN
7	01-G-107	PROCESS FLOW DIAGRAM
8	01-G-108	PIPING SCHEDULE
9	01-G-109	STRUCTURAL NOTES
10	01-G-110	MECHANICAL LEGEND
11	01-G-111	ELECTRICAL LEGEND
12	01-G-112	INSTRUMENTATION AND CONTROL - LEGEND - SHEET 1
13	01-G-113	INSTRUMENTATION AND CONTROL - LEGEND - SHEET 2
		02 - DEMOLITION
14	02-D-101	LOX SYSTEM - DEMOLITION - PLAN
15	02-D-102	OZONE GENERATOR BUILDING - DEMOLITION - PLAN
16	02-D-103	OLD HEADWORKS CONTROL BUILDING - DEMOLITION - MIDDLE FLOOR PLAN
17	02-D-104	OLD HEADWORKS CONTROL BUILDING - DEMOLITION - UPPER FLOOR PLAN
18	02-D-105	OZONE DESTRUCT BUILDING - DEMOLITION - PLAN
19	02-D-106	OZONE SAMPLE STATIONS - DEMOLITION PLAN
20	02-D-107	SODIUM BISULFITE - DEMOLITION - PUMP PLAN
21	02-D-301	OLD HEADWORKS CONTROL BUILDING - DEMOLITION - SOUTH ELEVATION
22	02-D-401	OZONE GENERATOR BUILDING - DEMOLITION - PHOTO DETAIL
23	02-D-402	OLD HEADWORKS CONTROL BUILDING - DEMOLITION - PHOTO DETAIL
24	02-D-403	OLD HEADWORKS CONTROL BUILDING - DEMOLITION - PHOTO DETAIL
25	02-D-404	OLD HEADWORKS CONTROL BUILDING - DEMOLITION - PHOTO DETAIL
26	02-D-405	OLD HEADWORKS CONTROL BUILDING - DEMOLITION - PHOTO DETAIL
27	02-D-406	OLD HEADWORKS CONTROL BUILDING - DEMOLITION - PHOTO DETAIL
28	02-D-407	SODIUM BISULFITE - DEMOLITION - PHOTO DETAIL
		05 - SITE DEVELOPMENT
29	05-C-101	OVERALL SITE PLAN AND CONTRACTOR STAGING
		08 - INSTRUMENTATION AND CONTROLS
30	08-I-101	P&ID - LIQUID OXYGEN STORAGE AND FEED
31	08-I-102	P&ID - OZONE GENERATION
32	08-I-103	P&ID - OZONE NITROGEN BOOST SYSTEM
33	08-I-104	P&ID - OZONE GENERATION COOLING WATER SYSTEM
34	08-I-105	P&ID - OZONE INJECTION AND CONTACTOR - R1
35	08-I-106	P&ID - OZONE INJECTION AND CONTACTOR - R5
36	08-I-107	P&ID - REACTOR WATER PIPELINES
37	08-I-108	P&ID - OZONE OFF-GAS DESTRUCTION
38	08-I-110	P&ID - SODIUM BISULFITE FEED
39	08-I-112	P&ID - SAMPLING STATION 1 OZONE
40	08-I-113	P&ID - SAMPLING STATION 2 OZONE
41	08-I-114	P&ID - SAMPLING STATION 3 OZONE
42	08-I-115	P&ID - SAMPLING STATION 4 OZONE
43	08-I-116	P&ID - SAMPLING STATION 5 OZONE
44	08-I-117	P&ID - UTILITY SYSTEMS
45	08-I-201	I&C - HEADWORKS CONTROL SYSTEM BLOCK DIAGRAM
46	08-I-202	I&C - OZONE CONTROL SYSTEM PROFINET BLOCK DIAGRAM
47	08-I-311	I&C - EXISTING HEADWORKS CONTROL PANEL - MODIFICATION DETAIL
48	08-I-312	I&C - NEW HEADWORKS CONTROL PANEL LAYOUT DIAGRAM
49	08-I-321	I&C - SAMPLING STATION 1-4 CONTROL PANEL LAYOUT DIAGRAM
50	08-I-323	I&C - SAMPLING STATION 5 CONTROL PANEL LAYOUT DIAGRAM
51	08-I-331	I&C - COMMUNICATION PANEL 31000 LAYOUT DIAGRAM
52	08-I-332	I&C - COMMUNICATION PANEL 32000 LAYOUT DIAGRAM
53	08-I-333	I&C - COMMUNICATION PANEL 33000 LAYOUT DIAGRAM
		09 - ELECTRICAL
54	09-E-601	MCC UPGRADE ONE-LINE DIAGRAMS
55	09-E-603	SCHEDULES
		10 - IN-LINE OZONE CONTACTOR
56	10-M-101	PROCESS MECHANICAL - SAMPLE STATION PLAN, SECTION, AND DETAILS
57	10-E-101	ELECTRICAL - PLANS
		20 - SODIUM BISULFITE
58	20-M-101	PROCESS MECHANICAL - SODIUM BISULFITE PUMPS PLAN
59	20-M-401	PROCESS MECHANICAL - SODIUM BISULFITE PUMPS DETAILS
60	20-E-101	ELECTRICAL - CHEMICAL AREA PLAN
		30 - OZONE GENERATOR BUILDING
61	30-M-101	PROCESS MECHANICAL - LOX AREA PLAN
62	30-M-102	PROCESS MECHANICAL - OZONE GENERATOR BUILDING PLAN
63	30-M-401	PROCESS MECHANICAL - OZONE GENERATOR BUILDING DETAILS
64	30-M-402	PROCESS MECHANICAL - SECTIONS
65	30-E-101	ELECTRICAL - LOX AREA PLAN
66	30-E-102	ELECTRICAL - OZONE GENERATOR BUILDING PLAN
		32 - OLD HEADWORKS CONTROL BUILDING
67	32-M-101	PROCESS MECHANICAL - MIDDLE FLOOR PLAN
68	32-M-401	PROCESS MECHANICAL - INJECTION ROOM DETAIL
69	32-M-402	PROCESS MECHANICAL - INJECTION ROOM DETAIL
70	32-E-101	ELECTRICAL - MIDDLE FLOOR PLAN
71	32-E-102	ELECTRICAL - UPPER FLOOR PLAN
72	32-A-101	ARCHITECTURAL - MIDDLE FLOOR PLAN
73	32-A-102	ARCHITECTURAL - UPPER FLOOR PLAN
74	32-A-301	ARCHITECTURAL - SOUTH ELEVATION
75	32-A-302	ARCHITECTURAL - SECTIONS AND DETAILS
		33 - OZONE DESTRUCT BUILDING
76	33-M-101	PROCESS MECHANICAL - PLAN
77	33-E-101	ELECTRICAL - PLAN
		100 - STANDARD DETAILS
78	100-SD-101	STANDARD DETAILS
79	100-SD-102	STANDARD DETAILS
80	100-SD-103	STANDARD DETAILS

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	CHK	APVD	BY	APVD
DSGN	T.YOUNG	DR	A.KOT	A.GAO		J.KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

GENERAL

DRAWING INDEX

CONSTRUCTION DOCUMENTS

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-102
SHEET	2

ABBREVIATIONS

SYMBOLS	
Δ	DELTA, DIFFERENCE
Σ	SUM
×	MULTIPLY
÷	DIVIDE
F(X)	CHARACTERIZED
X²	RAISED TO THE Nth POWER
√	SQUARE ROOT
>	SELECT HIGHEST SIGNAL
<	SELECT LOWEST SIGNAL
}	BIAS
%	GAIN, ATTENUATE
1:1	REPEAT, BOOST
@	AT
#	NUMBER, POUND
°F	DEGREES FAHRENHEIT
°C	DEGREES CELSIUS
A	
A	AMPERE AUTOMATIC, AMMETER, AMPERES
AB	ANCHOR BOLT
AC	ACCOUSTICAL CEILING, ALTERNATE CURRENT, AIR CONDITIONER
ACC	AIR-COOLED CIRCUIT
ACB	AIR-CIRCUIT BREAKER
ACI	AMERICAN CONCRETE INSTITUTE
ACS	ACCESS CONTROL SYSTEM
ADDL	ADDITIONAL
AF	AMPERE FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AHV	ACTIVE HARMONIC FILTER
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL	ALUMINUM
AM	AUTO-MANUAL
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
AR	ANALOG READY
ARMS	ARC FLASH REDUCTION MAINTENANCE SYSTEM
ARV	AIR RELEASE VALVE
AS	ADJUSTABLE SPEED
ASC	AUXILIARY SWITCH CLOSED
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASO	AUXILIARY SWITCH OPEN
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ATC	AUTOMATIC TRANSFER CONTROL
AUX	AUXILIARY
AVG	AVERAGE
AVRV	AIR AND VACUUM RELEASE VALVE
AWG	AMERICAN WIRE GAGE
AWS	AMERICAN WELDING SOCIETY
B	
BFP	BACK FLOW PREVENTER
BFV	BUTTERFLY VALVE
BKR	BREAKER
BLDG	BUILDING
BLR	BLOWER
BLV	BALL VALVE
BPVC	BOILER AND PRESSURE VESSEL CODE
BTU	BRITISH THERMAL UNITS
BWW	BACKWASH WASTE
C	
CAM	COMPUTER-AUTO-MANUAL
CCP	CENTRAL CONTROL PANEL
CCS	CENTRAL CONTROL SYSTEM
CE	CONCRETE ENCASED
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEM	CHEMICAL
CHFL	CHEMICAL CONVEYANCE WATER
CI	CAST IRON
CIP	CAST IN PLACE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CLDI	CEMENT LINED DUCTILE IRON
CL2	CHLORINE
COND	CONDUCTIVITY
CM	COMPUTER-MANUAL
CMP	CENTRAL MONITORING PANEL, CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT

COMM	COMMUNICATION(S)
CONC	CONCRETE
CONN	CONNECTION
COP	COPPER
CP	CONTROL PANEL, CATHODIC PROTECTION
CPLG	COUPLING
CPT	CONTROL POWER TRANSFER
CPU	CENTRAL PROCESSING UNIT
CP-X	CONTROL PANEL NO.X
CRK	CIRCUIT
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
CS	CONSTANT SPEED, CONTROL STATION, CARBON STEEL PIPE
CTR	CENTER
CTRD	CENTERED
CU	CUBIC
CU FT	CUBIC FEET
CU YD	CUBIC YARDS
CV	CHECK VALVE
CWR	OPEN LOOP COOLING WATER RETURN
CWS	OPEN LOOP COOLING WATER SUPPLY
D	
D	DRAIN
DA	DUAL ACTION
DAS	DATA ACQUISITION SYSTEM
DB	DIRECT BURIED
DBL	DOUBLE
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DCU	DISTRIBUTED CONTROL UNIT
DEG	DEGREE
DEMO	DEMOLITION
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIP	DUCTILE IRON PIPE
DIV	DIVISION
DN	DOWN
DO	DISSOLVED OXYGEN
DPM	DIGITAL POWER MONITOR
DSC	DISCONNECT SWITCH
DV	DIAPHRAGM VALVE
DW	DILUTION WATER
DWG	DRAWING
DWL	DOWEL
E	
E	EJECTOR
ECC	ECCENTRIC
EF	EACH FACE, EXHAUST FAN
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EL	ELEVATION
ELEC	ELECTRICAL
EMT	ELECTRICAL MONITORING TUBE
ENGR	ENGINEER
EQ	EQUAL
EQPT	EQUIPMENT
EXP JT	EXPANSION JOINT
EXST	EXISTING
EXT	EXTERIOR
F	
FACP	FIRE ALARM CONTROL PANEL
FU	FUSE
FC	FLEXIBLE CONDUIT
FCA	FLANGED COUPLING ADAPTER
FCL	FREE CHLORINE RESIDUAL
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FDN	FOUNDATION
FDU	FIBER DISTRIBUTION UNIT
FEXT	FIRE EXTINGUISHER
FF	FINISHED FLOOR
FG	FINISH GRADE
FIG	FIGURE
FL	FLOOR
FLG	FLANGE
FLEX	FLEXIBLE
FOS	FAST-OFF-SLOW
FOSA	FAST-OFF-SLOW-AUTO
FOSR	FAST-OFF-SLOW-REMOTE

FPP	FIBER PATCH PANEL
FP-W-X	FIELD PANEL NO. WX
FR	FORWARD-REVERSE
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FLOAT SWITCH
FT	FOOT, FEET
FTG	FOOTING
FV	FLOW VALVE
FWD	FORWARD
G	
G	GATE
GA	GAUGE
GALV	GALVANIZED
GCWR	GENERATOR COOLANT WATER RETURN
GCWS	GENERATOR COOLANT WATER SUPPLY
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTOR
GFR	GROUND FAULT RELAY
GOX	GASEOUS OXYGEN
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPR	GENERATOR PROTECTOR RELAY
GRTG	GRATING
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
H	
H	HYDROSTATIC
HCL	HYDROCHLORIC ACID
HDPE	HIGH DENSITY POLYTHELYNE
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HM	HOLLOW METAL
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HORIZ	HORIZONTAL
HP	HORSEPOWER, HEAT PUMP
HPT	HIGH POINT
HPU	HYDRAULIC POWER UNIT
HSS	HOLLOW STRUCTURAL STEEL
HV	HOSE VALVE
HVAC	HEATING VENTILATING AND AIR CONDITIONING
HWL	HIGH WATER LEVEL
HZ	HERTZ
I	
IBC	INTERNATIONAL BUILDING CODE
I&C	INSTRUMENTATION & CONTROL
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
I.F.	INSIDE FACE
IN	INCH
INSUL	INSULATION
INVT	INVERT
ISR	INTRINSICALLY SAFE RELAY
J	
JB	JUNCTION BOX
JT	JOINT
K	
KA	KILOAMPERES
KAIC	KILOAMPERES INTERRUPTING CAPACITY
KIP	1000 POUNDS
KSI	KIPS PER SQUARE INCH
KV	KILOVOLTS
KVA	KILOVOLTS AMPERES
KW	KILOWATT
L	
LAB	LABORATORY
LAM	LAMINATE
LB	POUND
LCP	LOCAL CONTROL PANEL
LCV	LEVEL CONTROL VALVE
LEL	LOWER EXPLOSIVE LIMIT
LIT	LEVEL INDICATING TRASNMITTER
LOI	LOCAL OPERATOR INTERFACE
LONG	LONGITUDINAL

GENERAL SHEET NOTES

1. THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

JOSHUA STEPHEN KENNEDY — STATE OF WASHINGTON — 53744 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	T YOUNG	DR	A.KOT	CHK	A.GAO	APVD	J.KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

GENERAL

ABBREVIATIONS 1

CONSTRUCTION DOCUMENTS

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-103
SHEET	3

ABBREVIATIONS

LOR	LOCAL-OFF-REMOTE
LOS	LOCKOUT STOP
LOX	LIQUID OXYGEN
LP	LOW VOLTAGE PANEL
LPT	LOW POINT
LR	LOCAL-REMOTE
M	
M	MECHANICAL EQUIPMENT
MA	MANUAL-AUTO
MATL	MATERIAL
MAU	MAKE-UP AIR UNIT
MAX	MAXIMUM
MC	MODULATE-CLOSE
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MDC	MOTORIZED DAMPER CONTROL
MECH	MECHANICAL
MFR	MANUFACTURER
MG/L	MILLIGRAM PER LITER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MPR	MOTOR PROTECTION RELAY
MRCT	MULTI RADIO CURRENT TRANSFORMER
MS	MOTOR STARTER
MSC	MANUFACTURER SUPPLIED CABLE
MV	MEDIUM VOLTAGE
MVA	MEGA-VOLT AMPERES
N	
N2	NITROGEN BOOST
N/A	NOT APPLICABLE
NAD	NORTH AMERICA DATUM
NAVD	NORTH AMERICA VERTICAL DATUM
NC	NOISE CRITERIA
NEC	NATIONAL ELECTRIC CODE
NESC	NATIONAL ELECTRICA SAFETY CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NO.	NUMBER (#)
NOM	NOMINAL, NATURAL ORGANIC MATTER
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
NV	NEEDLE VALVE
O	
O2	OXYGEN
O3	OZONE GAS
O3S	OZONE SOLUTION
OC	ON CENTER, OPEN-CLOSE
OCA	OPEN-CLOSE-AUTO
OCR	OVERCURRENT RELAY, OPEN-CLOSE-REMOTE
OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
O.F.	OUTSIDE FACE
OG	OZONATED OFF-GAS
OHM	OHMMETER
OIU	OPERATOR INTERFACE UNIT
OL	OVERLOAD RELAY
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OPP	OPPOSITE
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
OSS	OZONE SYSTEM SUPPLIER
OZ	OUNCE
OZW	OZONE SAMPLER WASTE
P	
P	PUMP
PAF	POWDER ACTUATED FASTENER
PCB	POWER CIRCUIT BREAKER
PCF	POUNDS PER CUBIC FOOT
PCI	POUNDS PER CUBIC INCH
PCV	PRESSURE CONTROL VALVE
pH	HYDROGEN ION CONCENTRATION
PIV	POST INDICATOR VALVE
PL	PROPERTY LINE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLF	POUNDS PER LINEAR FOOT
PMP	PUMP

POB	POINT OF BEGINNING
POC	POINT OF CONNECTION
POS	POSITION
PP	POWER POLE, FIBER-OPTIC PATCH PANEL
PPD	POUNDS PER DAY
PRCST	PRECAST
PRDV	PRESSURE REDUCING VALVE
PREFAB	PREFABRICATION
PRGV	PRESSURE REGULATING VALVE
PS	POINT OF SWITCH
PSE	RUPTURE DISK
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUND PER SQUARE INCH GAUGE
PSU	POWER SUPPLY UNIT
PSV	PRESSURE RELIEF VALVE
PT	PRESSURE TREATED
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVT	POINT OF VERTICAL TANGENCY
PW	POTABLE WATER
PWR	POWER
R	
RAD	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RCPT	RECEPTACLE
RD	ROAD, ROOF DRAIN
RDCR	REDUCER
REF	REFERENCE
REG	REGULAR
REINF	REINFORCING
REQ'D	REQUIRED
RGS	RIGID GALVANIZED STEEL
RIO	REMOTE I/O UNIT
RM	ROOM
RM-X	REMOTE MULTIPLEXING MODULE NO. X
RPM	REVOLUTIONS PER MINUTE
RST	REINFORCING STEEL
RTU-X	REMOTE TELEMETRY UNIT NO. X
RVNR	REDUCED VOLTAGE NON-REVERSING
RVR	REDUCED VOLTAGE REVERSING
S	
S	SOUTH
SA	SAMPLE WATER
SCADA	SUPERVISORY CONTROL AND DATA ACQUISTION
SCFM	STANDARD CUBIC FEET PER MINUTE
SCHED	SCHEDULE
SD	STORM DRAIN
SDWK	SIDEWALK
SEC	SECONDARY
SECT	SECTION
SED	SEDIMENTATION
SF	SQUARE FEET, SUPPLY FAN, SLOWER-FASTER
SH	SHEET
SHS	SOLIDS HANDLING SYSTEM
SIM	SIMILAR
SIP	SECURITY INTERFACE PANEL
SKM	SKIMMER
SMFO	SINGLE MODE FIBER OPTIC
SMLS	SEAMLESS EPOXY
SOG	SLAB ON GRADE
SPECS	SPECIFICATIONS
SPD	SURGE PROTECTION DEVICE
SPLY	SUPPLY
SQ	SQUARE
SQ IN	SQUARE INCH
SS	SANITARY SEWER, START-STOP
SSC	SUPERVISORY SET POINT CONTROL
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIF	STIFFENER
STL	STEEL
SUB	SUBSTATION
SUSP	SUSPENDED
SV	SOLENOID VALVE
SW	SWITCH

SWBD	SWITCHBOARD
SWD	SIDE WATER DEPTH
SWGR	SWITCHGEAR
SWPP	STORMWATER POLLUTION PREVENTION PLAN
SYMM	SYMMETRICAL
T	
T	TANK
T&B	TOP AND BOTTOM
TA	TRANSFER AIR
TAN	TANGENT
TB	TERMINAL BOARD
TC	TOP OF CURB
TCL	TOTAL CHLORINE RESIDUAL
TCU	TERMINAL CONTROL UNIT
TCV	TEMPERATURE CONTROL VALVE
TD	TIME DELAY
TDH	TOTAL DYNAMIC HEAD
TECH	TECHNICAL
TEMP	TEMPERATURE
TF	TOP FACE
THD	THREAD
THK	THICKNESS
THRU	THROUGH
TJB	TERMINAL JUNCTION BOX
T.O.	TOP OF
TOC	TOP OF CONCRETE, TOP OF CURB, TOTAL ORGANIC CARBON
TOD	TOTAL OXYGEN DEMAND
T.O.W.	TOP OF WALL
TP	TURNING POINT
TR	TRUSS, TOP OF RAIL
TS	TUBE STEEL
TU-X	TREATMENT UNIT NO. X
TURB	TURBIDITY
TVSS	TRANSIENT VOLTAGE SURGE PROTECTOR
TW	TEPID WATER
TYP	TYPICAL
U	
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIT SUBSTATION
UV	ULTRAVIOLET
UVR	UNDER VOLTAGE RELAY
V	
V	VOLTS, VERTICAL, VENT
VB	VAPOR BARRIER
VCB	VACUUM CIRCUIT BREAKER
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VHC	VOLATILE HYDROCARBONS
VIB	VIBRATION
VLV	VALVE
VM	VOLTMETER
VR	VOLTAGE REGULATOR
VTR	VENT THROUGH ROOF
W	
W	WATTS
WC	WATER COLUMN
WCO	WALL CLEANOUT
WG	WATER GAUGE
WH	WATTHOUR METER, WATER HEATER
WM	WATTMETER
W/	WITH
W/O	WITHOUT
WP	WATERPROOF
WS	WATERSTOP
WSP	WELDED STEEL PIPE
WTP	WATER TREATMENT PLANT
X	
XD	TRANSDUCER
XFMR	TRANSFORMER
Z	
Z	IMPEDANCE
ZS	POSITION SWITCH

GENERAL SHEET NOTES

1. THIS IS A STANDARD LEGEND SHEET. THEREFORE, NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

JOSHUA STEPHEN KENNEDY — STATE OF WASHINGTON — 53744 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DSGN	REVISION	CHK	BY	APVD
		DR		A.KOT	A.GAO	APVD
		T.YOUNG			J.KENNEDY	

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

GENERAL

ABBREVIATIONS 2

CONSTRUCTION DOCUMENTS

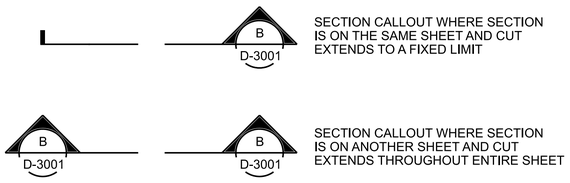
NTS

VERIFY SCALE

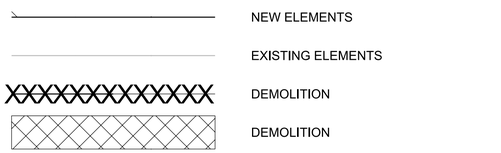
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-104
SHEET	4

STANDARD DESIGNATIONS



LEGEND



DESIGN DETAIL DESIGNATION

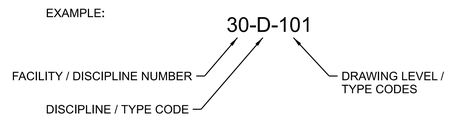
NOTES:

1. ALL DESIGN DETAILS ARE TYPICAL AND MUST BE USED IF DESIGN DETAIL DESIGNATION IS NOT SHOWN.
2. THE TERM STANDARD DETAIL, OR A FORM OF IT, IS SYNONYMOUS WITH DESIGN DETAIL AND REFERS TO THE DESIGN DETAILS FOUND IN THIS SET OF CONTRACT DOCUMENTS.
3. THE DESIGN DETAILS REPRESENT THE CHARACTER AND NATURE OF THE WORK REQUIRED THROUGHOUT THE PROJECT. ALL ASSOCIATED WORK SHALL BE IN ACCORDANCE WITH THE DESIGN DETAILS SHOWN WHETHER THE DETAILS ARE SPECIFICALLY REFERENCED OR NOT.

GENERAL SHEET NOTES

1. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THE PROJECT.

DRAWING NUMBERING LEGEND



FACILITY / DISCIPLINE NUMBER	DISCIPLINE / TYPE CODES	DRAWING LEVEL / TYPE CODES
01 - GENERAL 02 - DEMOLITION 05 - SITE DEVELOPMENT 08 - INSTRUMENTATION AND CONTROL 10 - IN-LINE OZONE CONTACTOR 20 - SODIUM BISULFITE 30 - OZONE GENERATOR BUILDING 32 - OZONE INJECTION PUMP STATION 33 - OZONE DESTRUCT BUILDING 100 - STANDARD DETAILS	A - ARCHITECTURAL C - CIVIL D - DEMOLITION E - ELECTRICAL G - GENERAL M - PROCESS MECHANICAL N - INSTRUMENTATION AND CONTROL S - STRUCTURAL	100 - PLANS 300 - SECTIONS/ELEVATIONS 400 - DETAILS 500 - ENLARGED PLANS 600 - DIAGRAMS, SCHEDULES 900 - ISOMETRICS

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	CHK	APVD	BY
DSGN	A.KOT		A.KOT	T.YOUNG	APVD	J.KENNEDY
DR	A.KOT					

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

GENERAL

GENERAL LEGEND

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-105
SHEET	5

FILENAME: ANSI_D.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 11:11

PARAMETER	DESIGN CRITERIA
DESIGN FLOW	
TOTAL ANNUAL AVERAGE FLOWRATE	80 MGD
TOTAL PEAK FLOWRATE	150 MGD
REACTOR 1	
MINIMUM FLOW	30 MGD
MAXIMUM FLOW	72 MGD
REACTOR 5	
MINIMUM FLOW	30 MGD
MAXIMUM FLOW	95 MGD

PARAMETER	DESIGN CRITERIA
OZONE GENERATION	
PURPOSE	TASTE AND ODOR CONTROL
TRANSFERRED OZONE DOSE	
AVERAGE DOSE	1.0 MG/L
PRODUCTION (AVERAGE DOSE & AVERAGE FLOW)	665 PPD
PEAK DOSE	2.0 MG/L
PRODUCTION (PEAK DOSE & PEAK FLOW)	2,500 PPD
MINIMUM DOSE	0.3 MG/L
PRODUCTION (MIN DOSE & MIN FLOW)	75 PPD
NO. OF GENERATORS (LEAD / LAG)	1 / 1
GENERATOR CAPACITY	
RATED CAPACITY AT 12%	1,050 PPD PER GENERATOR
MINIMUM CAPACITY AT 12%	85 PPD PER GENERATOR
RATED CAPACITY AT 10%	2,800 PPD WITH BOTH GENERATORS IN SERVICE
NITROGEN BOOST SYSTEM	
NUMBER OF COMPRESSORS (DUTY / STANDBY)	1 / 1
TARGET MIXED GAS FLOW (%)	1 - 5%
OPEN LOOP COOLING WATER SYSTEM	
NO. OF PUMPS (DUTY / STANDBY)	2 / 1
CAPACITY EACH	215 GPM AT 88 FT TDH
WATER SOURCE	BLENDED RAW WATER (GREEN RIVER OR NORTH FORK WELLS)
WATER TEMPERATURE RANGE	45 - 78 °F
CLOSED LOOP COOLING WATER SYSTEM	
NO. OF PUMPS (DUTY PER GENERATOR)	2 (1 PER GENERATOR)
CAPACITY EACH	205 GPM AT 50 FT TDH
HEAT EXCHANGERS	
TYPE	PLATE AND FRAME
QUANTITY (DUTY PER GENERATOR)	2 (1 PER GENERATOR)
HOT SIDE TEMP IN / OUT (CLOSED LOOP COOLING)	92 / 84.8 °F
COLD SIDE TEMP IN / OUT (OPEN LOOP COOLING)	78 / 86.9 °F
HEAT EXCHANGE	740 KBTU/HR
PLATE MATERIAL/THICKNESS	ALLOY 316 / 0.5 MM

PARAMETER	DESIGN CRITERIA
LIQUID OXYGEN SYSTEM	
FEED GAS	LIQUID OXYGEN
OXYGEN PURITY	99.9%
STORAGE TIME TOTAL (1,400 PPD @ 10% O3)	20 DAYS
NO. OF LOX TANKS	2
STORAGE VOLUME, EACH	15,000 GALLONS
VAPORIZER TYPE	2 AMBIENT VAPORIZERS
NUMBER OF VAPORIZERS (DUTY / STANDBY)	1 / 1
PRESSURE REGULATORS (DUTY / STANDBY)	1 / 1
PRESSURE SETPOINT	20 PSIG

PARAMETER	DESIGN CRITERIA
OZONE INJECTION	
INJECTION TYPE	SIDESTREAM
REACTOR 1	
NUMBER OF INJECTORS (LEAD / LAG)	1 / 1
INJECTOR SIZE	6 INCH
MINIMUM OZONE FLOW, EACH INJECTOR	12 SCFM
MAXIMUM OZONE FLOW, EACH INJECTOR	100 SCFM
NO. OF INJECTION PUMPS (DUTY / STANDBY)	2 / 1
CAPACITY OF SIDESTREAM INJECTION PUMPS	815 GPM AT 95 FT TDH
REACTOR 5	
NUMBER OF INJECTORS (LEAD / LAG)	1 / 1
INJECTOR SIZE	6 INCH
MINIMUM OZONE FLOW, EACH INJECTOR	12 SCFM
MAXIMUM OZONE FLOW, EACH INJECTOR	100 SCFM
NO. OF INJECTION PUMPS (DUTY / STANDBY)	2 / 1
CAPACITY OF SIDESTREAM INJECTION PUMPS	815 GPM AT 95 FT TDH

OZONE OFFGAS DESTRUCT	
NO. OF UNITS (DUTY / STANDBY)	1 / 1
DESTRUCT TYPE	THERMAL CATALYTIC
DESTRUCT CAPACITY (EACH)	400 SCFM
BLOWER TYPE	CONSTANT SPEED

SODIUM BISULFITE FOR OZONE QUENCHING	
STORAGE TANKS	
NO. OF STORAGE TANKS	2
VOLUME, EACH	3,150 GALLON
METERING PUMPS	
TYPE	DIAPHRAGM
NO. OF PUMPS (LEAD / LAG)	2 / 2
UTILITY WATER FLOW RATE (@ 25 PSIG)	130-150 GPM, TO EACH REACTOR
DOSAGE	
RATIO SODIUM BISULFITE TO OZONE RESIDUAL	2.65 MG SBS/MG OZONE
MINIMUM SBS DOSE	0.3 MG/L
MAXIMUM SBS DOSE	1.5 MG/L
CHEMICAL USAGE (38 WT% SBS)	
MINIMUM DOSE AND MINIMUM REACTOR FLOW	0.8 GPH
1 MG/L DOSE AND ANNUAL AVERAGE REACTOR FLOW	5.3 GPH
MAXIMUM DOSE AND MAXIMUM REACTOR 5 FLOW	20.8 GPH

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	BY
REVISION		T YOUNG	J SETNIK	APVD	J KENNEDY
				A GAO	APVD

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

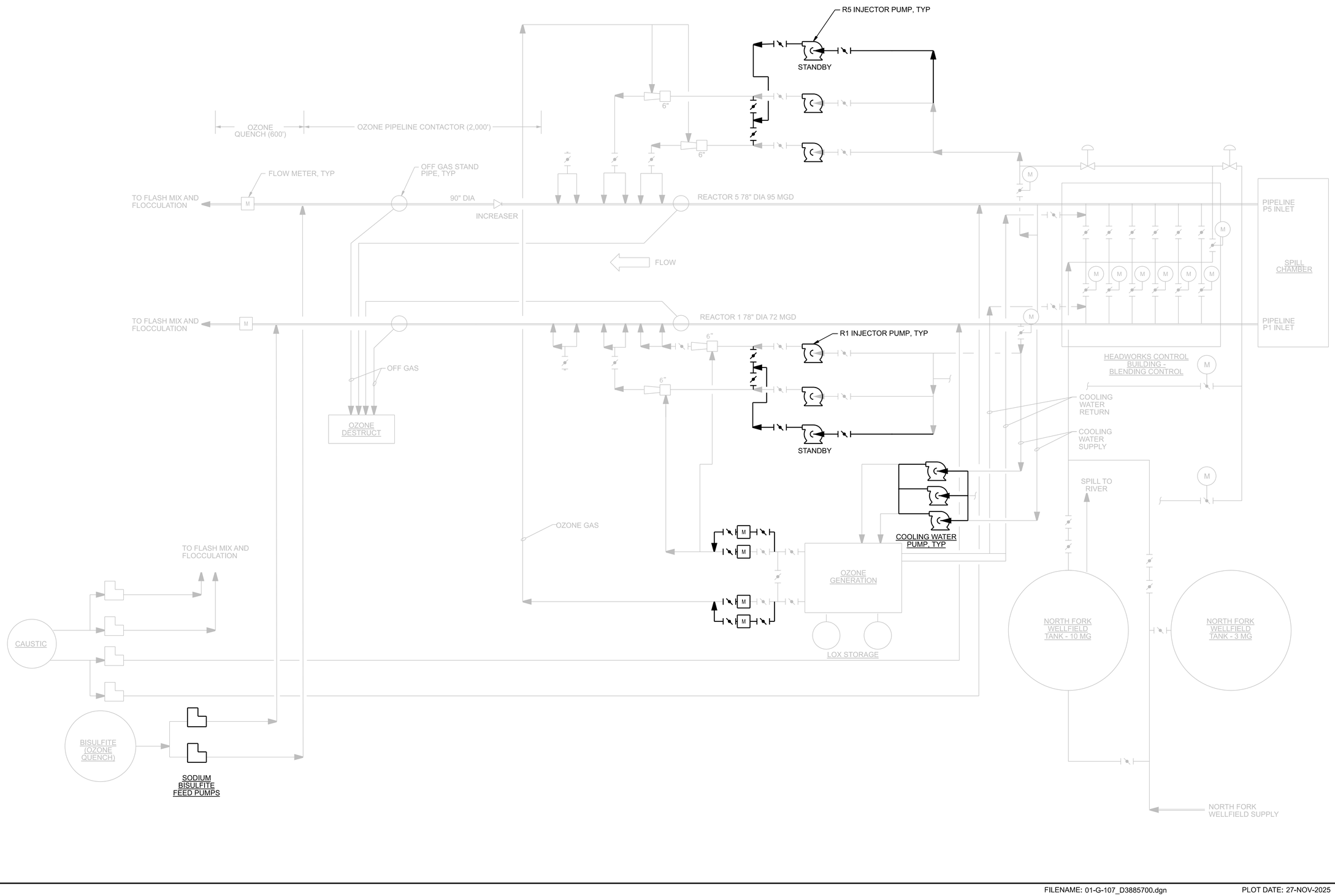
GENERAL

BASIS OF DESIGN

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-106
SHEET	6



JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
		T YOUNG	J SETNIK	A GAO		J KENNEDY	

REVISION

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

GENERAL

PROCESS FLOW DIAGRAM

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-107
SHEET	7

CONSTRUCTION DOCUMENTS

FILENAME: 01-G-107_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 03:54

SERVICE	DESCRIPTION	SIZE(S) (IN)	PIPING MATERIAL	RESPONSIBLE FOR INSTALL	SPECIFICATION SECTION	TEST PRESSURE PSIG - TYPE	PIPE LABELS	NOTES
CHFL	CHEMICAL CONVEYANCE WATER	ALL	PVC	CONTRACTOR	40 27 00.10	75 - H	"CHEMICAL CONVEYANCE WATER"	
CWR	OPEN LOOP COOLING WATER RETURN	ALL	CS	CONTRACTOR	40 27 00.03	75 - H	"COOLING WATER RETURN"	LINE AND COAT PIPE, PER SPECIFICATION 40 27 00.03
CWS	OPEN LOOP COOLING WATER SUPPLY	ALL	CS	CONTRACTOR	40 27 00.03	75 - H	"COOLING WATER SUPPLY"	LINE AND COAT PIPE, PER SPECIFICATION 40 27 00.03
D	DRAIN	ALL	PVC	CONTRACTOR	40 27 00.10		"DRAIN"	
DW	DILUTION WATER	ALL	CS	CONTRACTOR	40 27 00.03	100 - H	"DILUTION WATER"	LINE AND COAT PIPE, PER SPECIFICATION 40 27 00.03
GCWR	GENERATOR COOLANT WATER RETURN	ALL	SST	CONTRACTOR	40 27 00.08	75 - H	"GENERATOR COOLANT WATER RETURN"	
GCWS	GENERATOR COOLANT WATER SUPPLY	ALL	SST	CONTRACTOR	40 27 00.08	75 - H	"GENERATOR COOLANT WATER SUPPLY"	
GOX	GASEOUS OXYGEN	ALL	SST	CONTRACTOR	40 27 00.08	100 - P	"GASEOUS OXYGEN"	
LOX	LIQUID OXYGEN	ALL	SST	CONTRACTOR	40 27 00.08	150 - H	"LIQUID OXYGEN"	
N2	NITROGEN BOOST	ALL	SST	CONTRACTOR	40 27 00.08	150 - P	"NITROGEN"	
O3	OZONE GAS	ALL	SST	CONTRACTOR	40 27 00.08	150 - P	"OZONE GAS"	OZONE SAMPLE PIPING SHALL BE SOFT ANNEALED 316L SS TUBING, PER SPECIFICATION 40 27 00.09
OG	OZONATED OFF-GAS	ALL	SST	CONTRACTOR	40 27 00.08	100 - P	"OZONATED OFF-GAS"	
O3S	OZONE SOLUTION	ALL	SST	CONTRACTOR	40 27 00.08	100 - H	"OZONE SOLUTION"	
SA	SAMPLE WATER	ALL	SST	CONTRACTOR	40 27 00.08	50 - H	SAMPLE FLOW STREAM FOLLOWED BY "SAMPLE"	

PIPING SCHEDULE LEGEND

MATERIAL

CS	CARBON STEEL PIPE
PVC	POLYVINYL CHLORIDE PIPE
SST	316L STAINLESS STEEL

PRESSURE TEST

H	HYDROSTATIC
P	PNEUMATIC

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	BY
REVISION		T.YOUNG	J.SETNIK	A.GAO	APVD
					J.KENNEDY

Jacobs

GENERAL

PIPING SCHEDULE

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-108
SHEET	8

CONSTRUCTION DOCUMENTS

GENERAL INFORMATION

1. DRAWINGS SHALL NOT BE SCALED. ANY DISCREPANCIES BETWEEN THE DRAWINGS SHALL BE REFERRED TO THE ENGINEER FOR CLARIFICATION PRIOR TO UNDERTAKING THE WORK.
2. VERIFY ALL ELEVATIONS, DIMENSIONS, AND EXISTING CONDITIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES WITH THE CONTRACT DOCUMENTS.
3. DIMENSIONS NOTED AS (+/-) INDICATE UNVERIFIED DIMENSIONS AND ARE APPROXIMATE.
4. ALL DIMENSIONS, LOCATIONS, AND ELEVATIONS OF EXISTING CONDITIONS SHOWN ARE FOR REFERENCE ONLY AND SHALL BE FIELD VERIFIED.
5. ALL PLAN DIMENSIONS ARE MEASURED IN A TRUE HORIZONTAL PLANE UNLESS NOTED OTHERWISE.
6. ALL VERTICAL DIMENSIONS ARE MEASURED IN A TRUE VERTICAL PLAN, UNLESS NOTED OTHERWISE.

CODES AND REFERENCES

1. 2021 WASHINGTON STATE BUILDING CODE.
2. ASCE 7-16 "MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA FOR BUILDINGS AND OTHER STRUCTURES"
3. ACI 301-20 "SPECIFICATIONS FOR CONCRETE CONSTRUCTION"
4. ACI 318-19 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"

DESIGN CRITERIA

1. DEAD LOADS: WEIGHT OF MATERIALS USED AND ALLOWANCES
2. EARTHQUAKE DESIGN DATA (PER ASCE 7-16):

RISK CATEGORY	III
SEISMIC IMPORTANCE FACTOR	1.25
SITE CLASS	D (DEFAULT)
MAPPED SPECTRAL RESPONSE ACCELERATIONS	
S_S	1.094
S_1	0.377
DESIGN SPECTRAL RESPONSE ACCELERATIONS	
S_{DS}	0.875
S_{D1}	N/A
SEISMIC DESIGN CATEGORY	D

3. WIND DESIGN DATA (PER ASCE 7-16):

RISK CATEGORY	III
WIND SPEED	105 MPH
WIND SPEED (ASD)	81 MPH
EXPOSURE	B
K_d	0.85
K_{zt}	1.0
ENCLOSURE CLASSIFICATION	ENCLOSED
INTERNAL PRESSURE COEFFICIENT	+/- 0.18

THE FOLLOWING COMPONENTS AND CLADDING PRESSURES MAY BE USED IN LIEU OF CALCULATIONS:

EXTERIOR DOORS	+/- 20 PSF

CONCRETE

1. CONCRETE MATERIALS AND WORK SHALL CONFORM TO FOLLOWING:

   2021 WASHINGTON STATE BUILDING CODE CHAPTER 19
   ACI 301-20 "SPECIFICATIONS FOR CONCRETE CONSTRUCTION"
   ACI 318-19 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE"

2. MINIMUM REQUIRED CONCRETE COMPRESSIVE STRENGTHS AT 28 DAYS:

EQUIPMENT PADS:	5,500 PSI
WALL INFILL:	5,500 PSI

3. REINFORCING STEEL SHALL BE AS FOLLOWS:

ASTM A615 OR A706, GRADE 60	fy= 60,000 PSI

4. MAXIMUM WATER TO CEMENT RATIO FOR CONCRETE:

EQUIPMENT PADS:	0.50
WALL INFILL:	0.50

5. TARGET AIR ENTRAINMENT FOR CAST IN PLACE CONCRETE:

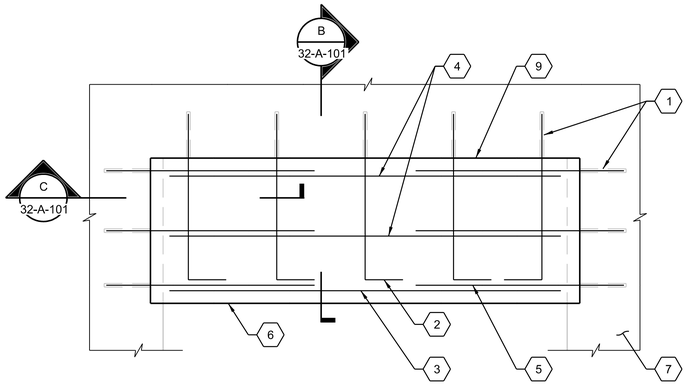
EQUIPMENT PADS:	N/A
WALL INFILL:	6.0% FOR 3/8" MAX AGGREGATE 5.5% FOR 1/2" MAX AGGREGATE 5.0% FOR 3/4" MAX AGGREGATE

6. REINFORCING SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 AND 318.
7. NO BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL BE FIELD BENT UNLESS SPECIFICALLY SO DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER.
8. CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

ALL SURFACES:	2"

9. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.
10. REINFORCING STEEL SHALL BE ADEQUATELY SUPPORTED ON BAR SUPPORTS WITH SPACERS TO KEEP REINFORCING IN POSITION DURING INSTALLATION OF CONCRETE.
11. NO CONSTRUCTION JOINTS, CONTROL JOINTS, OR EXPANSION JOINTS ARE PERMITTED WITHIN THE EQUIPMENT PADS OR WALL INFILL.
12. CONCRETE REINFORCEMENT SHOWN IS DIAGRAMMATIC AND ONLY INTENDED TO SHOW THE GENERAL CONFIGURATION, SIZE, AND QUANTITY OF REINFORCEMENT. CONTRACTOR/FABRICATOR SHALL FOLLOW THE LAP AND EMBEDMENT LENGTHS PROVIDED, ACI MNL-66(20) "ACI DETAILING MANUAL" FOR PROPER DETAILING REQUIREMENTS, AND THE CONCRETE REINFORCING STEEL INSTITUTE'S (CRSI) "MANUAL OF STANDARD PRACTICE."
13. STEEL ANCHORS GRADES:

CARBON STEEL BOLTS AND RODS:	F1554 GR. 36 OR GR. 55 WITH SUPPLEMENT S1
CARBON STEEL NUTS:	A563
STAINLESS STEEL BOLTS AND RODS:	F593, AISI TYPE 316, GROUP 2 CONDITION CW
STAINLESS STEEL NUTS:	F593, AISI TYPE 316, CONDITION CW

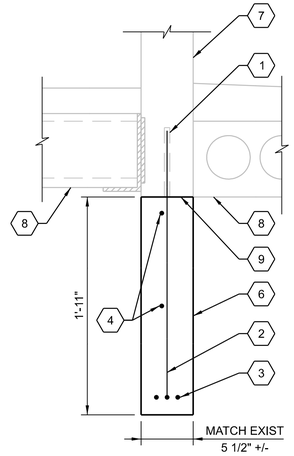


NOTE:
FLOOR SLABS NOT SHOW FOR CLARITY.

A WALL INFILL - DOOR HEAD - ELEVATION VIEW

1"=1'-0"

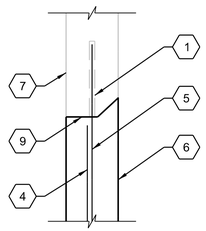
32-A-101



B WALL INFILL - DOOR HEAD - SECTION VIEW

1 1/2"=1'-0"

32-A-101



C WALL INFILL - DOOR JAMB - SECTION VIEW

1 1/2"=1'-0"

32-A-101

SHEET DETAILS LEGEND

1. ADHESIVE DOWEL WITH 8" MIN EMBEDMENT, TYP.
2. #4 HOOKED DOWELS AT 16" OC MAX.
3. (2) #4 BOTTOM BARS.
4. #4 BARS.
5. #4 DOWELS, LAP 24" MIN WITH BARS, TYP.
6. NEW CONCRETE INFILL WALL.
7. EXIST CONCRETE WALL.
8. EXIST HOLLOWCORE SLAB.
9. CLEAN AND REMOVE LAITANCE, COATINGS, OR DEBRIS FROM EXISTING CONCRETE SURFACE.

POST-INSTALLED ADHESIVE DOWELS REQUIREMENTS:

1. VOIDS, REINFORCING STEEL, PT TENDONS, PIPES, CONDUITS, AND ALL OTHER EMBEDDED ITEMS SHALL BE LOCATED USING SCANNING EQUIPMENT PRIOR TO DRILLING, USING A METHOD APPROPRIATE FOR THE DEPTH OF HOLE, THICKNESS OF CONCRETE, AND DEPTH OF REINFORCING.
2. A MINIMUM OF 1 1/2" CLEAR SHALL BE MAINTAINED TO THE EXISTING REINFORCEMENT BARS, PT-TENDONS, PIPES, CONDUIT, AND ALL OTHER EMBEDDED ITEMS.
3. ADHESIVE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE ADHESIVE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ICC-ES REPORT.
4. SPECIAL INSPECTION OF ADHESIVE DOWEL INSTALLATION SHALL BE IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.

JOHN A. CARREON
STATE OF WASHINGTON
12/09/25
56772
STRUCTURAL ENGINEER
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		J CARREON	K KOTARSKA	J RYAN	APVD	J KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

GENERAL

STRUCTURAL NOTES

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-109
SHEET	9

PIPE AND FITTING SYMBOLS

DOUBLE LINE

SINGLE LINE

- EXISTING PIPE
- NEW PIPE
- EXISTING PIPE TO BE ABANDONED
- EXISTING PIPE TO BE REMOVED
- WELDED JOINT
- GROOVED END JOINT
- FLANGED JOINT
- MECHANICAL JOINT
- BELL & SPIGOT JOINT (LEADED)
- BALL JOINT
- ADAPTER SIDE
  GROOVED END ADAPTER FLANGE
- FLANGED COUPLING ADAPTER
- FLEXIBLE COUPLING
- METAL BELLOWS EXP JOINT
- ELASTOMER BELLOWS EXP JOINT
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- LATERAL UP
- LATERAL DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- REDUCING BUSHING
- UNION
- CAP
- ANCHOR
- ELBOW, 90 DEGREE
- CROSS

DOUBLE LINE

SINGLE LINE

- TEE
- ELBOW, 45 DEGREE
- LATERAL

NOTES:

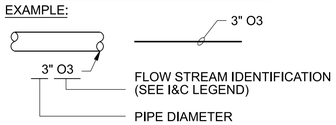
1. ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICATIONS.
2. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY.REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.
3. EXISTING PIPE AND EQUIPMENT IS SHOWN LIGHT-LINED AND/OR SCREENED AND IS NOTED AS EXISTING. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY-LINED.

MISCELLANEOUS PIPING SYMBOLS

- STRAINER
- SIGHT GLASS
- FLEXIBLE (ELASTOMER) PIPE CONNECTION
- GAUGE WITH COCK
- THERMOMETER
- ROTAMETER
- PIG LAUNCHER
- PIG CATCHER
- BACKFLOW PREVENTER
- REDUCER
- FLEXIBLE HOSE
- FLEXIBLE CONNECTOR
- PS
  26-1-2
  TYPICAL INSTRUMENT SYMBOL
  (SEE I&C LEGEND)
- AUTOMATIC AIR VENT

PIPING DESIGNATION

EXAMPLE:



VALVE SYMBOLS

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE-BALL
- SEATING PORT
- ECCENTRIC PLUG
- PLUG OR COCK
- NEEDLE
- DIAPHRAGM
- PINCH
- SWING CHECK
- BALL CHECK

OR

- HOSE VALVE (HV- X) OR (V-X)
  X = NO. IN SPECS
- SAMPLE
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELEASE
- REGULATED SIDE
  PRESSURE CONTROL
- REGULATED SIDE
  PRESSURE REGULATOR
- MULTI-PORT VALVE,
  ARROWS INDICATE FLOW PATTERN.
  SEATING PORTS ARE IMPLIED BY
  INDICATED FLOW PATTERN.
- TELESCOPING
- ROTARY
- ANGLE GATE

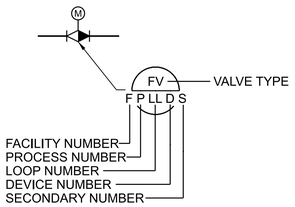
MECHANICAL LEGEND AND NOTES

GENERAL PIPING NOTES:

1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
2. SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
3. LOCATION AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN IS ONLY APPROXIMATE. CONTRACTOR SHALL DESIGN SUPPORTS AS SPECIFIED.
4. ALL NEW JOINTS SHALL BE WATERTIGHT.
5. ALL FLEXIBLE CONNECTORS AND FLANGED COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST TIES, BLOCKS, AND ANCHORS, AS NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
6. SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE PLANS, WHEREVER APPLICABLE. NOT ALL OF THE VARIOUS PIPING COMPONENTS ARE NECESSARILY USED IN THE PROJECT.
7. NUMBER AND LOCATION OF UNIONS SHOWN ON PLANS IS ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
8. WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.
9. COMPONENTS AND PANELS SHOWN WITH A SINGLE FILLED DIAMOND (♦) OR EMPTY DIAMOND (◊) ARE TO BE PROVIDED BY THE OZONE SYSTEM SUPPLIER.

VALVE DESIGNATIONS

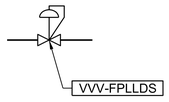
CONTROL VALVES



NOTES:

1. SEE I&C LEGENDS FOR FURTHER DEFINITIONS AND ACTUATOR TYPES.

MANUAL AND SELF-CONTAINED VALVES



V = VALVE TYPE
F = FACILITY NUMBER
P = PROCESS NUMBER
L = LOOP NUMBER
D = DEVICE NUMBER
S = SEC DEVICE NUMBER

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	BY
						APVD
						J KENNEDY
					APVD	
					A GAO	
				J SETNIK	CHK	
			T YOUNG		DR	
				REVISION		

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

GENERAL

MECHANICAL LEGEND

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-110
SHEET	10

FILENAME: 01-G-110_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 03:55

ONE-LINE DIAGRAM-1

SYMBOL	DESCRIPTION
	DRAWOUT AIR CIRCUIT BREAKER, LOW VOLTAGE
400	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE, UNO
AS/AF or AT/AF	CIRCUIT BREAKER, STATIC TRIP UNIT, SENSOR AMP TRIP AND FRAME RATINGS SHOWN, 3 POLE, UNO
100/M	CIRCUIT BREAKER, MAGNETIC TRIP ONLY, TRIP RATING SHOWN, 3 POLE, UNO
400 400	CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE, UNO
400 225	FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE, UNO
100	SWITCH, CURRENT RATING INDICATED, 3 POLE, UNO
60 (3)	FUSE, CURRENT RATING AND QUANTITY INDICATED
1	MOTOR STARTER WITH OVERLOAD, NEMA SIZE INDICATED, FVNR UNO
AFD	ELECTRONIC STARTER/SPEED CONTROL RVSS = REDUCED VOLTAGE SOFT STARTER AFD = AC ADJUSTABLE FREQUENCY DRIVE DC = DC ADJUSTABLE SPEED DRIVE RVAT = REDUCED VOLTAGE AUTO TRANSFORMER TYPE RVRT = REDUCED VOLTAGE REACTOR TYPE VFD = VARIABLE FREQUENCY DRIVE
	CABLE OR BUS CONNECTION POINT
K	KEY INTERLOCK
	SURGE ARRESTER (GAP TYPE)
10	CAPACITOR - KVAR INDICATED, 3 PHASE
3	AC MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED
G 500/625	GENERATOR, KW/KVA RATING SHOWN
VS V 0-600V	ANALOG METER WITH SWITCH - SCALE RANGE SHOWN V = VOLTAGE KW = KILOWATTS A = AMPERAGE KVAR = KILOVARS PF = POWER FACTOR
DPM	DIGITAL POWER METER (MULTIFUNCTION)
	UTILITY REVENUE METER
	GROUND
15 KVA 480-120/240V 1 PH	TRANSFORMER, SIZE, VOLTAGE RATINGS, AND PHASE INDICATED
	SHIELDED ISOLATION TRANSFORMER
480-120V (3)	POTENTIAL TRANSFORMER, VOLTAGE RATING AND QUANTITY INDICATED
100:5 (3)	CURRENT TRANSFORMER, RATIO(100:5) AND QUANTITY INDICATED (3)
	CONNECTION POINT TO EQUIPMENT SPECIFIED IN OTHER DIVISIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS DIVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR

ONE-LINE DIAGRAM-2

SYMBOL	DESCRIPTION
	TERMINAL BLOCK LUG
	DELTA CONNECTION
	WYE GROUNDED CONNECTION, SOLID GROUND
EUM	ENERGY MONITORING UNIT
MRP	MOTOR PROTECTION RELAY

NOTES:

1. THESE ARE STANDARD LEGEND SHEETS. SOME SYMBOLS AND ABBREVIATIONS MAY APPEAR ON THE LEGEND AND NOT ON THE DRAWINGS.
2. FOR ADDITIONAL ABBREVIATIONS OF OTHER DIVISIONS (HVAC, MECHANICAL, AND STRUCTURAL/ARCHITECTURAL) SEE OTHER LEGENDS.

CONTROL DIAGRAM-1

SYMBOL	DESCRIPTION
	PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
	PUSH-BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
	PUSH BUTTON SWITCH, MAINTAINED CONTACTS WITH MECHANICAL INTERLOCK
	3 POSITION SELECTOR SWITCH MAINTAINED CONTACT
HAND OFF REMOTE	SELECTOR SWITCH - MAINTAINED CONTACT - CHART IDENTIFIES OPERATION WHEN NEEDED FOR CLARITY:

	POSITION		
CKT	HAND	OFF	REMOTE
1	X	O	O
2	O	O	X

X - CLOSED CONTACT
O - OPEN CONTACT

SYMBOL	DESCRIPTION
	TOGGLE SWITCH, ON-OFF TYPE
ON OFF	SELECTOR SWITCH, ON-OFF TYPE
	MUSHROOM HEAD PUSHBUTTON SWITCH
A	INDICATING LIGHT, PUSH-TO-TEST, LETTER INDICATES COLOR
A	INDICATING LIGHT - LETTER INDICATES COLOR A - AMBER G - GREEN S - STROBE B - BLUE R - RED C - CLEAR W - WHITE
ETM	ELAPSED TIME METER
M	MOTOR STARTER CONTACTOR COIL
CRX	CONTROL RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT
TDR X	TIME DELAY RELAY, X INDICATES NUMERICAL ORDER IN CIRCUIT
SV X	SOLENOID VALVE, X INDICATES NUMERICAL ORDER IN CIRCUIT
	CONTACT - NORMALLY OPEN
	CONTACT - NORMALLY CLOSED
	REMOTE DEVICE
X SEC	TIME DELAY RELAY CONTACT, NORMALLY OPEN, CLOSES WHEN ENERGIZED AND TIMED OUT
X SEC	TIME DELAY RELAY CONTACT, NORMALLY CLOSED, OPENS WHEN ENERGIZED AND TIMED OUT
X SEC	TIME DELAY RELAY CONTACT, CLOSES WHEN ENERGIZED, OPENS WHEN DE-ENERGIZED AND TIMED OUT
X SEC	TIME DELAY RELAY CONTACT, OPENS WHEN ENERGIZED, CLOSES WHEN DE-ENERGIZED AND TIMED OUT
	MOTOR SPACE HEATER
	TERMINAL BLOCK, REMOTE
	TERMINAL BLOCK, INTERNAL
	FUSED TERMINAL BLOCK
	FUSE, RATING INDICATED
CPT 120V	TRANSFORMER, CONTROL POWER
	THERMOCOUPLE
	FUSED CONTROL SWITCH WITH BLOWN FUSE INDICATOR

J. ANDERSON — STATE OF WASHINGTON — 41040 — REGISTERED PROFESSIONAL ENGINEER — 12/7/25

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		D ANDERSON	J GARIBAY	D WAGNER	APVD	J KENNEDY	

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

GENERAL

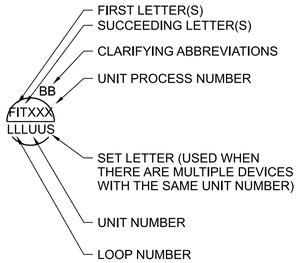
ELECTRICAL LEGEND

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-111
SHEET	11

INSTRUMENT IDENTIFICATION

EXAMPLE SYMBOLS



DIGITAL SYSTEM INTERFACES

- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT
- △x DISCRETE INPUT
- ▽x DISCRETE OUTPUT
- ■ NETWORKED COMMUNICATIONS INTERFACE PROFINET OR P/B (PROFIBUS)

WHERE X =
A = ALARM
H = MAINTAINED
M = MOMENTARY
S = STATUS

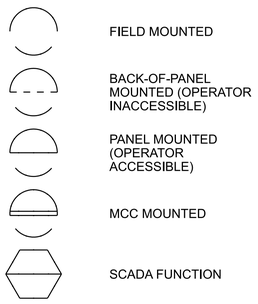
INSTRUMENT IDENTIFICATION LETTERS TABLE

LETTER	FIRST-LETTER		SUCCEEDING-LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	READOUT OR PASSIVE FUNCTION	READOUT OR PASSIVE FUNCTION
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
C	USER'S CHOICE (*)			CONTROL	
D	DENSITY (S.G.)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT, SENSOR		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE (*)		GLASS, GAUGE VIEWING DEVICE	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION	MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
O	USER'S CHOICE (*)		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD OR PRINT		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTI VARIABLE		MULTI FUNCTION	MULTI FUNCTION	MULTI FUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (*)	X AXIS	UNCLASSIFIED (*)	UNCLASSIFIED (*)	UNCLASSIFIED (*)
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION	Z AXIS		DRIVE, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

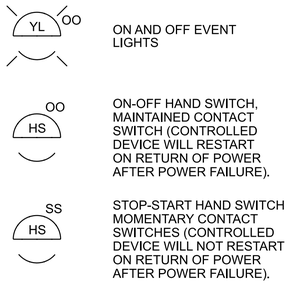
TABLE BASED ON THE INSTRUMENTATION, SYSTEMS, AND AUTOMATION SOCIETY (ISA) STANDARD.

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.
(*) WHEN USED, DEFINE THE MEANING HERE FOR THE PROJECT.

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS



SPECIAL CASES



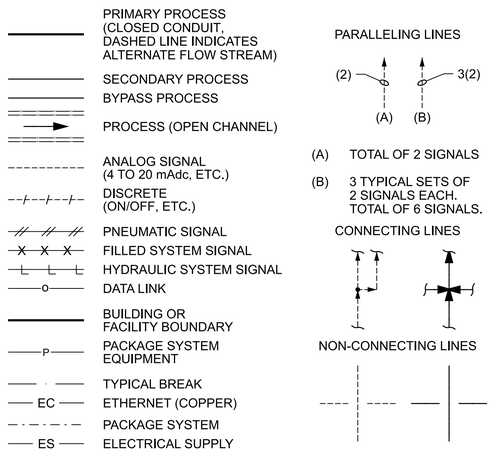
TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

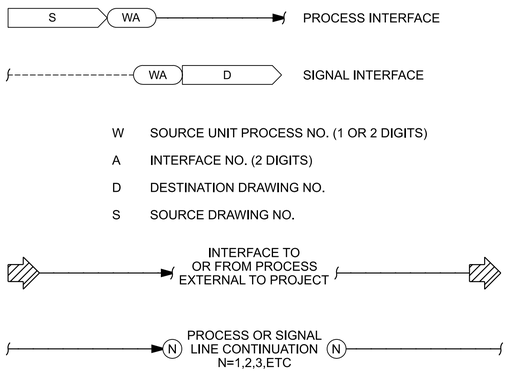
EXAMPLE

CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

LINE LEGEND



INTERFACE SYMBOLS



W SOURCE UNIT PROCESS NO. (1 OR 2 DIGITS)
A INTERFACE NO. (2 DIGITS)
D DESTINATION DRAWING NO.
S SOURCE DRAWING NO.

SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

AAA-FPLLDS

A = ISA IDENTIFIER
F = FACILITY NUMBER
P = PROCESS NUMBER
L = LOOP NUMBER
D = DEVICE NUMBER
S = SEC DEVICE NUMBER

ARV	AIR RELEASE VALVE
AVRV	AIR AND VACUUM RELEASE VALVE
BLV	BALL VALVE
BFV	BUTTERFLY VALVE
CV	CHECK VALVE
DV	DIAPHRAGM VALVE
E	EJECTOR
FCV	FLOW CONTROL VALVE
G	GATE
GV	GATE VALVE
LCV	LEVEL CONTROL VALVE
M	MECHANICAL EQUIPMENT
NV	NEEDLE VALVE
OIU	OPERATOR INTERFACE UNIT
P	PUMP
PCV	PRESSURE CONTROL VALVE
PSE	RUPTURE DISK
PSV	PRESSURE RELIEF VALVE
PV	PLUG VALVE
T	TANK
TCV	TEMPERATURE CONTROL VALVE

GENERAL SHEET NOTES

1. COMPONENTS AND PANELS SHOWN WITH A SINGLE ASTERISK (∗) ARE TO BE PROVIDED AS PART OF A PACKAGE SYSTEM.
2. COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (∗∗) ARE TO BE PROVIDED UNDER DIVISION 26, ELECTRICAL.
3. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THE PROJECT.
4. COMPONENTS AND PANELS SHOWN WITH A SINGLE FILLED IN DIAMOND (♦) ARE TO BE PROVIDED BY THE OZONE SYSTEM SUPPLIER AS PART OF THE CONTROL PANEL PROCUREMENT PACKAGE.
5. POWER SUPPLY UNITS INDICATED BY A SINGLE UNFILLED DIAMOND (◊) ARE TO BE PROVIDED BY THE OZONE SYSTEM SUPPLIER AS PART OF THE POWER SUPPLY UNIT PROCUREMENT PACKAGE.

NO.	DATE	DSGN	REVISION	BY	APVD
		DR	A ZIEBOWICZ	CHK	S BAKKEN	APVD	J KENNEDY
		G ERB			

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

GENERAL

INSTRUMENTATION AND CONTROL LEGEND - SHEET 1

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-112
SHEET	12

FILENAME: 01-G-112_D3885700.dgn PLOT DATE: 5-DEC-2025 PLOT TIME: 01:41

VALVE SYMBOLS

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE- BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- BALL CHECK
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELEASE
- REGULATED SIDE PRESSURE CONTROL
- MULTI-PORT VALVES (BALL VALVE SHOWN. FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN.) ARROWS INDICATE FLOW PATTERN. SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- TELESCOPE
- SAMPLE
- MUD

GATE SYMBOLS

- SLUICE
- BUTTERFLY
- FLAP
- FABRICATED SLIDE
- SHEAR

ACTUATOR SYMBOLS

- XX PNEUMATIC DIAPHRAM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
- XX PNEUMATIC CYLINDER SINGLE OR DOUBLE ACTING ACTUATED BY ONE INPUT
- XX ELECTRIC MOTOR
- XX SOLENOID
- XX HYDRAULIC
- ELECTRIC MOTOR WITH POSITIONER
- MANUAL
- XX ELECTROHYDRAULIC

NOTE:
ON LOSS OF PRIMARY POWER (PNEUMATIC, ELECTRICAL OR HYDRAULIC)
XX: FO =FAIL OPEN
FC =FAIL CLOSED
FLP=FAIL TO LAST POSITION

PRIMARY ELEMENT SYMBOLS

- PARSHALL FLUME
- WEIR
- ORFICE PLATE
- FLOW TUBE
- PITOT-STATIC
- VORTEX METER
- ROTAMETER
- THERMAL FLOW METER
- ULTRASONIC FLOWMETER
- ELECTROMAGNETIC FLOWMETER
- PROPELLER OR TURBINE METER
- DENSITY METER
- LEVEL (ULTRASONIC)
- LEVEL (BUBBLER TUBE)
- LEVEL (FLOAT)

MISCELLANEOUS SYMBOLS

- SIGHT GLASS
- DIAPHRAGM SEAL
- BLIND FLANGE
- AIR GAP
- VENT TO ATMOSPHERE
- AERATOR
- PLUG
- RECEPTACLE
- SELF CONTAINED AIR SUPPLY
- COMPOSITE SAMPLER (DIPPER TYPE)
- COMPOSITE SAMPLER (SUCTION TYPE)
- TV CAMERA
- RADIO ANTENNA
- "ON" TIME DELAY B "ON" X-SEC. AFTER A "ON". INSTANT "OFF".
- "OFF" TIME DELAY B "OFF" X-SEC. AFTER A "OFF". INSTANT "ON".
- OR INTERLOCK. SEE CONTROL DIAGRAMS
- MEMORY ELEMENT S= SET , R= RESET
- PURGE SET X: W = WATER A = AIR
- SEE
- XX AIR SET XX= SUPPLY PRESSURE IN PSIG.
- FILTER/ REGULATOR/ GAUGE SET
- FLEXIBLE CONNECTOR
- PULSATION DAMPENER
- FILTER
- 120V 120 VOLT, 60 HZ POWER
- 480V 480 VOLT, 60 HZ POWER
- ANNULAR DIAPHRAGM SEAL
- RUPTURE DISK (PRESSURE)
- RUPTURE DISK (VACUUM)
- PIG INSERT POINT
- OR PIG CATCH POINT
- MIXER
- ELECTRIC MOTOR
- PRESSURE GAUGE
- TONE TRANSMITTER NO. X
- TONE RECEIVER NO. X
- VOICE COMMUNICATION POINT
- TV MONITOR
- LOGIC ELEMENT: IF A AND NOT B THEN C
- LOGIC ELEMENT: IF A OR B THEN C
- ON/OFF RELAY. INPUT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS PRESENT.
- SWITCHING SIGNAL
- SWITCHING RELAY. INPUT WITH DOT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS PRESENT
- OTHER INPUT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS NOT PRESENT.
- FLUSHING CONNECTION
- HOSE ADAPTOR
- SEAL WATER SET
- SIGHT GLASS
- FFLCPLLLX PANEL CONTINUED ON SAME OR OTHER DRAWING
- PANEL OUTLINE
- PANEL NAME

PUMP AND COMPRESSOR SYMBOLS

NOTE: XX: AS ADJUSTABLE SPEED
CS-1 CONSTANT SPEED (SINGLE SPEED)
CS-2 CONSTANT SPEED (TWO SPEED)

- XX CENTRIFUGAL PUMP (DRY PIT)
- XX CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP
- XX CHEMICAL FEED PUMP
- XX DIAPHRAGM PUMP
- XX GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT)
- PERESTALTIC CHEMICAL FEED PUMP
- XX SUBMERSIBLE SUMP PUMP
- XX PROGRESSIVE CAVITY PUMP
- XX COMPRESSOR (CENTRIFUGAL)
- XX COMPRESSOR (PISTON)
- XX BLOWER OR FAN (CENTRIFUGAL)
- EJECTOR

LINE SIZE AND MATERIAL IDENTIFICATION

(FOR REFERENCE ONLY. SEE SITE AND MECHANICAL DRAWINGS)

PIPE DIAMETER IN INCHES → 24"-RW

FLOW STREAM ID

FLOW STREAM IDENTIFICATION

CHFL	CHEMICAL CONVEYANCE WATER
CHW	CHEMICAL FLUSHING WATER
CS	CAUSTIC SOLUTION, CONCENTRATED
CSD	CAUSTIC SOLUTION, DILUTE
CWR	COOLING WATER RETURN (OPEN LOOP)
CWS	COOLING WATER SUPPLY (OPEN LOOP)
D, DR	DRAIN
DW	DILUTION WATER
FS	FIRE SPRINKLER WATER
FW	FINISHED WATER
GCWR	GENERATOR COOLANT WATER RETURN (CLOSED LOOP)
GCWS	GENERATOR COOLANT WATER SUPPLY (CLOSED LOOP)
GOX	GASEOUS OXYGEN
HF	HYDROFLUORIC ACID, CONCENTRATED
HFD	HYDROFLUORIC ACID, DILUTE
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
LOX	LIQUID OXYGEN
N2	NITROGEN
O2	OXYGEN
O3	OZONE
O3S	OZONE SOLUTION
OF	OVERFLOW
OG	OFF GAS
OW	OZONATED WATER
R1	OZONE REACTOR R1
R5	OZONE REACTOR R5
RW	RAW WATER
SA	SAMPLE
SBD	SODIUM BISULFITE, DILUTE
SBS	SODIUM BISULFITE, CONCENTRATED
SD	STORM DRAIN
SH	SODIUM HYPOCHLORITE, CONCENTRATED
SHD	SODIUM HYPOCHLORITE, DILUTE
UW	UTILITY WATER
V	VENT
W1	NO.1 (POTABLE) WATER
W2	NO.2 (NONPOTABLE) WATER

GARY T. ERB — STATE OF WASHINGTON — 43363 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	APVD
DSGN			G ERB	A ZIEBOWICZ	S BAKKEN
					BY APVD
					J KENNEDY

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

GENERAL

INSTRUMENTATION AND CONTROL LEGEND - SHEET 2

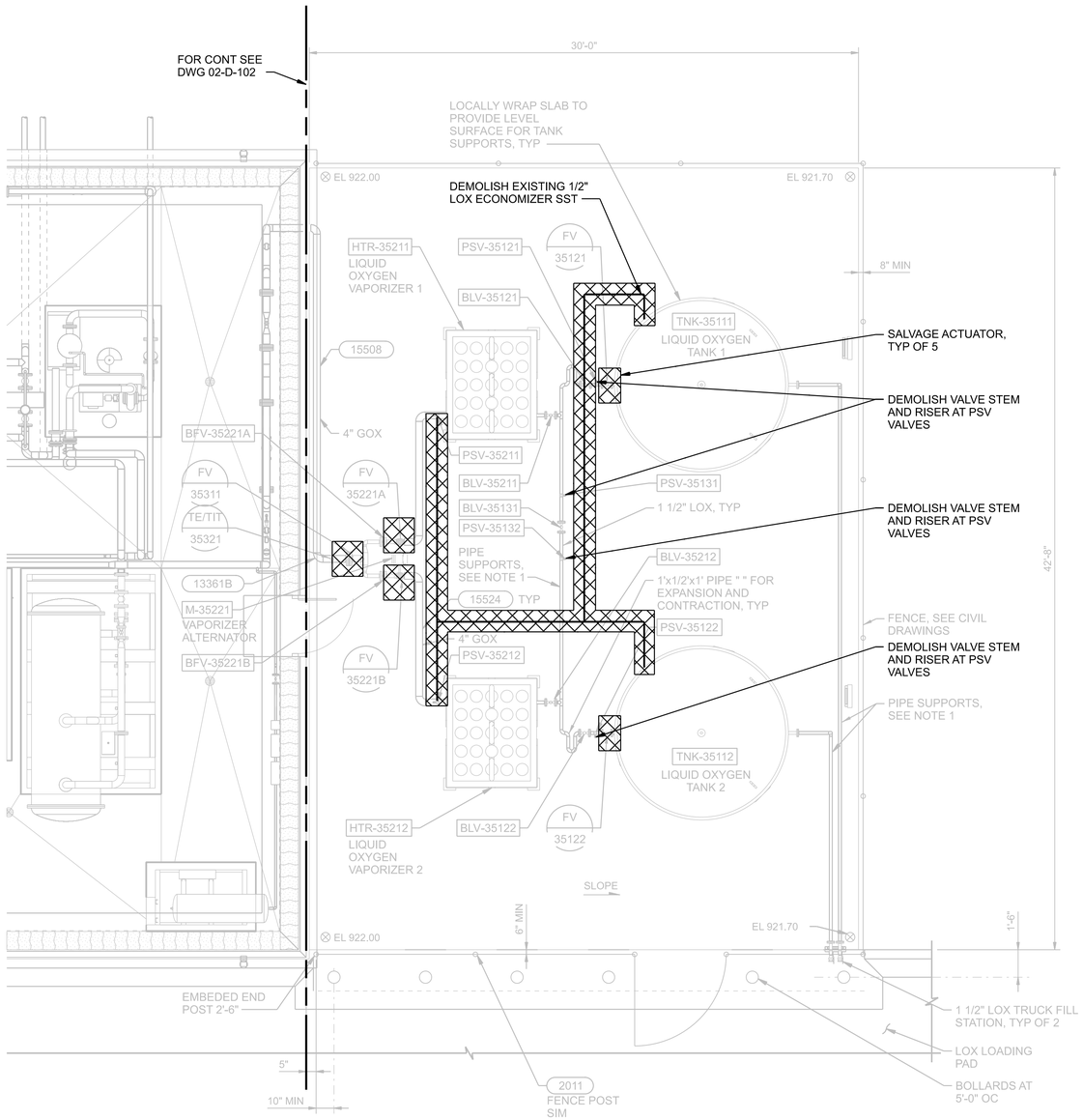
CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	01-G-113
SHEET	13

GENERAL SHEET NOTES

1. CAP AND SEAL ALL POINTS WHERE PIPING IS REMOVED TO KEEP MOISTURE AND DIRT OUT. ALL MATERIALS SHALL BE GREASE FREE AND/OR CLEANED FOR OXYGEN SERVICE.
2. SEE P&ID FOR DETAILED SCOPE OF REPLACEMENT OF ACTUATORS, INSTRUMENTATION AND ANALYZERS. DEMOLITION DETAILS TO BE PROVIDED AT FUTURE DESIGN PHASE.
3. SALVAGE IS DEFINED AS DECOMMISSIONING, DISCONNECTING, AND RETURNING TO OWNER. DEMOLISH IS DEFINED AS CONTRACTOR RESPONSIBLE FOR REMOVING FROM SITE.
4. SEE TO 01 31 13 PROJECT COORDINATION FOR WORK/SEQUENCING CONSTRAINTS RELATED TO DEMOLITION OF EQUIPMENT.



LOX AREA PLAN

1/4"=1'-0"

NO.	DATE	DSGN	DR	CHK	APVD
		T YOUNG	J.SETNIK	A.GAO	APVD

REVISION BY: J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

LOX SYSTEM
DEMOLITION PLAN

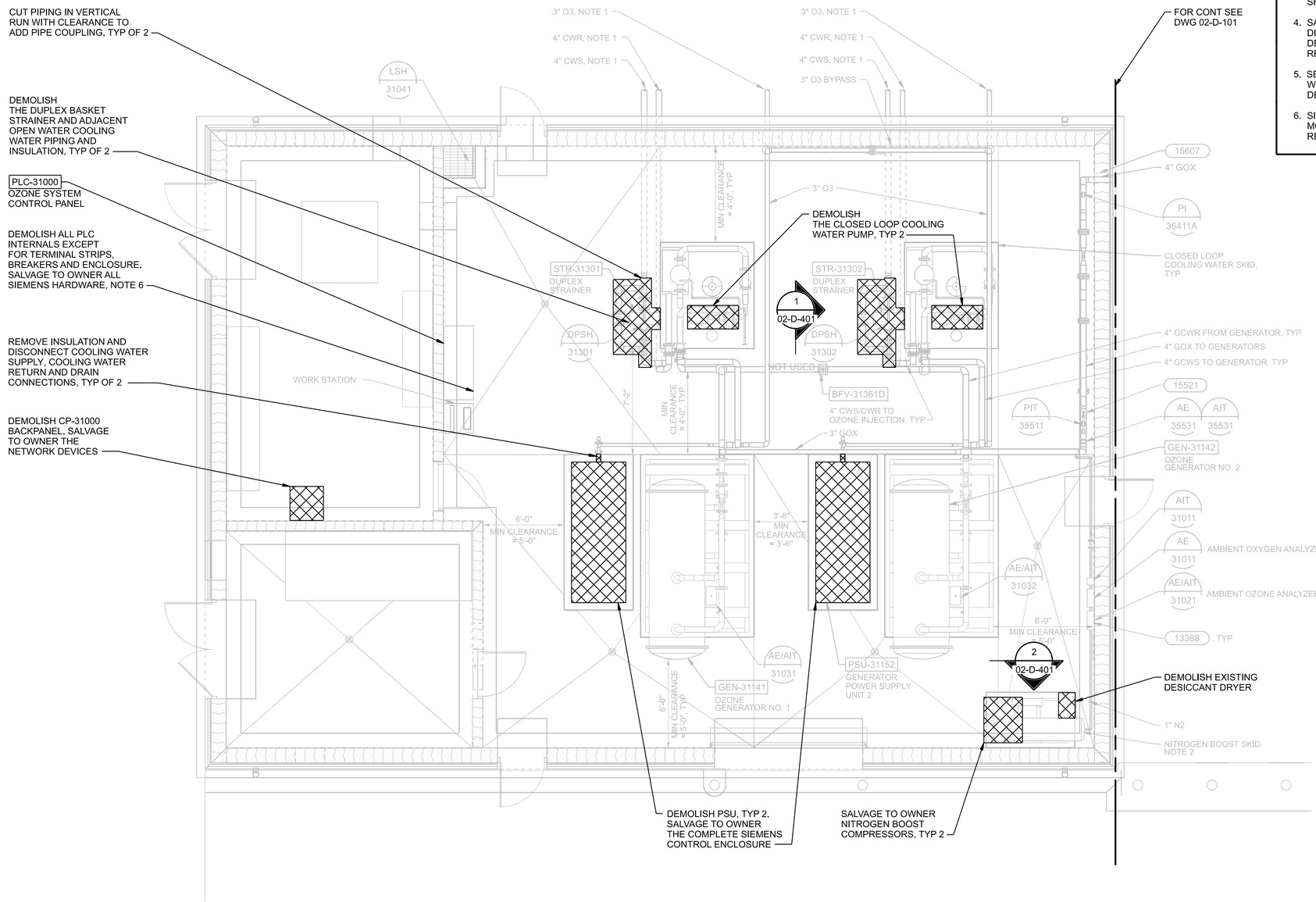
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-101
SHEET	14

CONSTRUCTION DOCUMENTS

GENERAL SHEET NOTES

1. CAP AND SEAL ALL POINTS WHERE PIPING IS REMOVED TO KEEP MOISTURE AND DIRT OUT. ALL MATERIALS SHALL BE GREASE FREE AND/OR CLEANED FOR OXYGEN SERVICE.
2. SEE P&ID FOR DETAILED SCOPE OF REPLACEMENT OF ACTUATORS, INSTRUMENTATION AND ANALYZERS. DEMOLITION DETAILS TO BE PROVIDED AT FUTURE DESIGN PHASE.
3. TAG NUMBERS FOR SKID-MOUNTED EQUIPMENT ARE SHOWN ON P&IDS.
4. SALVAGE IS DEFINED AS DECOMMISSIONING, DISCONNECTING, AND RETURNING TO OWNER. DEMOLISH IS DEFINED AS CONTRACTOR RESPONSIBLE FOR REMOVING FROM SITE.
5. SEE TO 01 31 13 PROJECT COORDINATION FOR WORK/SEQUENCING CONSTRAINTS RELATED TO DEMOLITION OF EQUIPMENT.
6. SIEMENS HARDWARE IS INCLUSIVE OF PLC, I/O MODULES, NETWORK DEVICES, AND ANY OTHER ITEM REQUESTED BY THE OWNER.



N

PLAN

1/4"=1'-0"

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DR	REVISION	CHK	APVD	BY	APVD
DSGN	T YOUNG	J.SETNIK		A.GAO		J.KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OZONE GENERATOR BUILDING
DEMOLITION PLAN

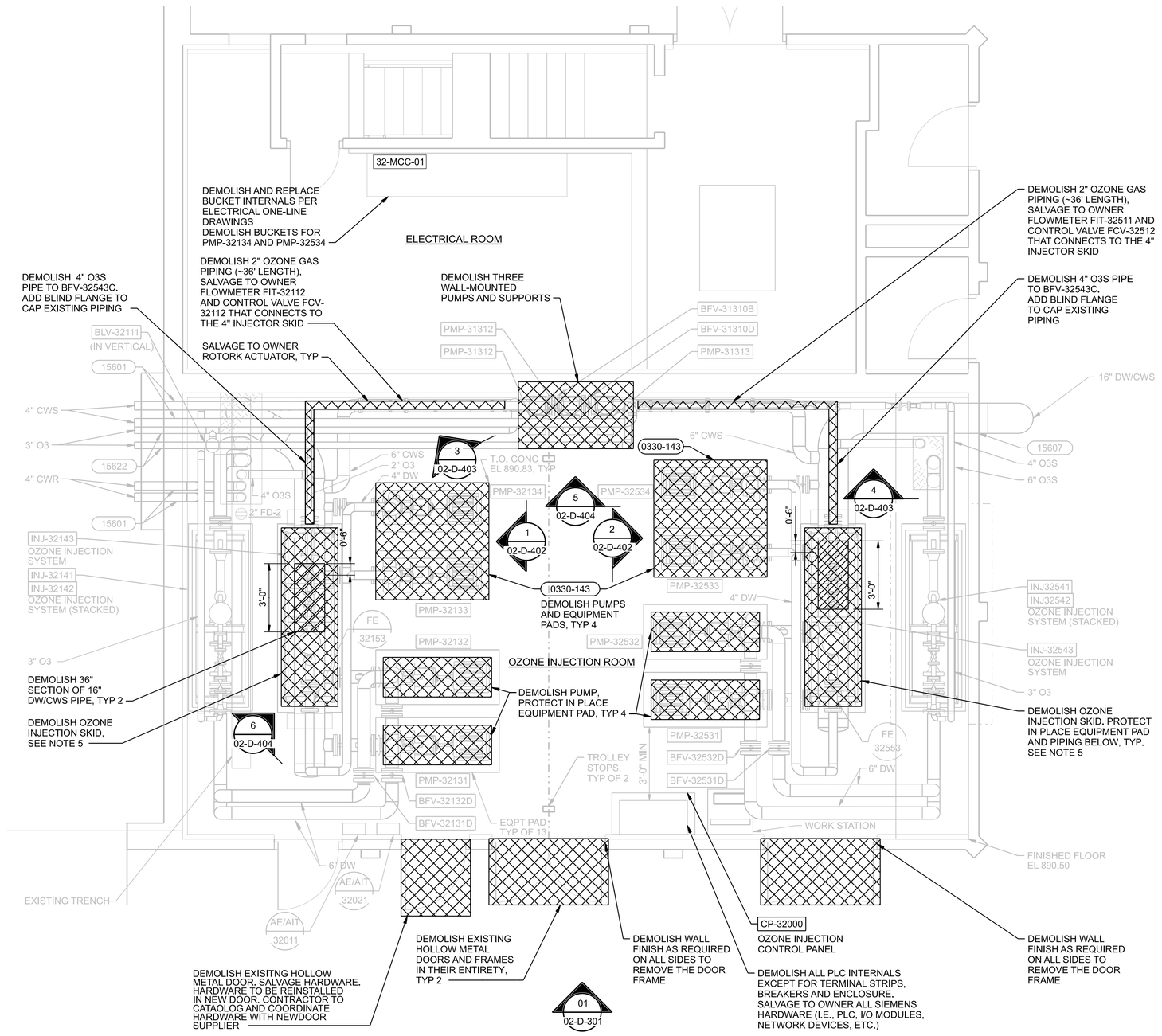
CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-102
SHEET	15

FILENAME: 02-D-102_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 03:48

GENERAL SHEET NOTES

1. CAP AND SEAL ALL POINTS WHERE PIPING IS REMOVED TO KEEP MOISTURE AND DIRT OUT. ALL MATERIALS SHALL BE GREASE FREE AND/OR CLEANED FOR OXYGEN SERVICE.
2. SEE P&ID FOR DETAILED SCOPE OF REPLACEMENT OF ACTUATORS, INSTRUMENTATION AND ANALYZERS.
3. SALVAGE IS DEFINED AS DECOMMISSIONING, DISCONNECTING, AND RETURNING TO OWNER. DEMOLISH IS DEFINED AS CONTRACTOR RESPONSIBLE FOR REMOVING FROM SITE.
4. SEE TO 01 31 13 PROJECT COORDINATION FOR WORK/SEQUENCING CONSTRAINTS RELATED TO DEMOLITION OF EQUIPMENT.
5. NO GRINDING/METAL CUTTING SHALL OCCUR WHILE OXYGEN/OZONE IS IN USE. PIPE WELDING SHALL ONLY OCCUR DURING THE OZONE OUTAGE WINDOW.
6. SALVAGE TO OWNER ALL ROTORK VALVE ACTUATORS.



MIDDLE FLOOR PLAN

3/8"=1'-0"

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	REVISION	CHK	APVD	BY
		T YOUNG	J SETNIK	A GAO	APVD	J KENNEDY

CONSTRUCTION DOCUMENTS

Jacobs

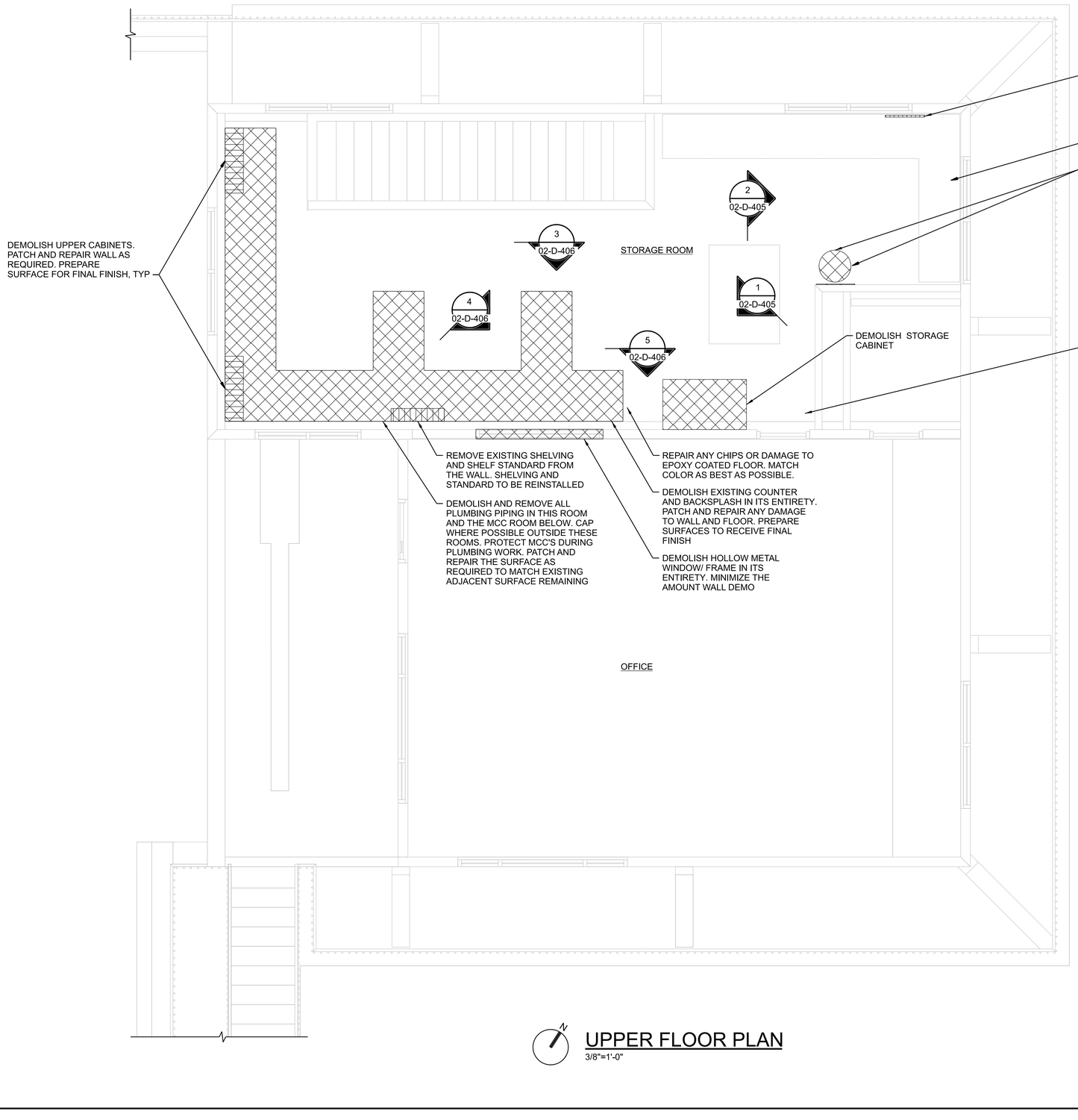
GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

OLD HEADWORKS CONTROL BUILDING
DEMOLITION
MIDDLE FLOOR PLAN

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-103
SHEET	16

FILENAME: 02-D-103_D3885700.dgn PLOT DATE: 28-NOV-2025 PLOT TIME: 07:29



UPPER FLOOR PLAN

3/8"=1'-0"

GENERAL NOTES

1. ALL WORK TO COMPLY WITH LOCAL, STATE AND FEDERAL BUILDING CODES AND SAFETY REGULATIONS.
2. CONTRACTOR TO VERIFY ALL SITE CONDITION PRIOR TO COMMENCING ANY WORK OR ORDERING ANY MATERIALS.
3. CONTRACTOR RESPONSIBLE FOR ALL WORK DETAILED IN THE CONSTRUCTION DOCUMENTS. ANY MODIFICATIONS OR DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS REQUIRE WRITTEN PERMISSION FROM THE ARCHITECT/OWNER.
4. ALL MILLWORK MODIFICATIONS SHALL MEET THE CURRENT STANDARDS OF THE ARCHITECTURAL WOODWORK INSTITUTE (AWI) OR EQUIVALENT INDUSTRY STANDARDS, TYPICALLY "COMMERCIAL" GRADE.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE WORK OF ALL THE TRADES TO AVOID INTERFERENCES. CHANGES REQUIRED DUE TO A LACK OF COORDINATION SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.
6. PROTECT EXISTING CABINETS NOT BEING MODIFIED, AS WELL AS ADJACENT FINISHES AND FURNISHINGS. USE TEMPORARY BARRIERS FOR DUST CONTROL.
7. ENSURE NEW CONSTRUCTION ALIGNS WITH EXISTING SURFACES.
8. ANYWHERE ELECTRICAL OUTLETS ARE DISTURBED DUE TO DEMOLITION, NEW OUTLETS TO BE INSTALLED RECESSED AND FLUSH IN THE NEW WALL.
9. MAINTAIN A CLEAN SITE DAILY AND PERFORM A THOROUGH FINAL CLEANING.
10. REMEDY DEFECTS FROM FAULTY WORKMANSHIP FOR ONE YEAR AFTER FINAL ACCEPTANCE.

23015280 REGISTERED ARCHITECT
MORGAN SHOEMAKER
STATE OF WASHINGTON
DIGITALLY SIGNED ON DEC 9, 2025

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		J RESEIGH	K KOTARSKA	M SHOEMAKER		J KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

CONSTRUCTION DOCUMENTS

Jacobs

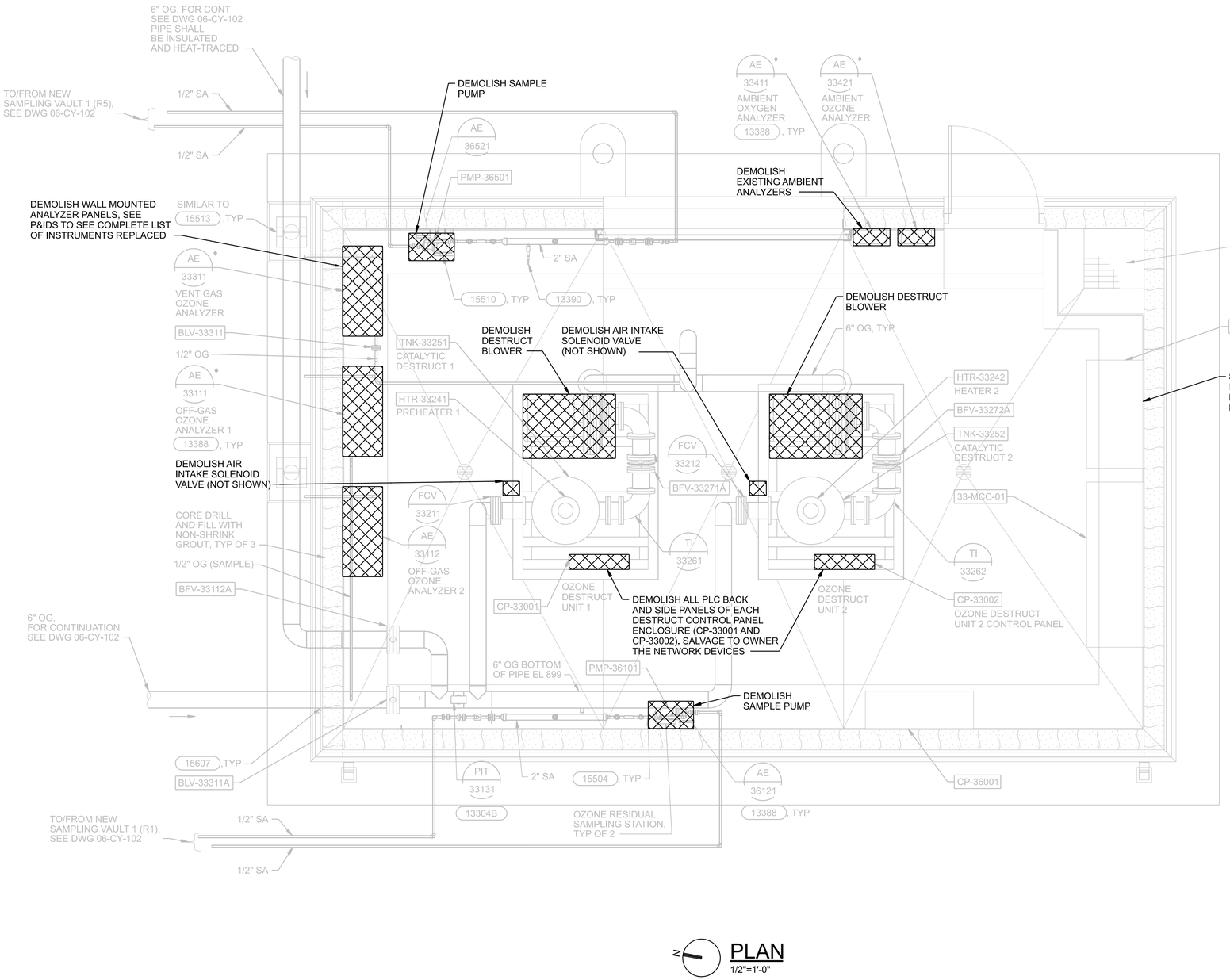
OLD HEADWORKS CONTROL BUILDING
DEMOLITION
UPPER FLOOR PLAN

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ADJUST SCALE ACCORDINGLY	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-104
SHEET	17

FILENAME: 02-D-104_D3885700.dgn PLOT DATE: 4-DEC-2025 PLOT TIME: 05:39

GENERAL SHEET NOTES

1. CAP AND SEAL ALL POINTS WHERE PIPING IS REMOVED TO KEEP MOISTURE AND DIRT OUT. ALL MATERIALS SHALL BE GREASE FREE AND/OR CLEANED FOR OXYGEN SERVICE.
2. SALVAGE IS DEFINED AS DECOMMISSIONING, DISCONNECTING, AND RETURNING TO OWNER. DEMOLISH IS DEFINED AS CONTRACTOR RESPONSIBLE FOR REMOVING FROM SITE.
3. SEE TO 01 31 13 PROJECT COORDINATION FOR WORK/SEQUENCING CONSTRAINTS RELATED TO DEMOLITION OF EQUIPMENT.



N

PLAN

1/2"=1'-0"

NO.	DATE	REVISION	CHK	APV'D	BY
DSGN	T YOUNG	DR	J.SETNIK	A.GAO	APV'D J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OZONE DESTRUCT BUILDING
DEMOLITION PLAN

CONSTRUCTION DOCUMENTS

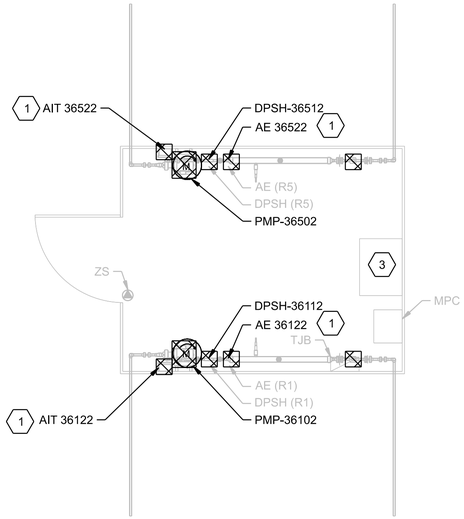
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-105
SHEET	18

FILENAME: 02-D-105_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 03:49

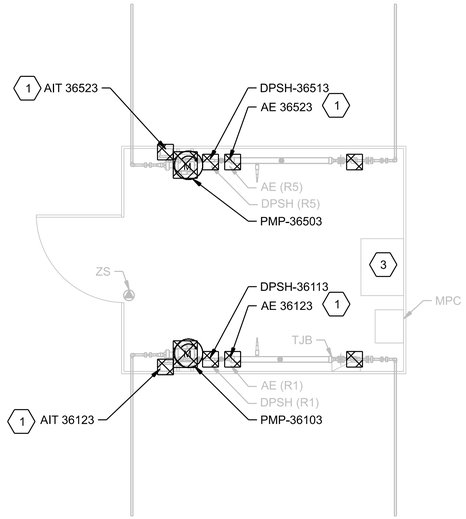
SHEET KEYNOTES

1. CAP AND SEAL ALL POINTS WHERE PIPING IS DEMOLISHED OR REMOVED TO KEEP MOISTURE AND DIRT OUT. ALL MATERIALS SHALL BE GREASE FREE AND/OR CLEANED FOR OXYGEN SERVICE.
2. DISCONNECT, REPLACE, AND RECONNECT INSTRUMENT WITH NEW. SEE P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
3. DISCONNECT AND DEMOLISH PLC BACKPANEL. PROTECT IN PLACE WIRING AND ENCLOSURE.
4. SEE TO 01 31 13 PROJECT COORDINATION FOR WORK/SEQUENCING CONSTRAINTS RELATED TO DEMOLITION OF EQUIPMENT.
5. DEMOLISH ALL PLC BACK AND SIDE PANELS IN EACH SAMPLE STATION CONTROL PANEL (CP-36001 - CP-36005). SALVAGE TO OWNER ALL SIEMENS HARDWARE.



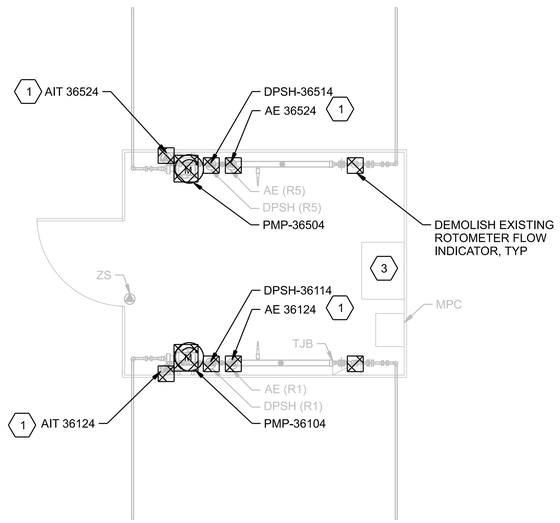
OZONE IN-LINE CONTACTOR AND SAMPLE STATION 2 PLAN

3/8"=1'-0"



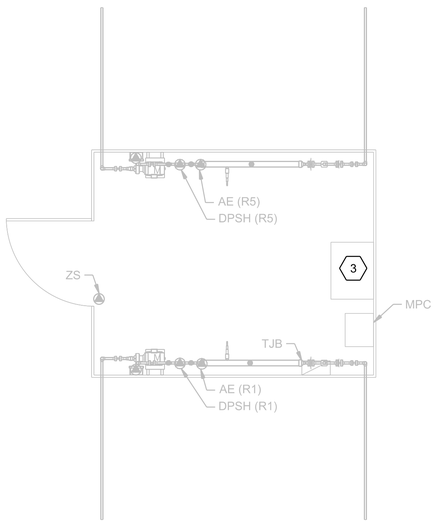
OZONE IN-LINE CONTACTOR AND SAMPLE STATION 3 PLAN

3/8"=1'-0"



OZONE IN-LINE CONTACTOR AND SAMPLE STATION 4 PLAN

3/8"=1'-0"



OZONE IN-LINE CONTACTOR AND SAMPLE STATION 5 PLAN

3/8"=1'-0"

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	BY
		T YOUNG	J SETNIK	A GAO	APVD
REVISION					APVD
					J KENNEDY

CONSTRUCTION DOCUMENTS

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

OZONE SAMPLE STATIONS
DEMOLITION PLAN

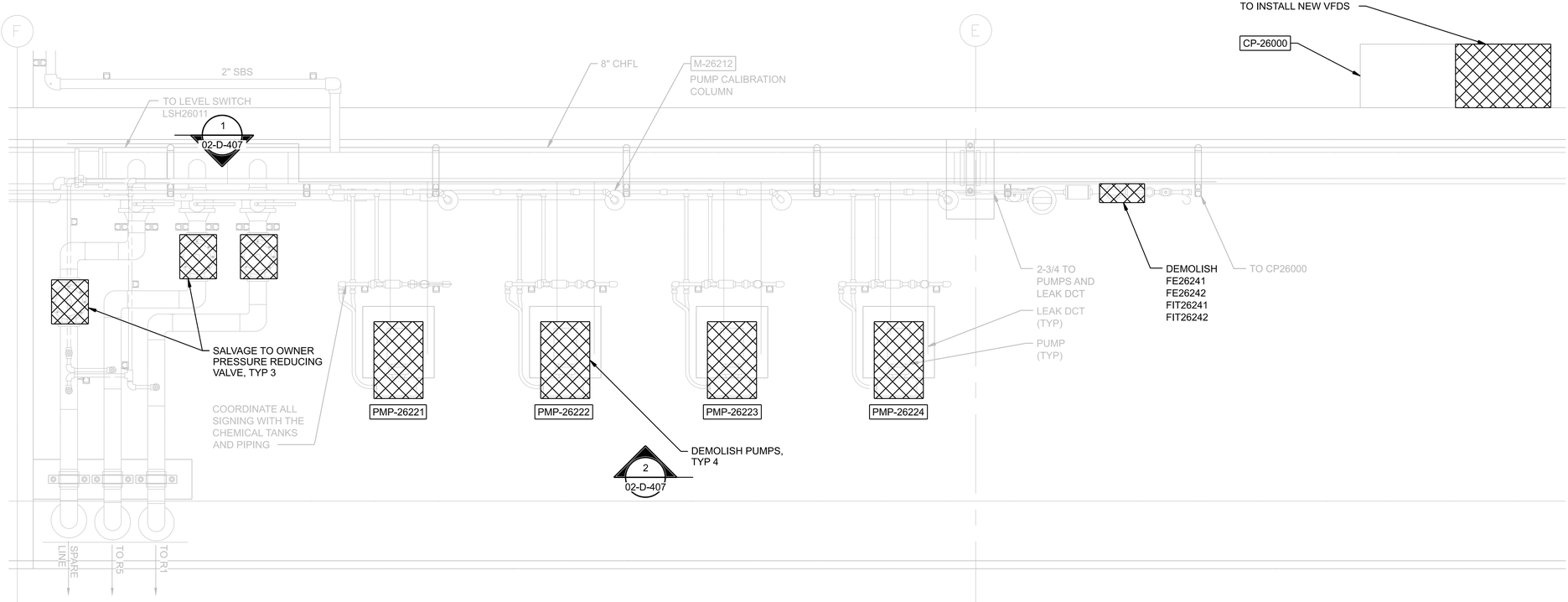
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-106
SHEET	19

FILENAME: 02-D-106_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 03:48

GENERAL SHEET NOTES

1. CAP AND SEAL ALL POINTS WHERE PIPING IS REMOVED TO KEEP MOISTURE AND DIRT OUT. ALL MATERIALS SHALL BE GREASE FREE AND/OR CLEANED FOR OXYGEN SERVICE.
2. SALVAGE IS DEFINED AS DECOMMISSIONING, DISCONNECTING, AND RETURNING TO OWNER. DEMOLISH IS DEFINED AS CONTRACTOR RESPONSIBLE FOR REMOVING FROM SITE.
3. SEE TO 01 31 13 PROJECT COORDINATION FOR WORK/SEQUENCING CONSTRAINTS RELATED TO DEMOLITION OF EQUIPMENT.



ENLARGED PLAN

3/4"=1'-0"

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		T YOUNG	J SETNIK	A GAO	APVD	J KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

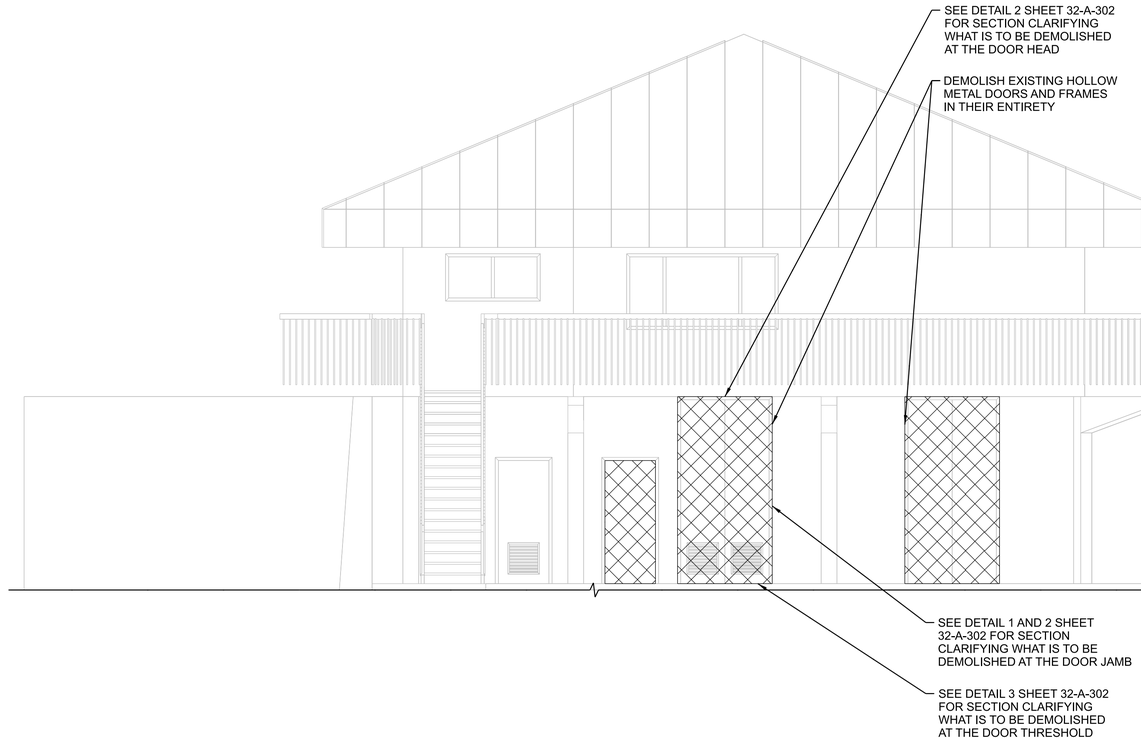
Jacobs

SODIUM BISULFITE
DEMOLITION PUMP PLAN

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-107
SHEET	20

FILENAME: 02-D-107_D3885700.dgn PLOT DATE: 3-DEC-2025 PLOT TIME: 05:27



1 DEMOLITION SOUTH ELEVATION

1/4"=1'-0"

02-D-103

23015280 REGISTERED ARCHITECT
MORGAN SHOEMAKER
STATE OF WASHINGTON
DIGITALLY SIGNED ON DEC 15, 2025

NO.	DATE	DR	CHK	APVD
DSGN	J RESEIGH	K KOTARSKA	M SHOEMAKER	J KENNEDY

REVISION

CONSTRUCTION DOCUMENTS

Jacobs

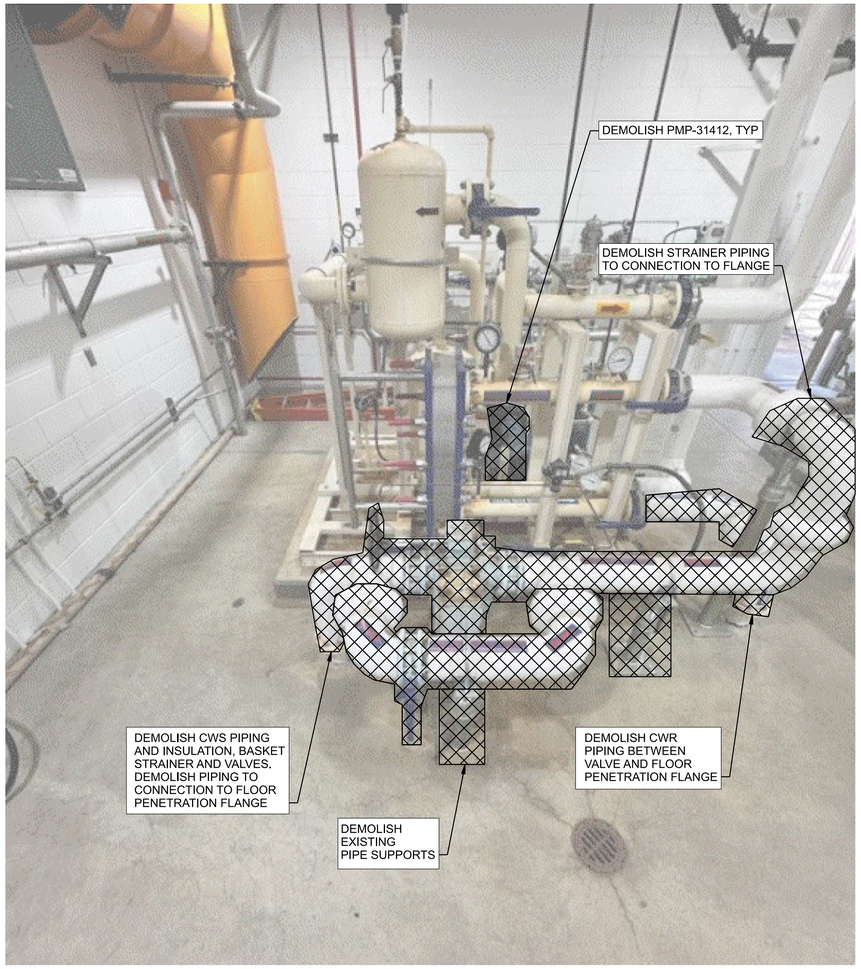
GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

OLD HEADWORKS CONTROL BUILDING
DEMOLITION
SOUTH ELEVATION

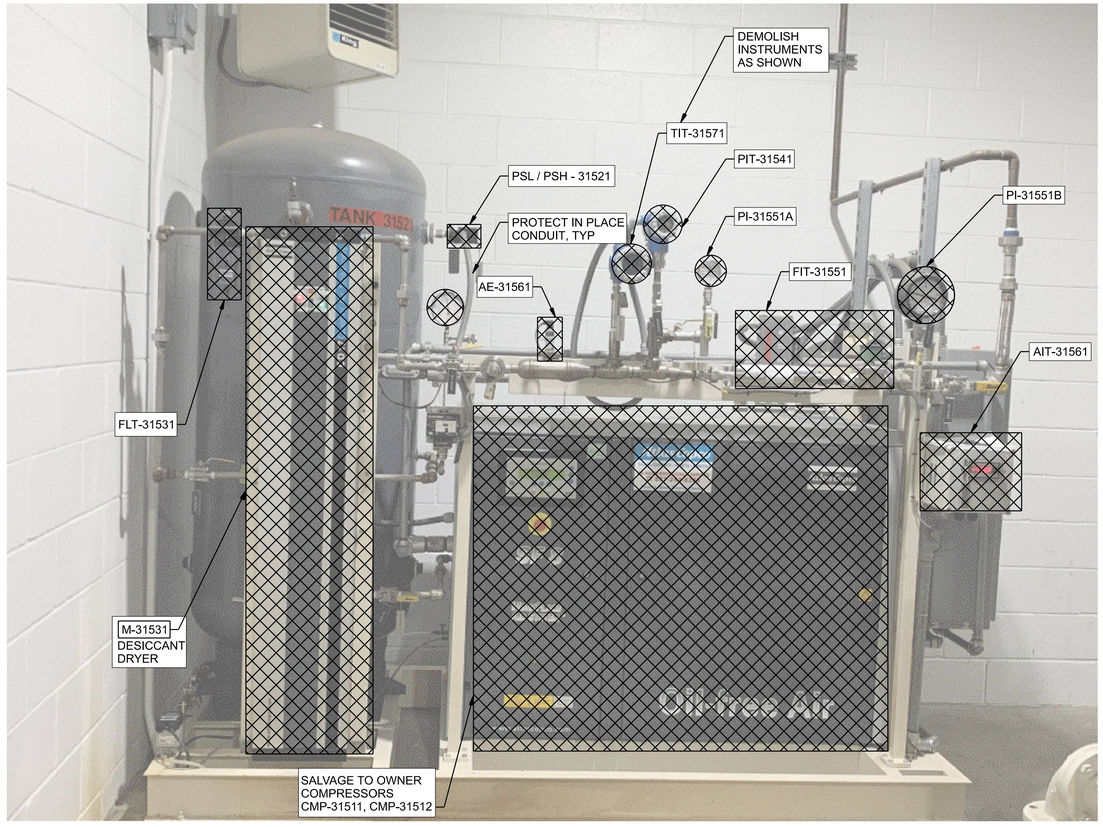
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-301
SHEET	21

FILENAME: 02-D-301_D3885700.dgn PLOT DATE: 15-DEC-2025 PLOT TIME: 04:45



1 PHOTO DETAIL
NTS
02-D-102



2 PHOTO DETAIL
NTS
02-D-102

NO.	DATE	DR	CHK	APVD	BY
DSGN	T YOUNG	J SETNIK	A GAO	APVD	J KENNEDY

REVISION

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

Jacobs

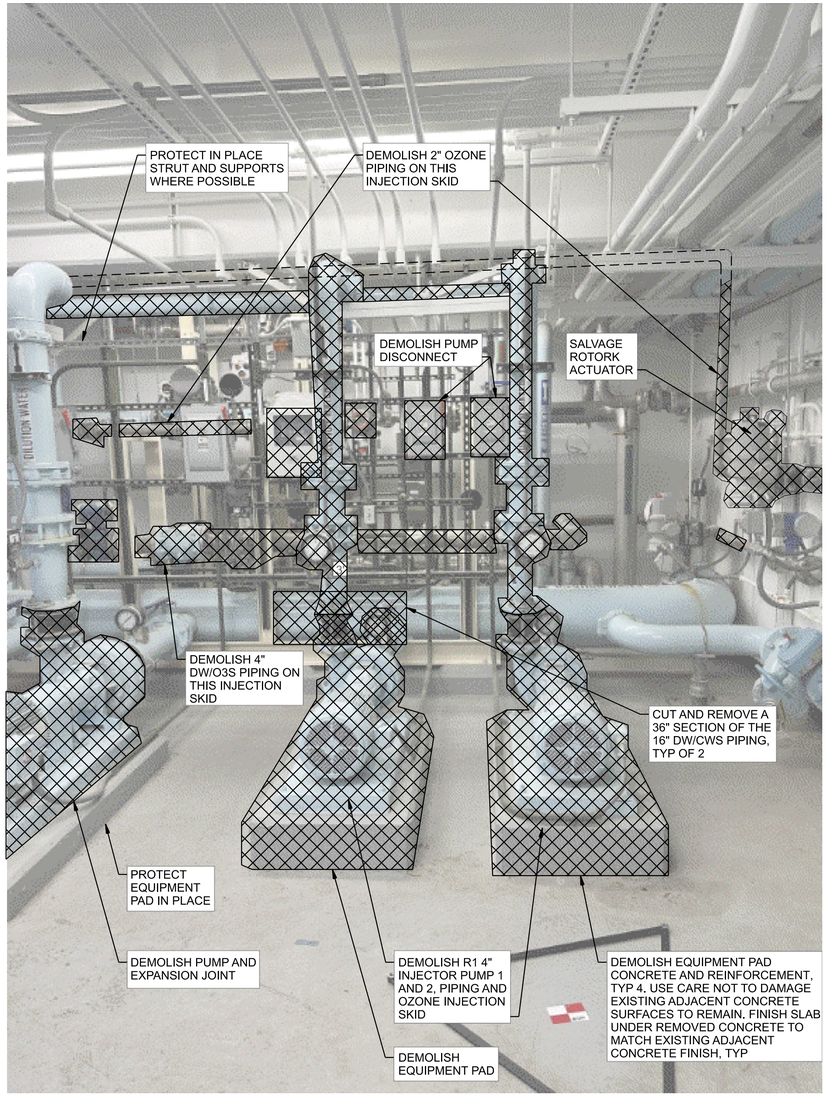
GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

OZONE GENERATOR BUILDING
DEMOLITION PHOTO DETAIL

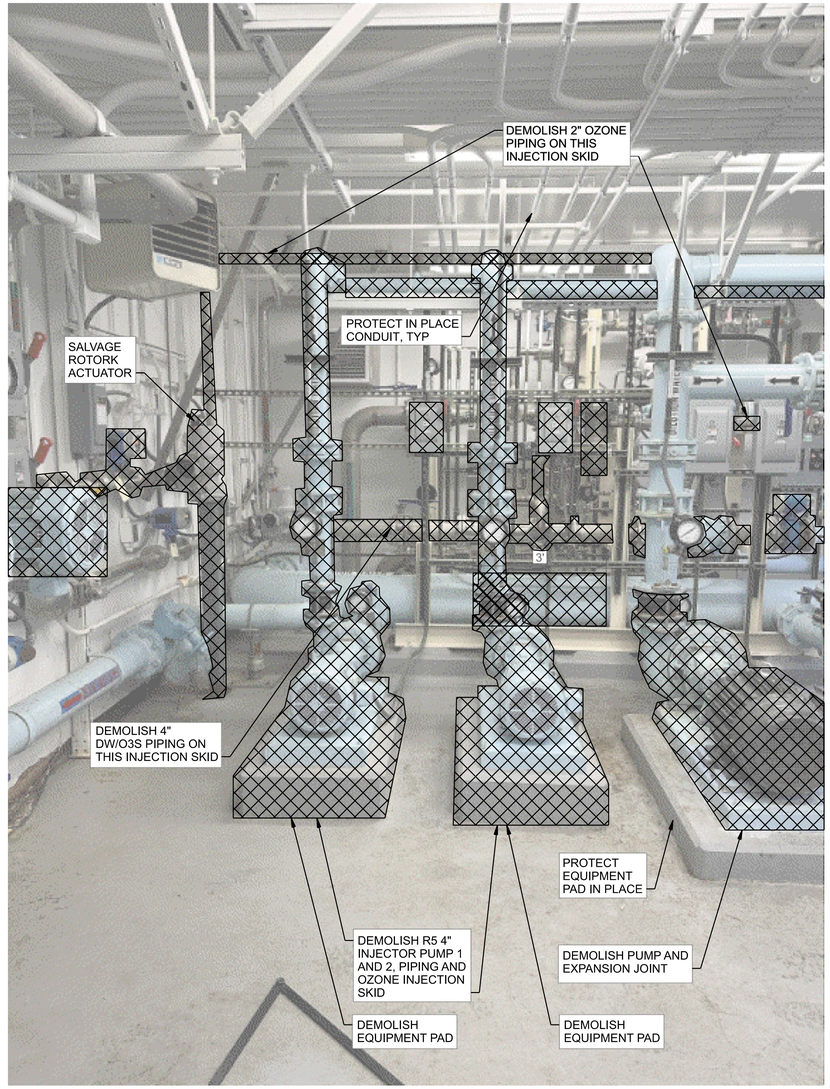
CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-401
SHEET	22



1 PHOTO DETAIL
NTS
02-D-103



2 PHOTO DETAIL
NTS
02-D-103

NO.	DATE	REVISION	BY	APVD
DSGN	T YOUNG	DR J.SETNIK	CHK A.GAO	APVD J.KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

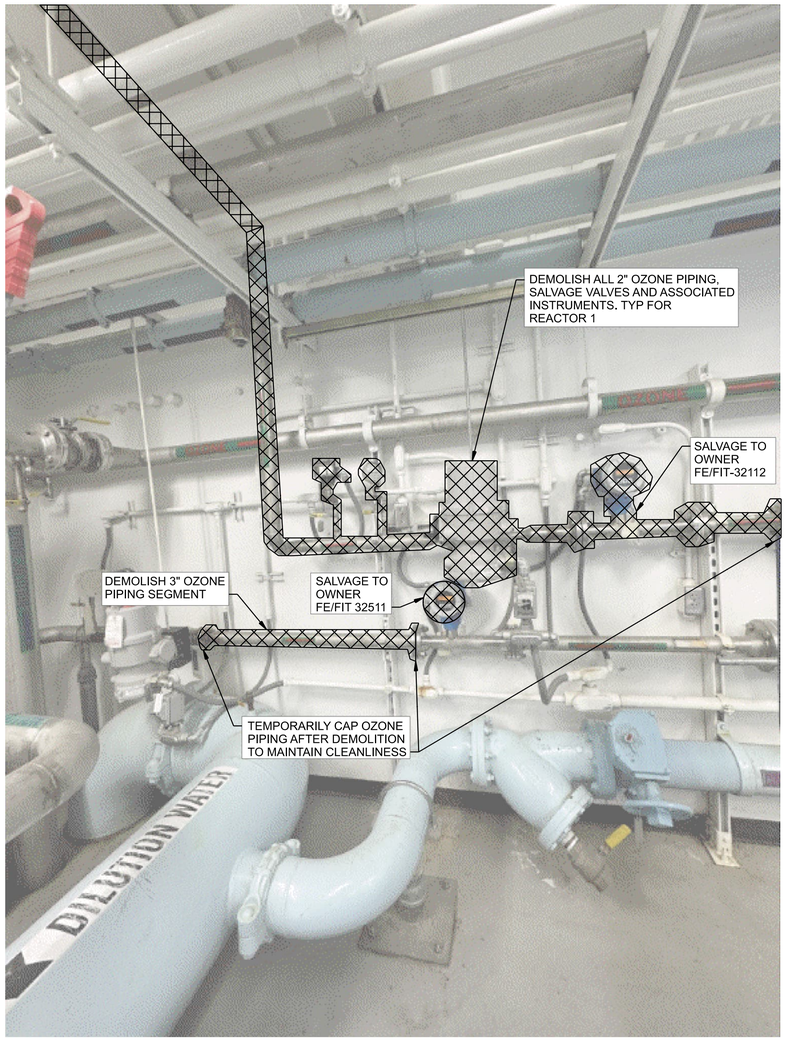
OLD HEADWORKS CONTROL BUILDING
DEMOLITION
PHOTO DETAIL

CONSTRUCTION DOCUMENTS

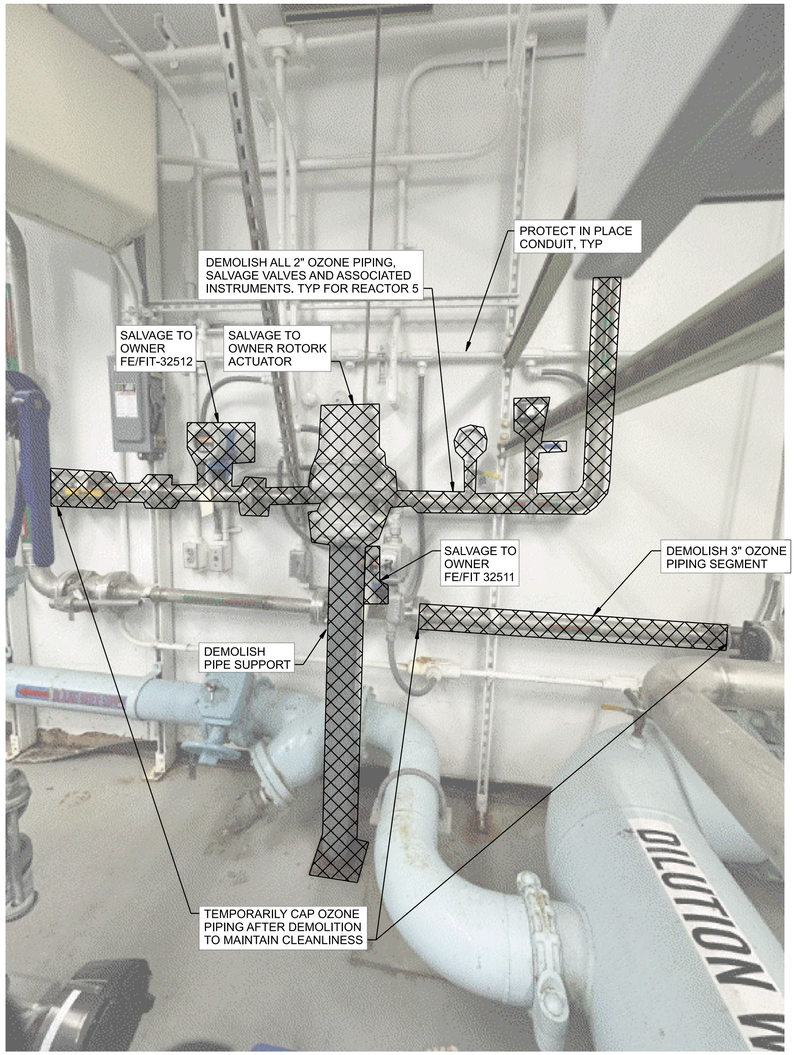
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-402
SHEET	23

FILENAME: 02-D-402_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 03:48



3 PHOTO DETAIL
NTS
02-D-103



4 PHOTO DETAIL
NTS
02-D-103

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	BY	REVISION	CHK	APVD
DSGN	T YOUNG	DR	J SETNIK	A GAO	APVD
					J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

CONSTRUCTION DOCUMENTS

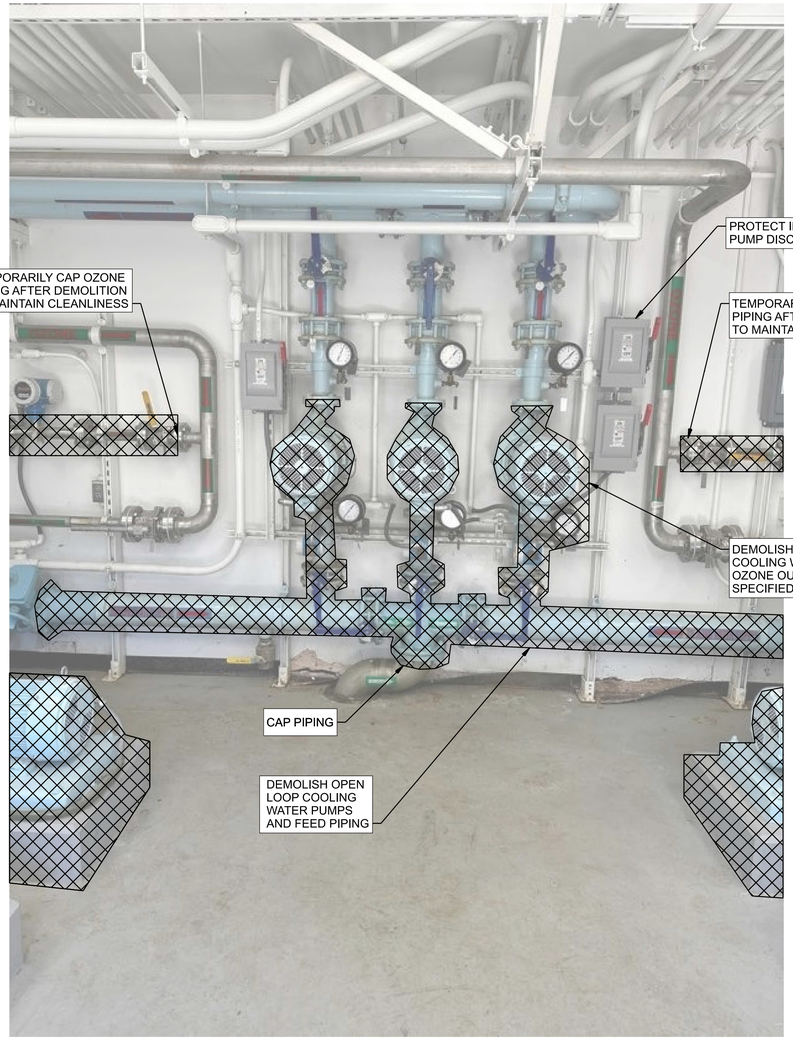
Jacobs

OLD HEADWORKS CONTROL BUILDING
DEMOLITION PHOTO DETAIL

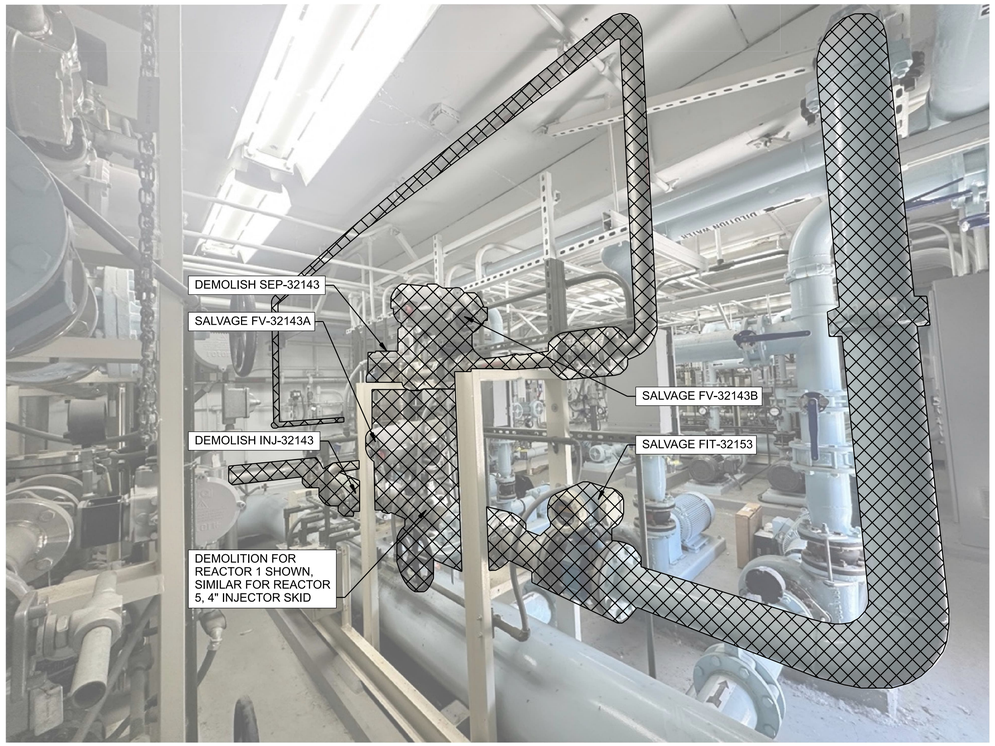
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-403
SHEET	24

FILENAME: 02-D-403_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 03:50



5 PHOTO DETAIL
NTS
02-D-103



6 PHOTO DETAIL
NTS
02-D-103

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD
DSGN	T YOUNG	DR J.SETNIK CHK A.GAO APVD	J.KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OLD HEADWORKS CONTROL BUILDING
DEMOLITION
PHOTO DETAIL

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-404
SHEET	25

1 PHOTO DETAIL
NTS
02-D-104

2 PHOTO DETAIL
NTS
02-D-104

NO.	DATE	DSGN	DR	CHK	APVD	BY
		T YOUNG	J.SETNIK	A.GAO	APVD	J.KENNEDY

REVISION

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

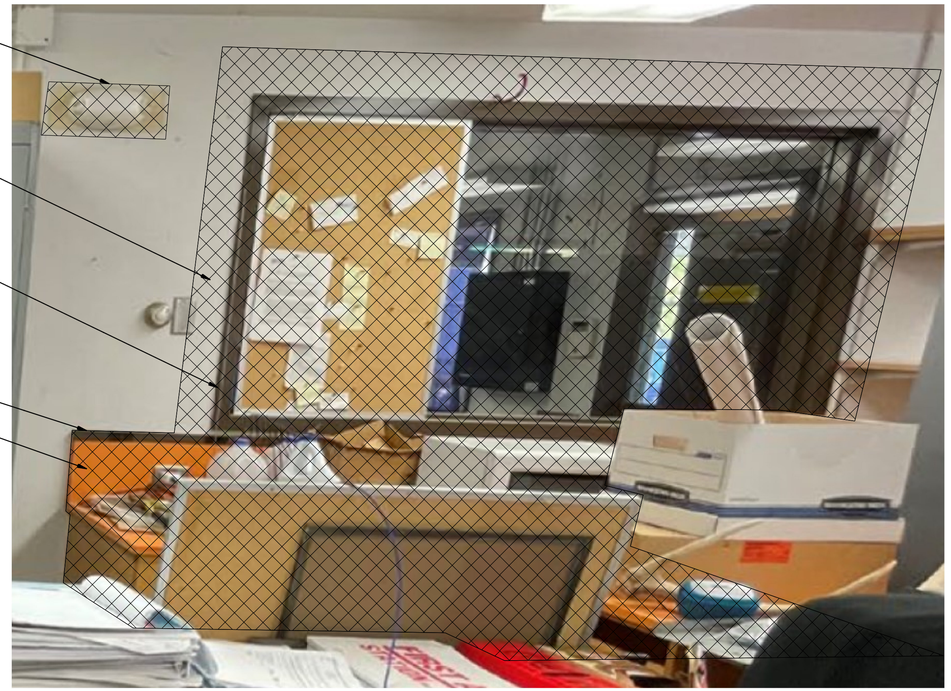
OLD HEADWORKS CONTROL BUILDING
DEMOLITION PHOTO DETAIL

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-405
SHEET	26

FILENAME: 02-D-405_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 06:55



3 PHOTO DETAIL
NTS
02-D-104

4 PHOTO DETAIL
NTS
02-D-104

5 PHOTO DETAIL
NTS
02-D-104

23015280 REGISTERED ARCHITECT
MORGAN SHOEMAKER, STATE OF WASHINGTON
DIGITALLY SIGNED ON DEC 9, 2025

NO.	DATE	REVISION	BY	APVD
DSGN	J RESEIGH	DR K KOTARSKA	CHK M SHOEMAKER	APVD J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

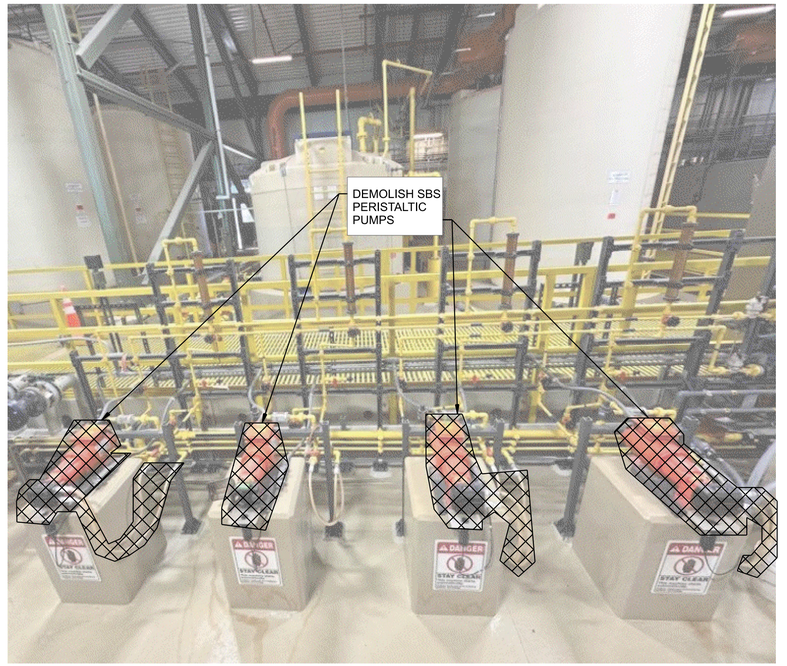
OLD HEADWORKS CONTROL BUILDING
DEMOLITION PHOTO DETAIL

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-406
SHEET	27

FILENAME: 02-D-406_D3885700.dgn PLOT DATE: 4-DEC-2025 PLOT TIME: 05:40

1 PHOTO DETAIL
NTS
02-D-107



2 PHOTO DETAIL
NTS
02-D-107

NO.	DATE	DSGN	DR	CHK	APVD	BY
		T YOUNG	J.SETNIK	A.GAO	APVD	J.KENNEDY

REVISION

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

SODIUM BISULFITE
DEMOLITION
PHOTO DETAIL

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

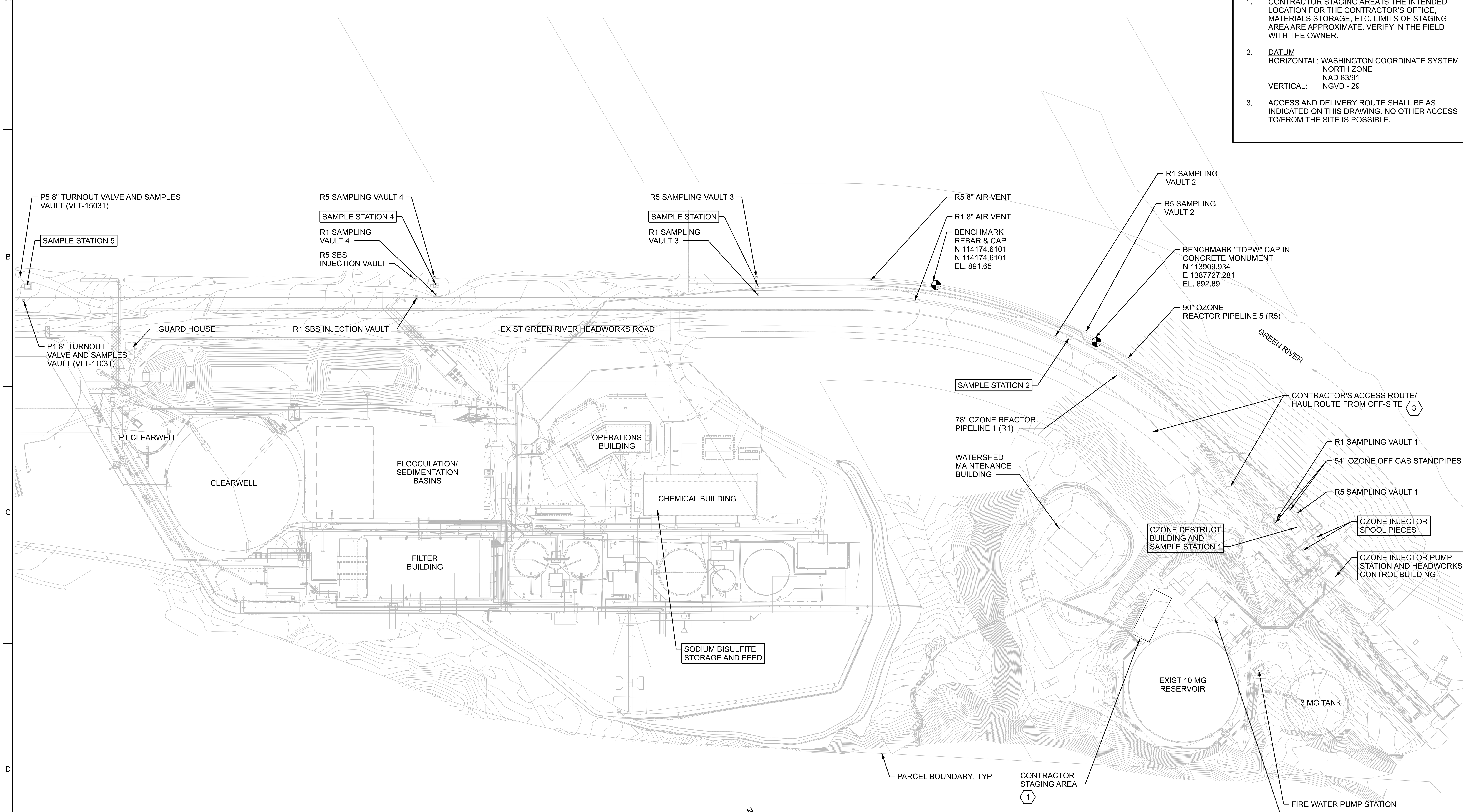
DATE	DECEMBER 2025
PROJ	D3885700
DWG	02-D-407
SHEET	28

GENERAL SHEET NOTES

1. SEE ASSOCIATED FACILITY DRAWINGS FOR DEMOLITION AND INSTALLATION DETAILS FOR OZONE EQUIPMENT.

SHEET KEYNOTES

1. CONTRACTOR STAGING AREA IS THE INTENDED LOCATION FOR THE CONTRACTOR'S OFFICE, MATERIALS STORAGE, ETC. LIMITS OF STAGING AREA ARE APPROXIMATE. VERIFY IN THE FIELD WITH THE OWNER.
2. DATUM
   HORIZONTAL: WASHINGTON COORDINATE SYSTEM NORTH ZONE NAD 83/91
   VERTICAL: NGVD - 29
3. ACCESS AND DELIVERY ROUTE SHALL BE AS INDICATED ON THIS DRAWING. NO OTHER ACCESS TO/FROM THE SITE IS POSSIBLE.



P5 8" TURNOUT VALVE AND SAMPLES VAULT (VLT-15031)
SAMPLE STATION 5
P1 8" TURNOUT VALVE AND SAMPLES VAULT (VLT-11031)
GUARD HOUSE
R5 SAMPLING VAULT 4
SAMPLE STATION 4
R1 SAMPLING VAULT 4
R5 SBS INJECTION VAULT
R1 SBS INJECTION VAULT
R5 SAMPLING VAULT 3
SAMPLE STATION
R1 SAMPLING VAULT 3
EXIST GREEN RIVER HEADWORKS ROAD
R5 8" AIR VENT
R1 8" AIR VENT
BENCHMARK REBAR & CAP N 114174.6101 N 114174.6101 EL. 891.65
R1 SAMPLING VAULT 2
R5 SAMPLING VAULT 2
BENCHMARK "TDPW" CAP IN CONCRETE MONUMENT N 113909.934 E 1387727.281 EL. 892.89
90" OZONE REACTOR PIPELINE 5 (R5)
GREEN RIVER
SAMPLE STATION 2
78" OZONE REACTOR PIPELINE 1 (R1)
CONTRACTOR'S ACCESS ROUTE/ HAUL ROUTE FROM OFF-SITE
3
P1 CLEARWELL
CLEARWELL
FLOCCULATION/ SEDIMENTATION BASINS
OPERATIONS BUILDING
CHEMICAL BUILDING
FILTER BUILDING
SODIUM BISULFITE STORAGE AND FEED
WATERSHED MAINTENANCE BUILDING
R1 SAMPLING VAULT 1
54" OZONE OFF GAS STANDPIPES
R5 SAMPLING VAULT 1
OZONE INJECTOR SPOOL PIECES
OZONE DESTRUCT BUILDING AND SAMPLE STATION 1
OZONE INJECTOR PUMP STATION AND HEADWORKS CONTROL BUILDING
EXIST 10 MG RESERVOIR
3 MG TANK
PARCEL BOUNDARY, TYP
CONTRACTOR STAGING AREA
1
FIRE WATER PUMP STATION
OZONE BUILDING AND ELECTRICAL EQUIPMENT

SITE PLAN

1"=100'

0 50' 100' 150'
Scale In Feet

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
T YOUNG	J SETNIK	A GAO	J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

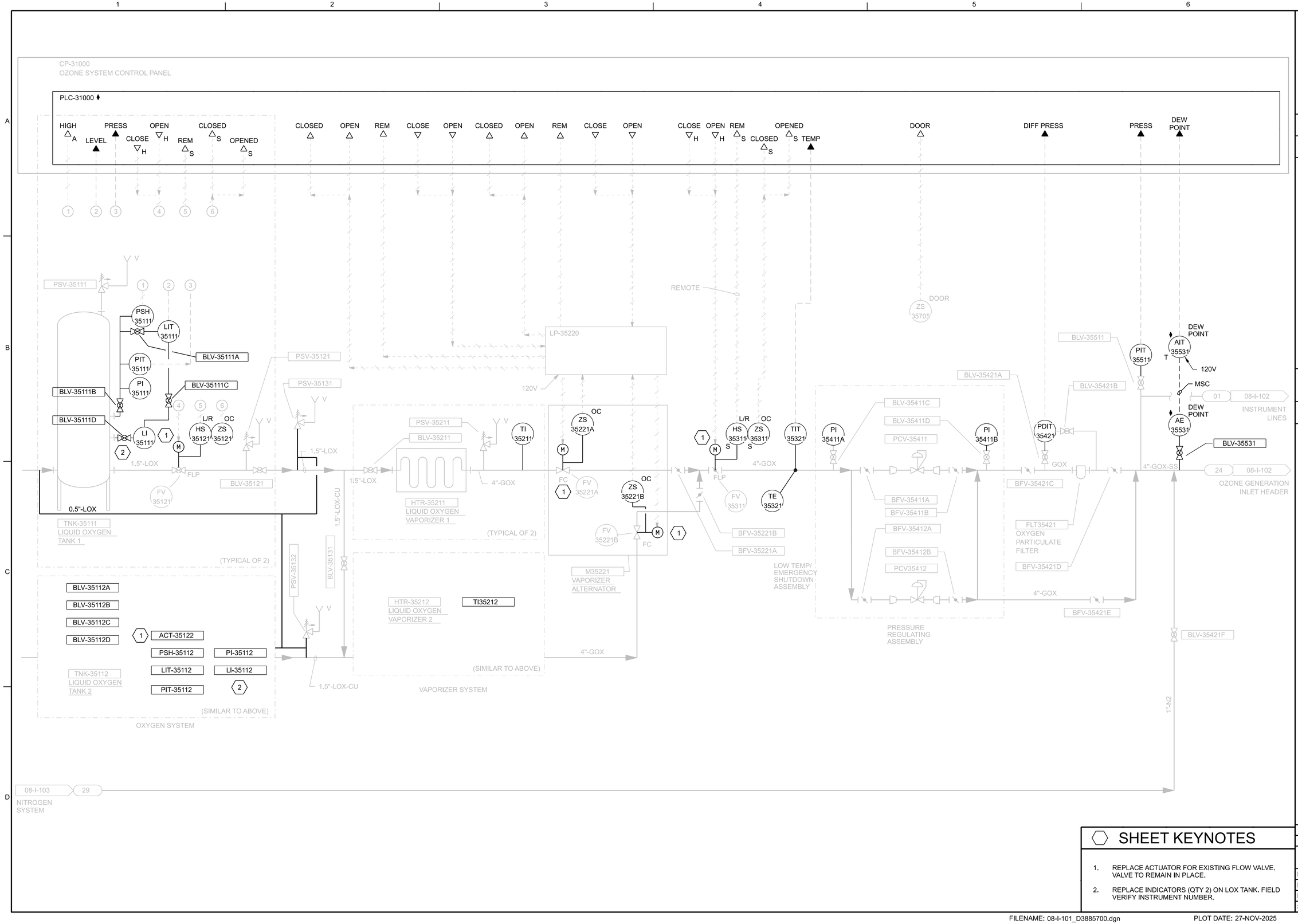
Jacobs

SITE DEVELOPMENT
OVERALL SITE PLAN AND CONTRATOR STAGING

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	05-C-101
SHEET	29

CONSTRUCTION DOCUMENTS



SHEET KEYNOTES

1. REPLACE ACTUATOR FOR EXISTING FLOW VALVE. VALVE TO REMAIN IN PLACE.
2. REPLACE INDICATORS (QTY 2) ON LOX TANK. FIELD VERIFY INSTRUMENT NUMBER.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
			G ERB	A ZIEBOWICZ	S BAKKEN	J KENNEDY	

REVISION

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID
LIQUID OXYGEN STORAGE AND FEED

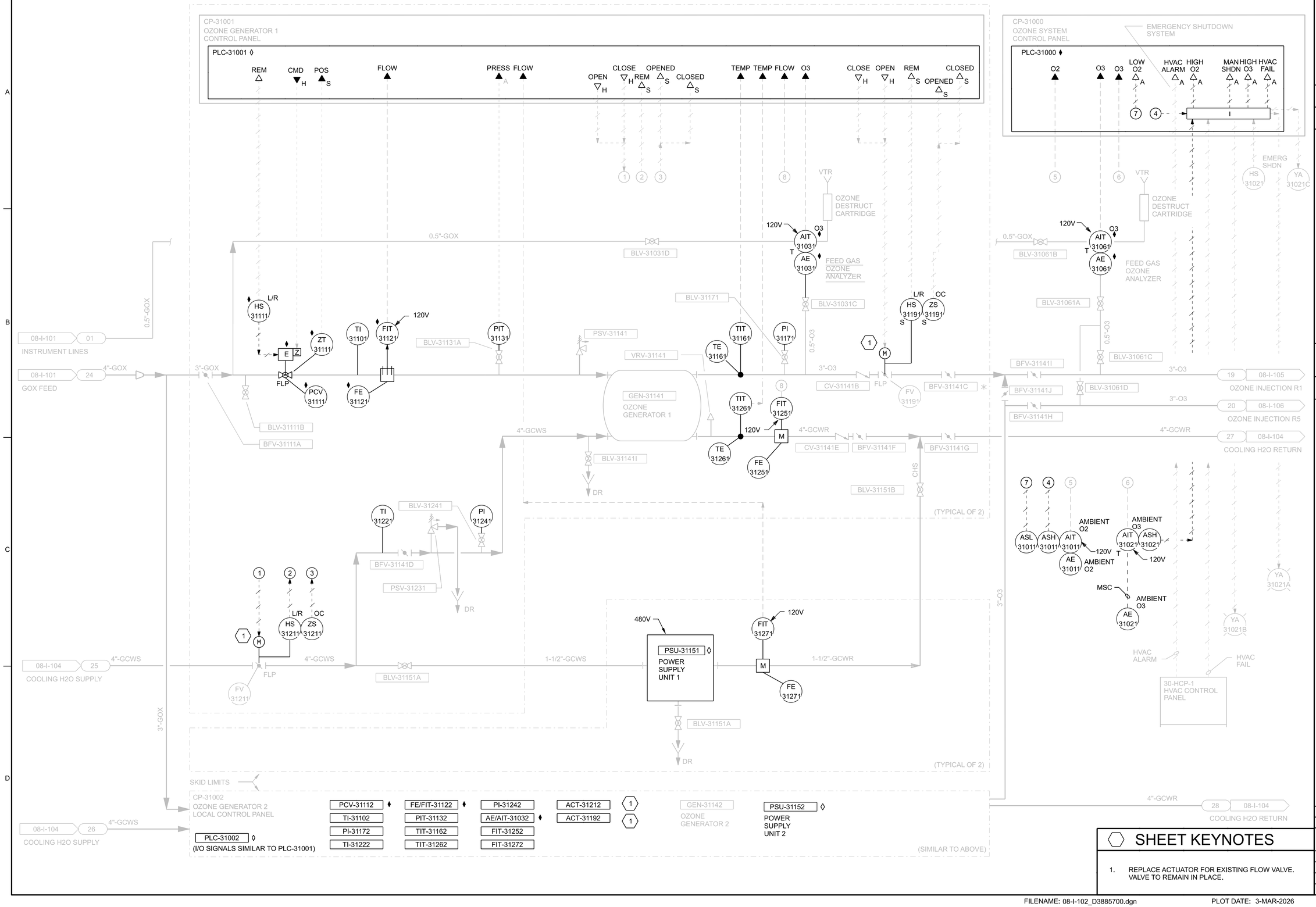
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-101
SHEET	30

CONSTRUCTION DOCUMENTS

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

FILENAME: 08-I-101_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:10



SHEET KEYNOTES

1. REPLACE ACTUATOR FOR EXISTING FLOW VALVE. VALVE TO REMAIN IN PLACE.

NO.	DATE	REVISION	DR	CHK	APV'D
DSGN		G ERB	A ZIEBOWICZ	S BAKKEN	APV'D
BY		J KENNEDY			

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID
OZONE GENERATION

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-102
SHEET	31

CONSTRUCTION DOCUMENTS

FILENAME: 08-I-102_D3885700.dgn PLOT DATE: 3-MAR-2026 PLOT TIME: 06:02

CP-31000
OZONE SYSTEM CONTROL PANEL

PLC-31000

FLOW | LOW PRESS | FLOW SP | HI TEMP | AUTO | ON | FAIL | RUN | DEW POINT

LP-31500

480V

120V

DEW POINT AIT 31561 T

DEW POINT AE 31561

BLV-31521A

PI 31521 | PSL 31521 | TSH 31521

1/2" | 1/4"

PSV-31521

FLT-31531A
COALESCING FILTER

120V

1/2"-NW-BRASS

1

TIT 31571 | PIT 31541 | PI 31551A | FIT 31551 | PI 31551B

BLV-31561 | BLV-31541 | BLV-31551A | BLV-31551B

1"-N2

M | S

CV-31511

TNK31521
AIR RECEIVER TANK

BLV-31531A | BLV-31531B | BLV-31551C

FLT-31511
INTAKE AIR FILTER

CMP-31511
AIR COMPRESSOR 1

CMP-31512
AIR COMPRESSOR 2

DESICCANT DRYER
M-31531

PCV 31541 | TE 31571 | FE 31551 | FCV 31551 | FV 31551

29 08-I-101
LIQUID OXYGEN FEED SYSTEM

BLV-31521

120V
M-31581
AUTOMATIC CONDENSATE TRAP

D

SKID LIMIT

SHEET KEYNOTES

1. REPLACE COMBINED FLOW CONTROL UNIT IN NITROGEN BOOST SKID. FIELD LOCATE EXISTING REMOTE FLOW CONTROLLER AND DEMOLISH.

GARY T. ERB
STATE OF WASHINGTON
43363
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	CHK	APVD	BY	APVD
DSGN	G ERB	DR	A ZIEBOWICZ	S BAKKEN		J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID
OZONE NITROGEN BOOST SYSTEM

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-103
SHEET	32

FILENAME: 08-I-103_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:12

CP-32000
OZONE INJECTION CONTROL PANEL

RIO-32000A/B

PROFINET

TEMP

CP-31000
OZONE SYSTEM CONTROL PANEL

PLC-31000

FLUSH

PRESSURE

PROFINET

LOW

LOW
A

TEMP

HIGH
A

HVAC
ALARM

DOOR
S

PROFINET
NETWORK

HS
31311

LR

SS

CP-
32000

32-MCC-01

1

DPIT
31301

120VAC

VCP-31301

BLV-31301H

DPSH
31301

BLV-31301I

BLV-31301E

M

BLV-31301F

BFV-31301B

4"-CWS

BFV-31301C

STR-31301

RAW WATER
STRAINER

SV-31301

CV-31301

4"-CWS

BFV-31301D

(TYPICAL OF 2)

BFV-31311C

CV-31311B

BLV-31311E

BLV-31311D

TIT
31321

TE
31321

PI
31311A

PI
31311B

6"-CWS

4"-CWS

4"-CWS

CS-1

PMP-31311
HEAT REJECTION WATER
PUMP 1

BFV-31311A

08-I-107
13
NORTH FORK
WELL TANK

(TYPICAL OF 3)

4"-CWS

1.5" CWR

HS
31411

CP-
31000

31-MCC-01

1

BLV-31461C

V

BLV-31461A

BLV-31461B

M-31461
CHEMICAL POT
FEEDER 1

D

BLV-31461D

3/4"-GCWR

LSH
31041

DRAIN SUMP

DOOR

ZS
31051

(5) TYPICAL

32-HCP-1
HVAC
CONTROL PANEL

MAKEUP
WATER

BLV-31491A

PCV-31491

BLV-31491B

3/4"-W2

TNK-31481
EXPANSION TANK 1

PI
31481

BLV-31481

LSL
31481

TI
31331A

FI/FSL
31341

PI
31351A

BLV-31351A

2

ARV-31471

BFV-31361A

TNK-31471
AIR SEPARATOR 1

BFV-31411A

CS

PMP-31411
COOLANT WATER
PUMP 1

BLV-31411D

PI
31411

TIT
31421

FI
31441

TI
31431A

TE
31421

4"-GCWS

25
08-I-102
OZONE GENERATION

BFV-31361D

TI
31331B

PI
31351B

PI
31451

TI
31431B

BLV-31451

3/4"-GCWR

4"-GCWR

27
08-I-102
OZONE GENERATION

BFV-31361C

BLV-31351B

BFV-31361B

M31361
HEAT EXCHANGER 1

BLV-31361E

D

08-I-107
17
REACTOR 1

4"-CWR

BFV-31361C

BLV-31361A

2"-CWS

D

BFV-31310B

BFV-31361D

6"-CWS

4"-CWS

TIT-31322

PI-31312A

PI-31312B

BFV-31312A

PMP-31312
HEAT REJECTION WATER
PUMP 2

(SIMILAR TO ABOVE)

JT
31USS01

120V

BFV-31302B

BFV-31302C

BFV-31302D

BLV-31302E

BLV-31302F

BLV-31302H

BLV-31302I

DPIT-31302

CV-31302

DPSH-31302

SV-31302

(SIMILAR TO ABOVE)

3"-VYX

JT
31SWBD01

BFV-31310D

6"-CWS

TIT-31323

PI-31313A

PI-31313B

BFV-31313A

PMP-31313
HEAT REJECTION WATER
PUMP 3

(SIMILAR TO ABOVE)

4"-CWS

VCP-31302

STR-31302

RAW WATER
STRAINER

08-I-107
9
NORTH FORK
WELL TANK

BLV-31362A

1.5" CWR

4"-CWR

08-I-107
10
REACTOR 5

2"-CWS

D

BFV-31362C

(TYPICAL OF 2)

SKID LIMIT

M31362
HEAT EXCHANGER 2

FI/FSL-31342

TIT-31422

LSL-31482

TI-31332A

TI-31332B

PI-31352A

PI-31352B

FI-31342

PI-31482

PI-31412

TI-31432A

FI-31442

TI-31432B

PI-31452

TI-31432A

PMP-31412
COOLANT WATER
PUMP 2

(SIMILAR TO ABOVE)

M-31462
CHEMICAL POT
FEEDER 2

TNK-31472
AIR SEPARATOR 2

TNK-31482
EXPANSION TANK 2

4"-GCWS

26
08-I-102

4"-GCWR

28
08-I-102

SHEET KEYNOTES

1. REFERENCE DRAWING 02-D-601 FOR ELECTRICAL EQUIPMENT UPGRADES.
2. HEAT EXCHANGER MODIFICATIONS SHOWN ON DRAWING 30-M-102.

GARY T. ERB
STATE OF WASHINGTON
43363
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	APVD
DSGN			G ERB	A ZIEBOWICZ	S BAKKEN
		BY	APVD		
		J KENNEDY			

CONSTRUCTION DOCUMENTS

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

P&ID

OZONE GENERATION COOLING WATER SYSTEM

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-104
SHEET	33

FILENAME: 08-I-104_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:11

CP-32000
OZONE INJECTION CONTROL PANEL

RIO-3200A/B

FLOW FLOW REM CMD POS LOW PROFINET LOW FLOW OPEN REM OP CL OP CL REM OPEN HIGH 3 DOOR DOOR

3" O3
08-I-106 50
NORTH FORK WELL TANK
BLV-32111
08-I-102 19
OZONE GENERATION
2" O3
2"-O3
3"-O3
120V
HS 32111 L/R
FIT 32111 FE 32111
E Z
ZT 32111
FCV 32111
PE 32121A PI 32121 PSL 32121 PE 32121B
BLV-32121B
BLV-32121A
BLV-32111A
BLV-32111B
120V
FIT 32111A FE 32111A
BLV-32111C
BLV-32111D

3"-O3
BLV-32141B
OSC HS 32141B LR HS 32141B
2 M
OC ZS 32141B
FV 32141B
PI 32141B
BLV-32141G
SEP-32141 OZONE LIQUID SEPARATOR
LSH 32141
BLV-32141J
BLV-32141I
D
OSC HS 32141A LR HS 32141A
PI 32141A
BLV-32141E
CV-32141H
PI 32141C PE 32141C
BLV-32141D
6"-03S 16 08-I-107 PIPELINE R1
BFV-32141C
INJ-32141 R1 OZONE 6" INJECTOR 1
GLV-32141F
120V FIT 32151 OC ZS 32141A 2 M OC FE 32151
(TYPICAL OF 2)

(2) DOOR ZS 32054 DOOR ZS 32055
(6) DOOR ZS 32051 DOOR ZS 32052 DOOR ZS 32053 DOOR ZS 32056 DOOR ZS 32057 DOOR ZS 32058

HS 32131 LR HS 32131 SS
480V CP-32000 CP-32000
32-MCC-01 1
PI 32131A PI 32131B PSL 32131B
BLV-32131E BLV-32131D
6"-DW
BFV-32131A CS CV-32131B BFV-32131C
PMP-32131 R1 6" INJECTOR PUMP 1
(TYPICAL OF 3)
BFV-32131D
3"-O3
SKID LIMIT
BFV-32131C
BFV-32133D
PMP-32132 R1 6" INJECTOR PUMP 2
PI-32132A PI-32132B PSL-32132B
(SIMILAR TO ABOVE)
6"-DW
6"-DW
BFV-32132D
6" DW
JT 32MCC01
BFV-32133A CV-32133B PMP-32133 R1 6" INJECTOR PUMP 3
PI-32133A PI-32133B PSL-32133B
(SIMILAR TO ABOVE)
6"-DW
BFV-32133C
SKID LIMIT

08-I-107 18
NORTH FORK WELL TANK
16"-DW 6"-DW
1/2"-DW
BLV-32131A
TAP FOR TURBIDITY METERS
PROFINET NETWORK
PROFINET

FIT-32152
PI-32142A PI-32142B PI-32142C LSH-32142
ACT-32142A ACT-32142B
INJ-32142 R1 OZONE 6" INJECTOR 2
BLV-32142I BLV-32142J CV-32142H
6"-03S 15 08-I-107 PIPELINE R1
(SIMILAR TO ABOVE)
SKID LIMIT
4"-03S 13 08-I-107 PIPELINE R1

SHEET KEYNOTES

1. REFERENCE DRAWING 02-D-601 FOR ELECTRICAL EQUIPMENT UPGRADES.
2. REPLACE ACTUATOR FOR EXISTING FLOW VALVE. VALVE TO REMAIN IN PLACE.
3. DOOR SWITCHES ON NEW ROLLUP DOORS SHALL BE WIRED TO THE SAME INPUTS IN CP-32000 AS THE EXISTING DOOR SWITCHES BEING REPLACED.

GARY T. ERB
STATE OF WASHINGTON
4.3363
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	REVISION	CHK	APVD	BY
		G ERB	A ZIEBOWICZ	S BAKKEN	APVD	J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID
OZONE INJECTION AND CONTACTOR - R1

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-105
SHEET	34

FILENAME: 08-I-105_D3885700.dgn PLOT DATE: 5-DEC-2025 PLOT TIME: 02:37

CP-32000
OZONE INJECTION CONTROL PANEL

RIO-32000A/B

FLOW FLOW REM CMD POS LOW PROFINET LOW O2 HIGH LOW O2 O3 HIGH FLOW OPEN REM OP CL OP CL REM OPEN HIGH

08-I-105 50
OZONE INJECTION R1

08-I-102 20
OZONE GENERATION

3" O3

120V FIT 32511 FE 32511 L/R HS 32511 PE 32521A PI 32521 PSL 32521 PE 32521B ZT 32511 E Z FCV 32511

3"-O3 2"-O3 3"-O3

BLV-32511A BLV-32511B BLV-32511C BLV-32511D

120V FIT 32511A FE 32511A

BLV-32521B BLV-32521A

120V AMBIENT O2 AIT 32011 ASH 32011 ASL 32011 T MSC AMBIENT O2 AE 32011

120V AMBIENT O3 AIT 32021 ASH 32021 T MSC AMBIENT O3 AE 32021

HIGH YA 32021 HIGH YA 32021

BLV-32541B

3"-O3

HS 32531 LR HS 32531 SS 480V CP-32000 CP-32000 32-MCC-01 1

PI 32531A PI 32531B PSL 32531B

BLV-32531E BLV-32531D

BFV-32531D

16"-DW 6"-DW 6"-DW

08-I-107 11
NORTH FORK WELL TANK

1/2"-DW

BLV-32531A

TAP FOR TURBIDITY METERS

BFV-32531A CS CV-32531B BFV-32531C

PMP-32531
R5 6" INJECTOR PUMP 1

(TYPICAL OF 3)

BFV-32533F

3"-O3

PROFINET NETWORK

SKID LIMIT

BFV-32533D

PMP-32532
R5 6" INJECTOR PUMP 2

PI-32532A
PI-32532B
PSL-32532B

(SIMILAR TO ABOVE)

BFV-32532D

6"-DW 6"-DW

6"-DW

BFV-32533A
CV-32533B

PMP-32533
R5 6" INJECTOR PUMP 3

PI-32533A
PI-32533B
PSL-32533B

(SIMILAR TO ABOVE)

6" DW

BFV-32533C

FLOW OPEN REM OP CL OP CL REM OPEN HIGH

OSC HS 32541B L/R HS 32541B OC ZS 32541B 2 M

BLV-32541G

PI 32541B

FV 32541B

3"-O3 3"-O3

SEP-32541
OZONE LIQUID SEPARATOR

LSH 32541

BLV-32541J

BLV-32541I

D

CV-32541H

OSC HS 32541A L/R HS 32541A PI 32541A

PI 32541C PE 32541C

BLV-32541D

120V FIT 32551 OC ZS 32541A 2 M

BLV-32541E

6"-03S

8 08-I-107
PIPELINE R5

M FE 32551 FV 32541A GLV-32541F

INJ-32541
R5 OZONE 6" INJECTOR 1

BFV-32541C

(TYPICAL OF 2)

SKID LIMIT

FIT-32552

PI-32542A
PI-32542B
PI-32542C
LSH-32542

ACT-32542A
ACT-32542B

INJ-32542
R5 OZONE 6" INJECTOR 2

BLV-32542I
BLV-32542J
CV-32542H

6"-03S
7 08-I-107
PIPELINE R5

(SIMILAR TO ABOVE)

4"-03S
6 08-I-107
PIPELINE R5

SHEET KEYNOTES

1. REFERENCE DRAWING 02-D-601 FOR ELECTRICAL EQUIPMENT UPGRADES.
2. REPLACE ACTUATOR FOR EXISTING FLOW VALVE. VALVE TO REMAIN IN PLACE.

NO.	DATE	DSGN	REVISION	CHK	BY	APV'D
		G ERB	A ZIEBOWICZ	S BAKKEN	J KENNEDY	APV'D

GARY T. ERB
STATE OF WASHINGTON
4.3363
REGISTERED
PROFESSIONAL ENGINEER

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID
OZONE INJECTION AND CONTACTOR - R5

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-106
SHEET	35

FILENAME: 08-I-106_D3885700.dgn PLOT DATE: 3-MAR-2026 PLOT TIME: 06:02

CHEMICAL FACILITY
PCM-2700

SODIUM
HYDROXIDE FEED
(CAUSTIC SODA)

4"-CSD

SODIUM
BISULFITE FEED

08-I-110 4

-SBD

TO FLASH MIX AND
FLOCCULATION

FE

FIT

PE-33512A

PE-33512B

BLV-33512A

BLV-33512B

VPR-33512

PDI
33512

M-33512
DEMISTER

OFF GAS DESTRUCT
STAND PIPE

6"-OG

90"-R5

78"-R1

PE-33511A

PE-33511B

BLV-33511A

BLV-33511B

VPR-33511

PDI
33511

M-33511
DEMISTER

1/2"-SA

45 08-I-15
OZONE SAMPLING 4

44 08-I-15
OZONE SAMPLING 4

41 08-I-14
OZONE SAMPLING 3

40 08-I-14
OZONE SAMPLING 3

37 08-I-13
OZONE SAMPLING 2

36 08-I-13
OZONE SAMPLING 2

21 08-I-08
OZONE DESTRUCT

22 08-I-08
OZONE DESTRUCT

08-I-12 32
OZONE SAMPLING 1

08-I-12 33
OZONE SAMPLING 1

30 08-I-12
OZONE SAMPLING 1

31 08-I-12
OZONE SAMPLING 1

34 08-I-13
OZONE SAMPLING 2

35 08-I-13
OZONE SAMPLING 2

38 08-I-14
OZONE SAMPLING 3

39 08-I-14
OZONE SAMPLING 3

42 08-I-15
OZONE SAMPLING 4

43 08-I-15
OZONE SAMPLING 4

08-I-110 2

-SBD

SODIUM
BISULFITE FEED

4"-CSD

SODIUM
HYDROXIDE FEED
(CAUSTIC SODA)

BFV-32542D
INJ-32552B
BFV-32541D
INJ-32552A
INJ-32551B
INJ-32551A

BFV-32151A
INJ-32151B
INJ-32152A
BFV-32141D
INJ-32152B
BFV-32142D
BFV-32143D

2"-OG

D

INJ-32553B
INJ-32553A

NORTH FORK
WELL TANK

INJ-32153A
INJ-32153B

23 08-I-08
OZONE DESTRUCT

24 08-I-08
OZONE DESTRUCT

6"-O3S
8 08-I-106
R5 INJECTION

6"-O3S
7 08-I-106
R5 INJECTION

BFV-32543D
4"-O3S
ABANDON IN PLACE
6 08-I-106
R5 INJECTION

BLV-32561A
4"-CWR
BLV-32561B
BFV-31362C
10 08-I-104
OZONE COOLING

16"-DW/CWS
BFV-32531D
11 08-I-106
R5 INJECTION

4"-CWS
9 08-I-104
OZONE COOLING

78"-R5

GREEN
RIVER

BFV-32131D
4"-CWS
13 08-I-104
OZONE COOLING

BFV-31361C
16"-DW/CWS
18 08-I-105
R1 INJECTION

BLV-32161B
4"-CWR
17 08-I-104
OZONE COOLING

BLV-32161A
4"-O3S
ABANDON IN PLACE
14 08-I-105
R1 INJECTION

6"-O3S
15 08-I-105
R1 INJECTION

6"-O3S
16 08-I-105
R1 INJECTION

NO.	DATE	REVISION	BY	APV'D
DSGN	DR	CHK		
G ERB	A ZIEBOWICZ	S BAKKEN	J KENNEDY	APV'D

GARY T. ERB
STATE OF WASHINGTON
43363
REGISTERED
PROFESSIONAL ENGINEER

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

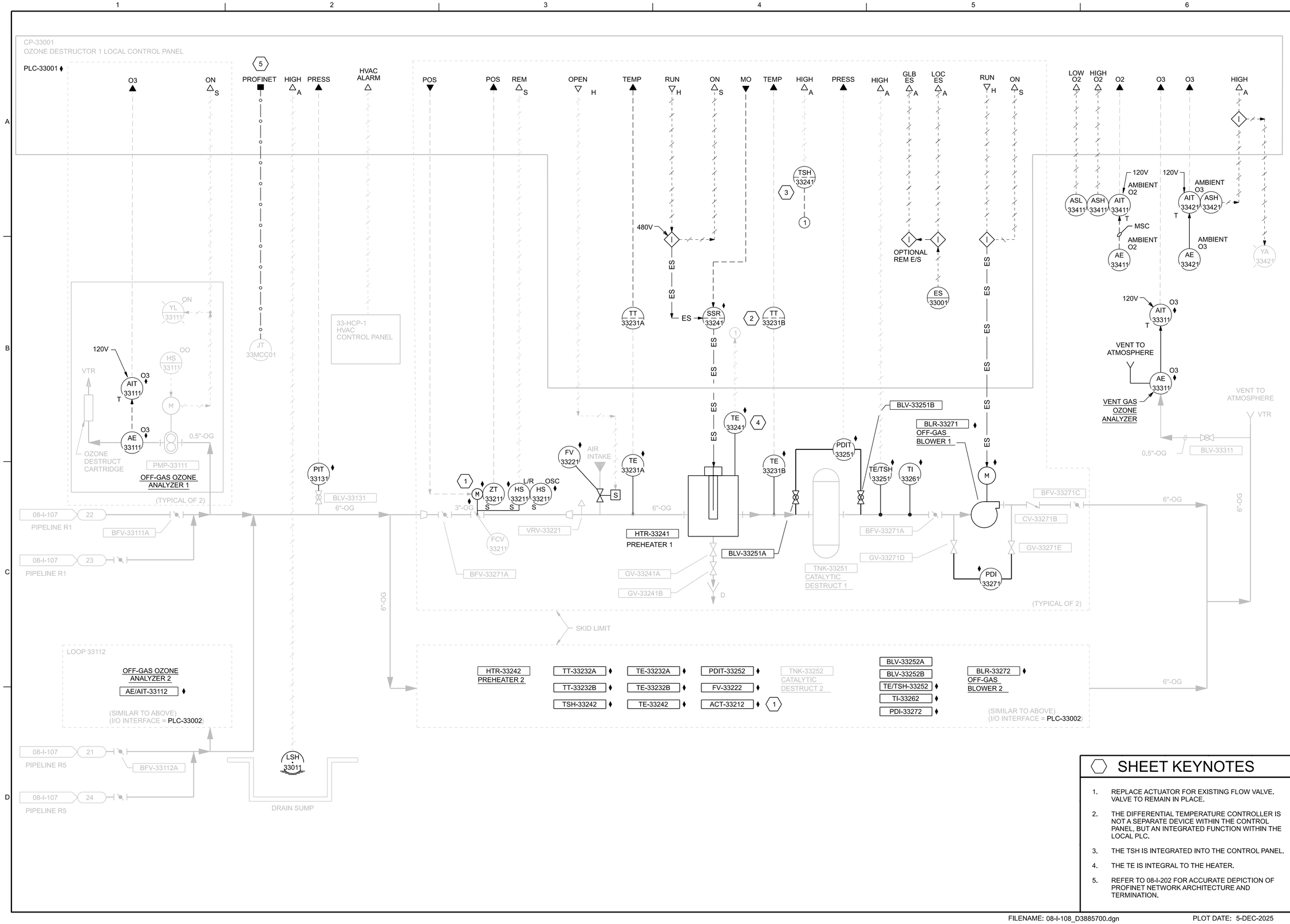
P&ID

REACTOR WATER PIPELINES

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-107
SHEET	36

FILENAME: 08-I-107_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:11



SHEET KEYNOTES

1. REPLACE ACTUATOR FOR EXISTING FLOW VALVE. VALVE TO REMAIN IN PLACE.
2. THE DIFFERENTIAL TEMPERATURE CONTROLLER IS NOT A SEPARATE DEVICE WITHIN THE CONTROL PANEL, BUT AN INTEGRATED FUNCTION WITHIN THE LOCAL PLC.
3. THE TSH IS INTEGRATED INTO THE CONTROL PANEL.
4. THE TE IS INTEGRAL TO THE HEATER.
5. REFER TO 08-I-202 FOR ACCURATE DEPICTION OF PROFINET NETWORK ARCHITECTURE AND TERMINATION.

NO.	DATE	DSGN	REVISION	CHK	APVD	BY
				S BAKKEN	APVD	J KENNEDY
				A ZIEBOWICZ	DR	G ERB

GARY T. ERB
STATE OF WASHINGTON
43363
REGISTERED
PROFESSIONAL ENGINEER

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

P&ID

OZONE OFF-GAS DESTRUCTION

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-108
SHEET	37

FILENAME: 08-I-108_D3885700.dgn PLOT DATE: 5-DEC-2025 PLOT TIME: 02:37

CP-26000

PLC-2000

P/B

HS 26221 L/R — CP-26000

HS 26221 SS — CP-26000

SHK 26221 SPD — CP-26000

VFD-26221 (CP-26000)

PSV-26221

M-26211 CALIBRATION TUBE

D

DV-26211B

DV-26211A

FI 26221

CV-26221

DV-26221A

DV-26221B

08-I-109 24 2"-SBS

SODIUM BISULFITE STORAGE

1/2"-SBS

1/2"-CHW

BLV-26211D

BLV-26211C

PMP-26221 SODIUM BISULFITE FEED PUMP 1

(TYPICAL OF 4)

PULSATION DAMPENER M-2631

PI 26231

PE 26231

DV-26231A

DV-26231B

PCV-26231

FIT 26241

24VDC

MSC

M

FE 26241

1/2"-SBS

DV-26241A

DV-26241C

CV-26241A

CV-26241B

DV-26241B

DV-26241D

PMP-26222 SODIUM BISULFITE FEED PUMP 2

VFD-26222

PSV-26222

(SIMILAR TO ABOVE)

PMP-26223 SODIUM BISULFITE FEED PUMP 3

VFD-26223

PSV-26223

(SIMILAR TO ABOVE)

PMP-26224 SODIUM BISULFITE FEED PUMP 4

VFD-26224

PSV-26224

(SIMILAR TO ABOVE)

2"-SBS

PULSATION DAMPENER M-2632

PI 26232

PE 26232

FIT 26242

24VDC

MSC

DV-26232A

DV-26232B

PCV-26232

FE 26242

DV-26242A

DV-26242C

CV-26242A

CV-26242B

DV-26242B

DV-26242D

4"-SBD

2 08-I-107 PIPELINE R1

4"-CHFL

4"-SBD

4 08-I-107 PIPELINE R5

BFV-26252

BFV-26253

BFV-26251

8"-CHFL

CHEMICAL CONVEYANCE WATER

CAUSTIC FEED

1"-CHW

CHEMICAL FLUSHING

CAUSTIC FEED

CONTAINMENT AREA

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		G ERB	A ZIEBOWICZ	S BAKKEN	APVD	J KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID

SODIUM BISULFITE FEED

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-110
SHEET	38

CONSTRUCTION DOCUMENTS

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

FILENAME: 08-I-110_D3885700.dgn PLOT DATE: 5-DEC-2025 PLOT TIME: 02:39

CP-36001

RIO-36001

REM RUN ON O3 FLOW DOOR

HOR
HS 36101
CP-36001

O3
AIT 36121
CP-36001
120V
MSC
O3
AE 36121

DOOR
ZS 36051

BLV-36101A
BLV-36101D
1/2"-SA
08-I-107 31
PIPELINE R1

PMP-36101
SAMPLE PUMP

BLV-36101B
1/2"-SA
BLV-36101E
SAMPLE TAP

1/2"-SA
2"-SA

BLV-36121A
BLV-36121B

FIT 36131A
MSC
M
FE 36131A
CV-36131
NV-36131A
BLV-36131A
1/2"-SA
BLV-36131C
1/2"-SA
33 08-I-107
PIPELINE R1

(TYPICAL OF 2)

PMP-36501
AE/AIT-36521
FIT-36531A
NV-36531A
FI-36531B

BLV-36501D
1/2"-SA
08-I-107 30
PIPELINE R5

BLV-36531C
1/2"-SA
32 08-I-107
PIPELINE R5

(SIMILAR TO ABOVE)

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
			G ERB	A ZIEBOWICZ	S BAKKEN	APVD	J KENNEDY

CONSTRUCTION DOCUMENTS

GARY T. ERB
STATE OF WASHINGTON
4.3363
REGISTERED
PROFESSIONAL ENGINEER

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

P&ID
SAMPLING STATION 1 OZONE

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-112
SHEET	39

FILENAME: 08-I-112_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:11

CP-36002

RIO-36002

REM RUN ON O3 FLOW DOOR

HOR
HS 36102
CP-36002

O3
AIT 36122
CP-36002
120V
MSC
O3
AE 36122

DOOR
ZS 36052

BLV-36102A
BLV-36102D
08-I-107 34 1/2"-SA
PIPELINE R1

PMP-36102
SAMPLE PUMP

BLV-36102B
1/2"-SA
BLV-36102E
SAMPLE TAP

1/2"-SA
2"-SA
BLV-36122A
BLV-36122B

FIT 36132A
MSC
M
FE 36132A
NV-36132A

CV-36132
BLV-36132A
1/2"-SA
BLV-36132C
1/2"-SA
35 08-I-107
PIPELINE R1

(TYPICAL OF 2)

PMP-36502

AE/AIT-36522

FIT-36532A

NV-36532A

FI-36532B

BLV-36502D
08-I-107 36 1/2"-SA
PIPELINE R5

BLV-36532C
1/2"-SA
37 08-I-107
PIPELINE R5

(SIMILAR TO ABOVE)

GARY T. ERB
STATE OF WASHINGTON
43363
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
			G ERB	A ZIEBOWICZ	S BAKKEN		J KENNEDY

REVISION

CONSTRUCTION DOCUMENTS

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

P&ID
SAMPLING STATION 2 OZONE

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-113
SHEET	40

FILENAME: 08-I-113_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:12

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		G ERB	A ZIEBOWICZ	S BAKKEN	APVD	J KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID

SAMPLING STATION 3 OZONE

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-114
SHEET	41

CONSTRUCTION DOCUMENTS

FILENAME: 08-I-114_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:11

CP-36004

RIO-36004

REM RUN ON O3 FLOW DOOR

HOR
HS 36104
CP-36004

O3
AIT 36124
CP-36004
120V
MSC
O3
AE 36124

DOOR
ZS 36054

BLV-36104A
BLV-36104D
08-I-107 42 1/2"-SA
PIPELINE R1

PMP-36104
SAMPLE PUMP

BLV-36104E
SAMPLE TAP

BLV-36104B
1/2"-SA
1/2"-SA
2"-SA

BLV-36124A
BLV-36124B

FIT 36134A
MSC
FE 36134A
M

CV-36134
BLV-36134A
1/2"-SA
BLV-36134C
1/2"-SA
43 08-I-107
PIPELINE R1

NV-36134A

(TYPICAL OF 2)

PMP-36504

AE/AIT-36524

FIT-36534A

NV-36534A

FI-36534B

BLV-36504D
08-I-107 44 1/2"-SA
PIPELINE R5

BLV-36534C
1/2"-SA
45 08-I-107
PIPELINE R5

(SIMILAR TO ABOVE)

NO.	DATE	DSGN
	REVISION	
DR	CHK	APVD
G ERB	A ZIEBOWICZ	S BAKKEN
		BY APVD
		J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID

SAMPLING STATION 4 OZONE

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-115
SHEET	42

FILENAME: 08-I-115_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:12

CP-36005

RIO-36005

REM RUN ON REM OPEN REM OPEN REM OPEN REM OPEN FAULT CL2 pH CL2 pH DOOR

HOR HS 36105A CP-36005
OCR HS 2916 CP-36005
OCR HS 2906 CP-36005
OCR HS 2905 CP-36005
OCR HS 2915 CP-36005
120V CP-36005
CL2 RESID AIT 2903 NOTE 1
pH AIT 2900 NOTE 1
DOOR ZS 36055

BLV-36105A
BLV-36105B
08-I-107 46
PIPELINE R1
1/2"-SA
CS-1
PMP-36105A
(TYPICAL OF 4)
BLV-36105C
BLV-36115A
NV-36115A
1/2"-SA
FI 36115A
AE 2900 pH
NOTE 1
CV-36115
BLV-36115B
BLV-36131E
47 08-I-107
PIPELINE R1

BLV-36115C
NV-36115B
FI 36115B
AE 2903 CL2 RESID
NOTE 1
BLV-36115D
D
(TYPICAL OF 2)

PMP-36105B
(SIMILAR TO ABOVE)
BLV-36105D
BLV-36105E

BLV-36115G
SAMPLE TAP
EDV-2906
EDV-2905
NV-36315B
FI 36315A
AE 2920 pH
NOTE 1
CV-36315
AIT 2921 CL2
AIT 2920 pH
120V CP-36005
BLV-36315A
BLV-36315B
BLV-36315C
EDV-2916
EDV-2915
NV-36315A
FI 36315B
AE 2921 CL2
BLV-36515G
SAMPLE TAP

BLV-36505A
BLV-36505B
08-I-107 48
PIPELINE R5
PMP-36505A
(SIMILAR TO ABOVE)
PMP-36505B
(SIMILAR TO ABOVE)
BLV-36505C
BLV-36505D
BLV-36505E
BLV-36515A
NV-36515A
NV-36515B
BLV-36515B
FI-36515A AE/AIT-2913 AE/AIT-2910
FI-36515B
(SIMILAR TO ABOVE)
BLV-36515E
49 08-I-107
PIPELINE R5

NOTE:
1. OWNER PROVIDED EQUIPMENT.

NO.	DATE	REVISION	BY	APV'D
DSGN	G ERB	DR A ZIEBOWICZ	CHK S BAKKEN	APV'D J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

P&ID
SAMPLING STATION 5 OZONE

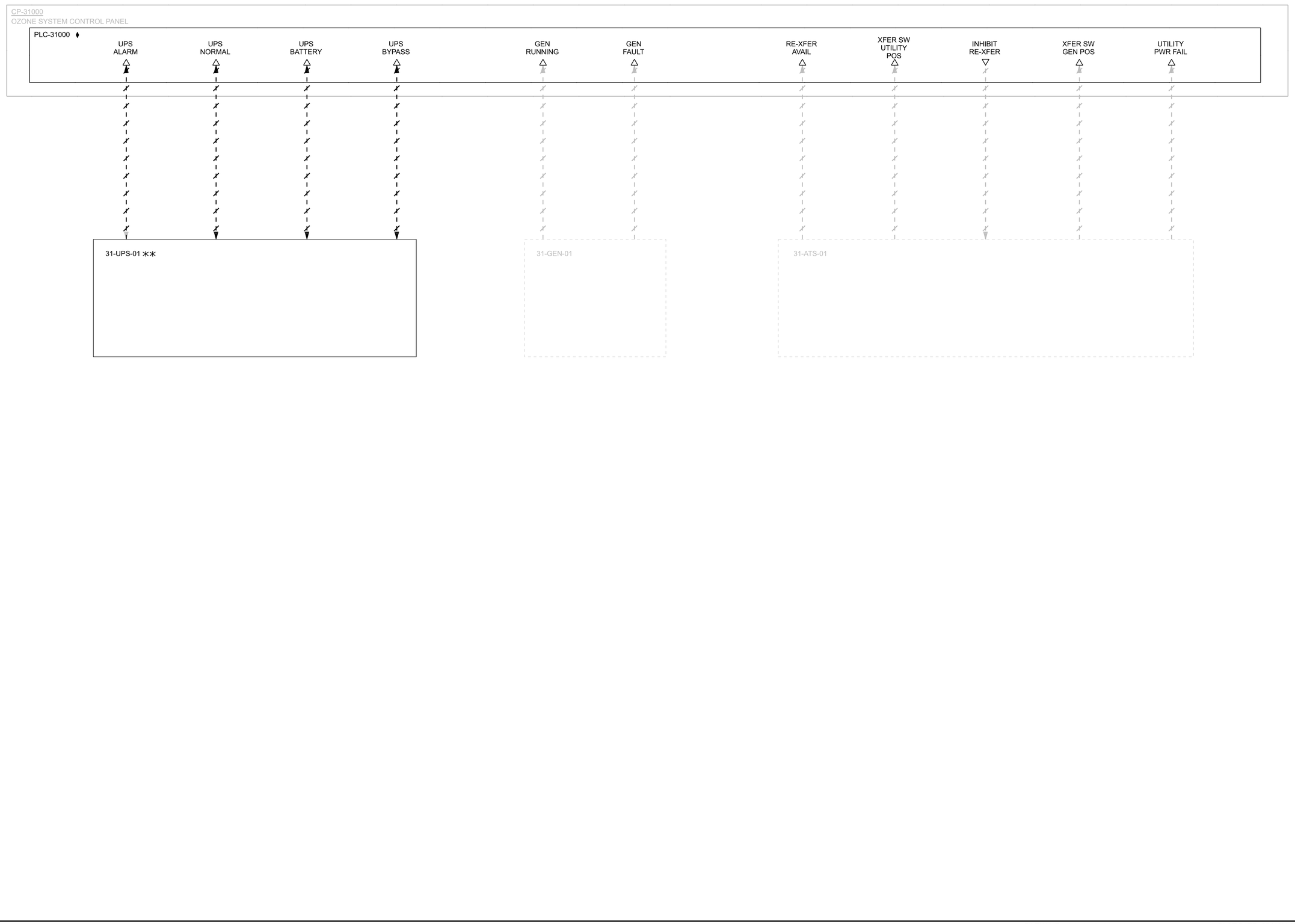
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-116
SHEET	43

CONSTRUCTION DOCUMENTS

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

FILENAME: 08-I-116_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:11



NO.	DATE	REVISION	BY	APV'D
DSGN	G ERB	DR A ZIEBOWICZ CHK S BAKKEN	J KENNEDY	APV'D

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

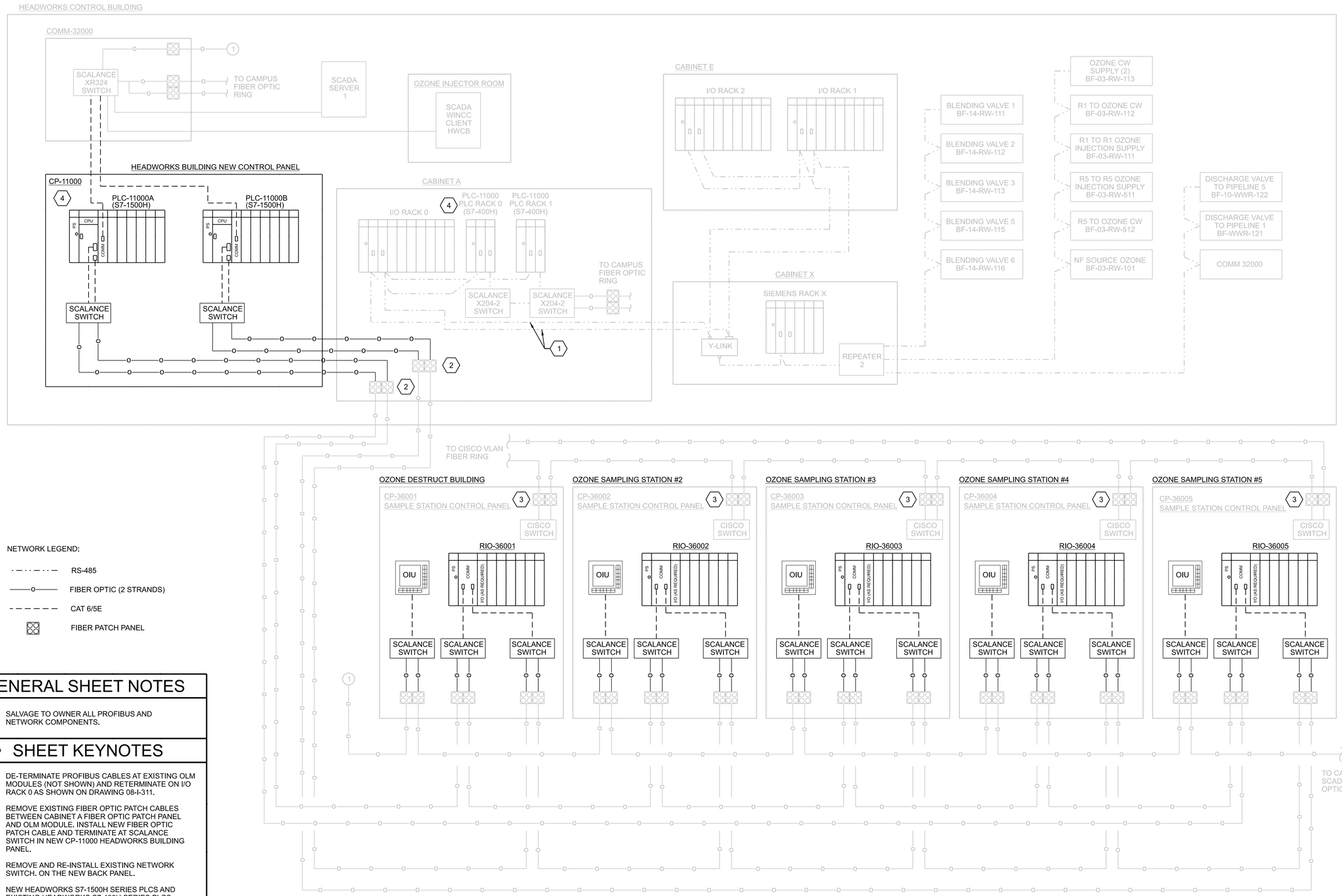
P&ID
UTILITY SYSTEMS

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-117
SHEET	44

FILENAME: 08-I-117_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:10



NETWORK LEGEND:

- RS-485
- FIBER OPTIC (2 STRANDS)
- CAT 6/5E
- FIBER PATCH PANEL

GENERAL SHEET NOTES

1. SALVAGE TO OWNER ALL PROFIBUS AND NETWORK COMPONENTS.

SHEET KEYNOTES

1. DE-TERMINATE PROFIBUS CABLES AT EXISTING OLM MODULES (NOT SHOWN) AND RETERMINATE ON I/O RACK 0 AS SHOWN ON DRAWING 08-I-311.
2. REMOVE EXISTING FIBER OPTIC PATCH CABLES BETWEEN CABINET A FIBER OPTIC PATCH PANEL AND OLM MODULE. INSTALL NEW FIBER OPTIC PATCH CABLE AND TERMINATE AT SCALANCE SWITCH IN NEW CP-11000 HEADWORKS BUILDING PANEL.
3. REMOVE AND RE-INSTALL EXISTING NETWORK SWITCH. ON THE NEW BACK PANEL.
4. NEW HEADWORKS S7-1500H SERIES PLCS AND EXISTING HEADWORKS S7-400H SERIES PLCS TEMPORARILY UTILIZE COMMON "PLC-11000" NOMENCLATURE. EXISTING S7-400H SERIES PLCS TO BE REMOVED IN FUTURE PROJECT.

GARY T. ERB — STATE OF WASHINGTON — 43363 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DR	REVISION	CHK	APV'D	BY
DSGN	G ERB	A ZIEBOWICZ		S BAKKEN	APV'D	J KENNEDY

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

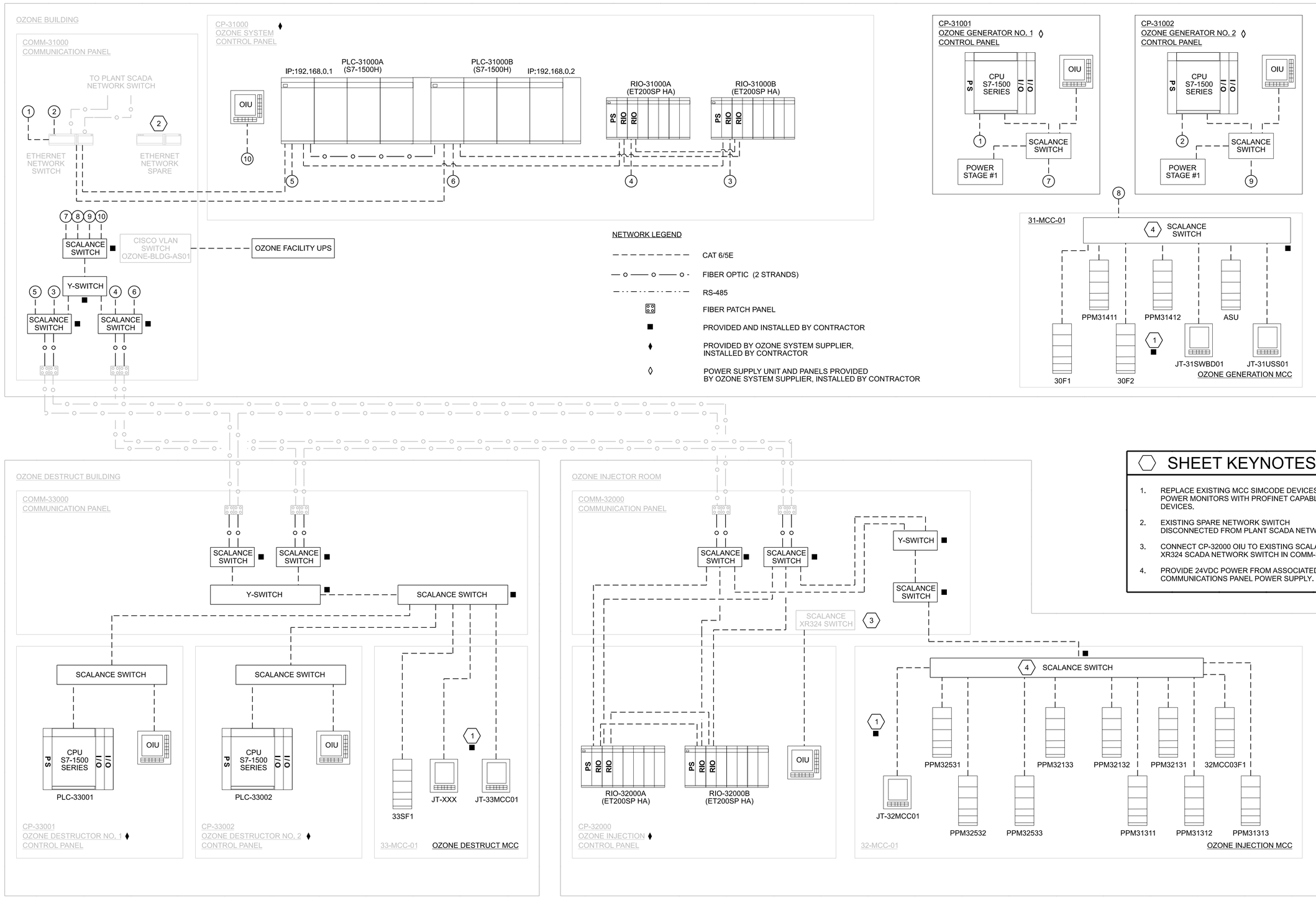
I&C

HEADWORKS CONTROL SYSTEM BLOCK DIAGRAM

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-201
SHEET	45

FILENAME: 08-I-201_D3885700.dgn PLOT DATE: 20-MAR-2026 PLOT TIME: 04:18



SHEET KEYNOTES

1. REPLACE EXISTING MCC SIMCODE DEVICES AND POWER MONITORS WITH PROFINET CAPABLE DEVICES.
2. EXISTING SPARE NETWORK SWITCH DISCONNECTED FROM PLANT SCADA NETWORK.
3. CONNECT CP-32000 OIU TO EXISTING SCALANCE XR324 SCADA NETWORK SWITCH IN COMM-32000.
4. PROVIDE 24VDC POWER FROM ASSOCIATED COMMUNICATIONS PANEL POWER SUPPLY.

NO.	DATE	REVISION	DR	CHK	APV'D
DSGN	G ERB	A ZIEBOWICZ	S BAKKEN	J KENNEDY	BY

GARY T. ERB
STATE OF WASHINGTON
4.3363
REGISTERED
PROFESSIONAL ENGINEER

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

I&C

OZONE CONTROL SYSTEM PROFINET BLOCK DIAGRAM

CONSTRUCTION DOCUMENTS

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-202
SHEET	46

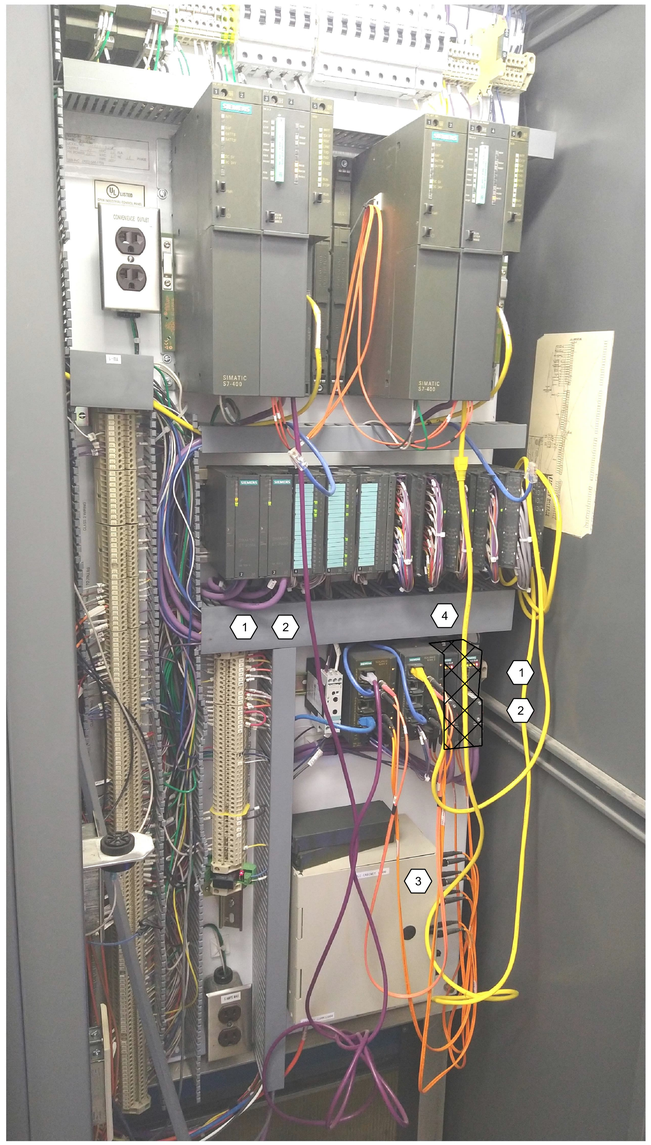
FILENAME: 08-I-202_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:11

SHEET KEYNOTES

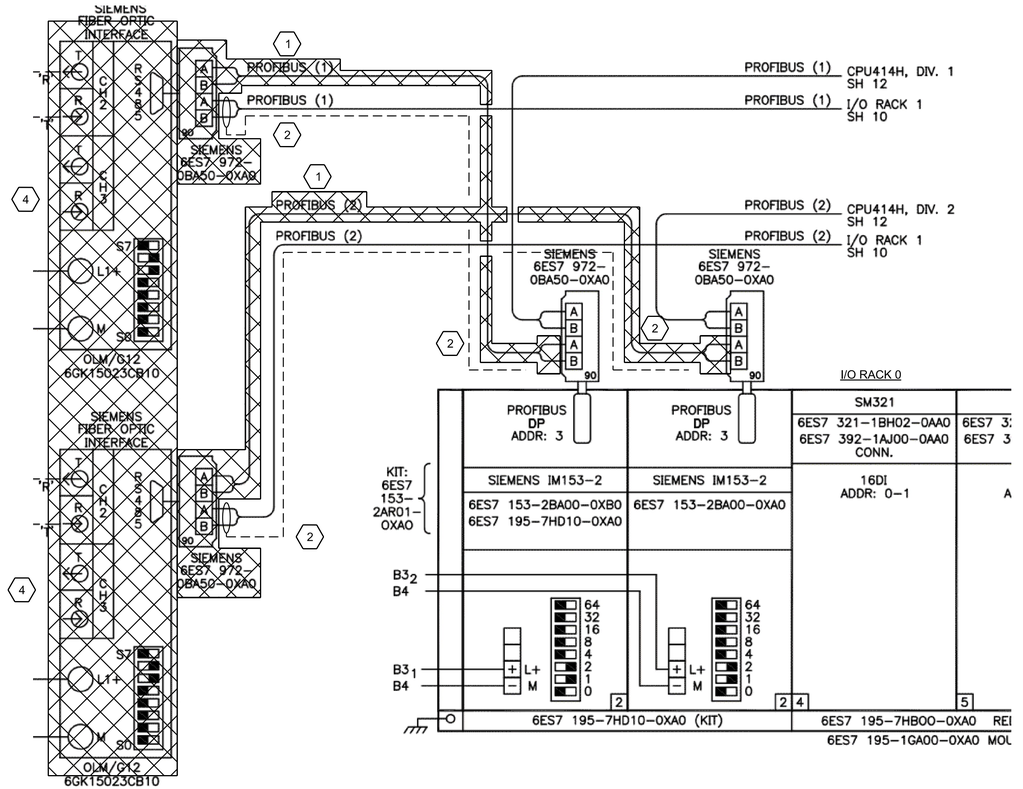
1. DE-TERMINATE AND REMOVE PROFIBUS CABLES CONNECTING I/O RACK 0 TO OLM MODULES.
2. DE-TERMINATE PROFIBUS CABLES FROM I/O RACK 1 AT OLM MODULE. RE-TERMINATE PROFIBUS CABLE FROM I/O RACK 1 AT I/O RACK 0.
3. REMOVE EXISTING FIBER OPTIC PATCH CABLES BETWEEN CABINET A FIBER OPTIC PATCH PANEL AND OLM MODULE. INSTALL NEW MULTIMODE FIBER OPTIC PATCH CABLE WITH ST TYPE CONNECTORS AND TERMINATE AT SCALANCE SWITCH IN NEW HEADWORKS BUILDING PANEL. REFER TO SECTION 40 90 00B FOR CABLE SPECIFICATIONS. REFERENCE DRAWING 08-I-201 FOR NETWORK CONTROL SYSTEM BLOCK DIAGRAM.
4. SALVAGE DEMOLISHED OLM MODULES TO THE OWNER.

LINETYPE LEGEND;

– – PATH TO RE-TERMINATE EXISTING PROFIBUS CABLE



1 PHOTO DETAIL
NTS



2 PROFIBUS CONNECTION MODIFICATION DETAIL
NTS

NO.	DATE	REVISION	DR	CHK	APVD	BY
DSGN			G ERB	A ZIEBOWICZ	S BAKKEN	J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

I&C
EXISTING HEADWORKS CONTROL PANEL MODIFICATION DETAIL

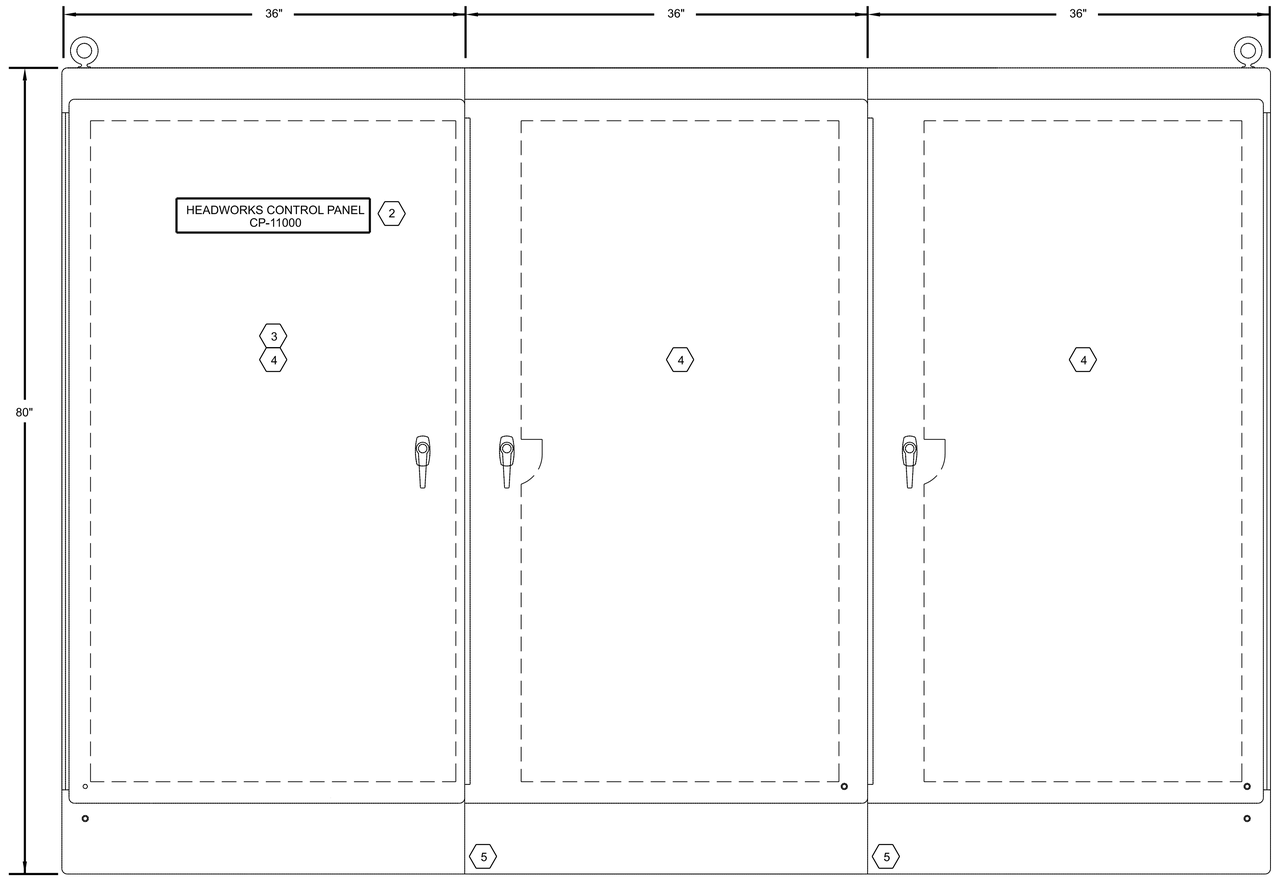
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-311
SHEET	47

CONSTRUCTION DOCUMENTS

REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

GARY T. ERB — STATE OF WASHINGTON — 43363 — REGISTERED PROFESSIONAL ENGINEER



HEADWORKS CONTROL PANEL NEMA 12 ENCLOSURE (1)

GENERAL SHEET NOTES

1. PIC INTEGRATOR SHALL FABRICATE BACK PANELS IN ACCORDANCE WITH SECTION 40 90 00.
2. CONTROL PANEL SHALL MEET THE REQUIREMENTS OF UL 508A.
3. INSTALL FIELD TERMINALS, CIRCUIT COMPONENTS, AND SCALANCE SWITCHES IN ACCORDANCE WITH 40 90 00 FOR REDUNDANT PLC RACK PROFINET COMMUNICATIONS.
4. PLC SHALL BE INSTALLED NO HIGHER THAN 65 INCHES FROM FLOOR.
5. ENCLOSURE AND BACK PANELS SHALL BE INSTALLED BY PIC INSTALLER IN ACCORDANCE WITH SECTION 40 90 00.

SHEET KEYNOTES

1. PROVIDE MODULAR MULTISECTIONAL ENCLOSURE FOR INSTALLATION OF REDUNDANT PLCS, REMOTE I/O, NETWORKING EQUIPMENT, AND NECESSARY CONTROL HARDWARE. DETAILED ENCLOSURE SIZING DESIGN IN SUPPORT OF FUTURE MIGRATION OF I/O FROM THE EXISTING HEADWORKS PANEL TO BE COMPLETED BY CONTRACTOR'S PIC INTEGRATOR AND APPROVED BY THE ENGINEER ACCORDING TO SECTION 40 90 00.
2. PROVIDE NAMEPLATE ACCORDING TO SECTION 40 90 00.
3. LEFT-MOST ENCLOSURE SHALL BE DESIGNATED AS A MARSHALLING CABINET.
4. DETAILED BACK PANEL DESIGN FOR ALL ENCLOSURE SECTIONS TO BE COMPLETED BY CONTRACTOR'S PIC INTEGRATOR AND APPROVED BY THE ENGINEER ACCORDING TO SECTION 40 90 00.
5. PROVIDE GROMMETED WIREWAY PENETRATIONS BETWEEN ENCLOSURES TO ALLOW FOR WIRE AND CABLE TO TRANSITION BETWEEN ENCLOSURES.

GARY T. ERB — STATE OF WASHINGTON — 43363 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	APV'D	BY	APV'D
DSGN			G ERB	A ZIEBOWICZ	S BAKKEN	J KENNEDY	

Jacobs

I&C

NEW HEADWORKS CONTROL PANEL LAYOUT DIAGRAM

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

CONSTRUCTION DOCUMENTS

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-312
SHEET	48

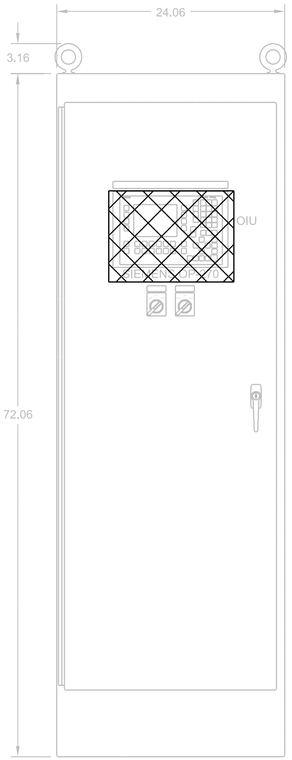
FILENAME: 08-I-312_D3885700.dgn PLOT DATE: 20-MAR-2026 PLOT TIME: 04:18

GENERAL SHEET NOTES

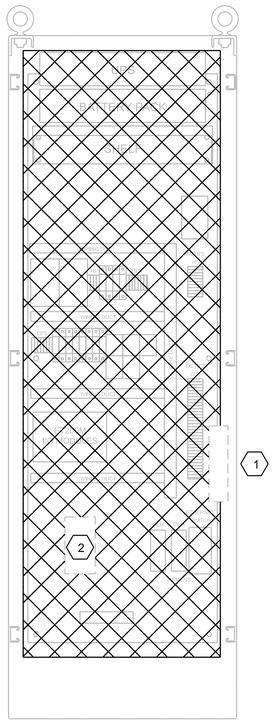
1. THE PROVIDED BACK PANEL LAYOUT IS GENERAL IN NATURE AND DEPICTS GENERAL PANEL LAYOUT AND FABRICATION REQUIREMENTS FOR THE APPLICABLE CONTROL PANEL. FABRICATE PANEL IN ACCORDANCE WITH SECTION 40 90 00.
2. CONTROL PANEL SHALL MEET THE REQUIREMENTS OF UL 508A.
3. SALVAGE SAMPLE STATION BACK PANEL IN ACCORDANCE WITH SECTION 02 41 00.

SHEET KEYNOTES

1. WHEN REPLACING THE EXISTING BACK PANEL IN SAMPLE STATIONS 2 THROUGH 4, TAKE APPROPRIATE PRECAUTIONS TO PROTECT THE EXISTING FIBER PATCH PANEL AND FIBER CONNECTIONS LOCATED ON SIDE PANEL.
2. OWNER'S EXISTING CISCO VLAN SWITCH TO BE REINSTALLED ON NEW BACK PANEL. PROVIDE DIN RAIL FOR VLAN SWITCH AND ASSOCIATED COMPONENTS TO BE REINSTALLED IN THE SAME LOCATION.
3. FIELD TERMINATIONS MUST BE POSITIONED WITHIN THE ENCLOSURE TO ALLOW TERMINATION OF EXISTING FIELD WIRES.
4. DETAILED BACK PANEL DESIGN TO BE COMPLETED BY PROCESS INSTRUMENTATION AND CONTROL INTEGRATOR AND APPROVED BY THE ENGINEER. PROVIDE AND INSTALL NEW BACK PANEL IN ACCORDANCE WITH SECTION 40 90 00.
5. UPS AND UPS BATTERY TO BE PHYSICALLY SECURED AT BOTTOM OF SAMPLE STATION ENCLOSURE WHILE STILL ALLOWING ACCESS/REMOVAL FOR MAINTENANCE.

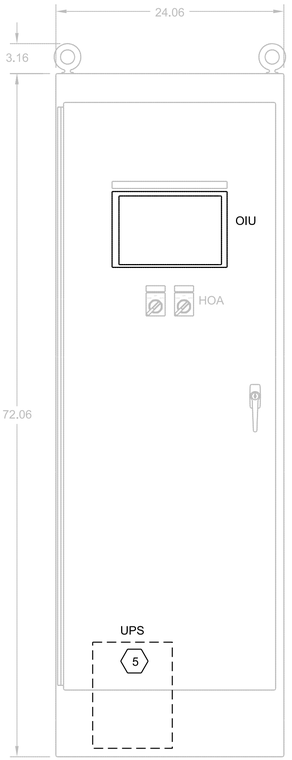


HOFFMAN A-722420FS NEMA 12 ENCLOSURE

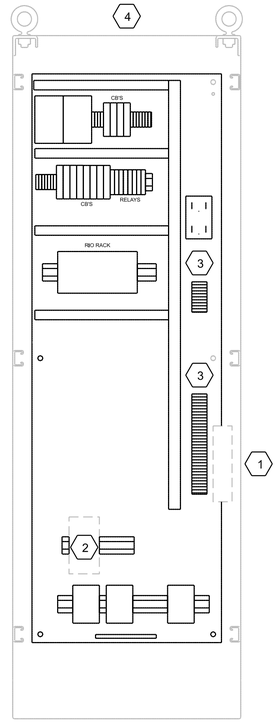


HOFFMAN A-72P24F1 BACK PANEL

SAMPLE STATION 1-4 DEMOLITION



HOFFMAN A-722420FS NEMA 12 ENCLOSURE



HOFFMAN A-72P24F1 BACK PANEL

SAMPLE STATION 1-4 LAYOUT

GARY T. ERB
STATE OF WASHINGTON
43363
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	REVISION	CHK	APV'D	BY	APV'D
DSGN	G ERB	DR	A ZIEBOWICZ	S BAKKEN	J KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

I&C

SAMPLING STATION 1-4 CONTROL PANEL LAYOUT DIAGRAM

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-321
SHEET	49

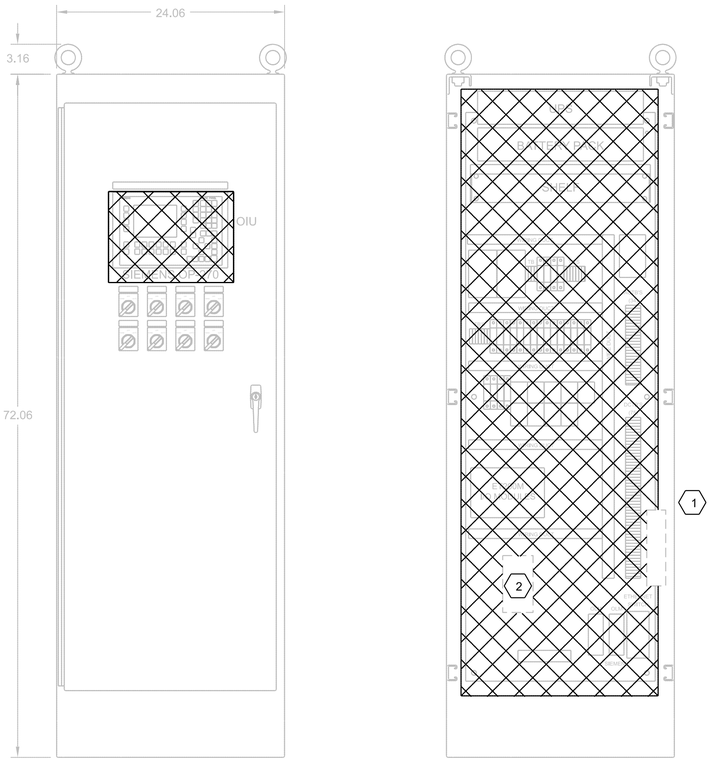
FILENAME: 08-I-321_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 06:04

GENERAL SHEET NOTES

1. THE PROVIDED BACK PANEL LAYOUT IS GENERAL IN NATURE AND DEPICTS GENERAL PANEL LAYOUT AND FABRICATION REQUIREMENTS FOR THE APPLICABLE CONTROL PANEL. FABRICATE PANEL IN ACCORDANCE WITH SECTION 40 90 00.
2. CONTROL PANEL SHALL MEET THE REQUIREMENTS OF UL 508A.
3. SALVAGE SAMPLE STATION BACK PANEL IN ACCORDANCE WITH SECTION 02 41 00.

SHEET KEYNOTES

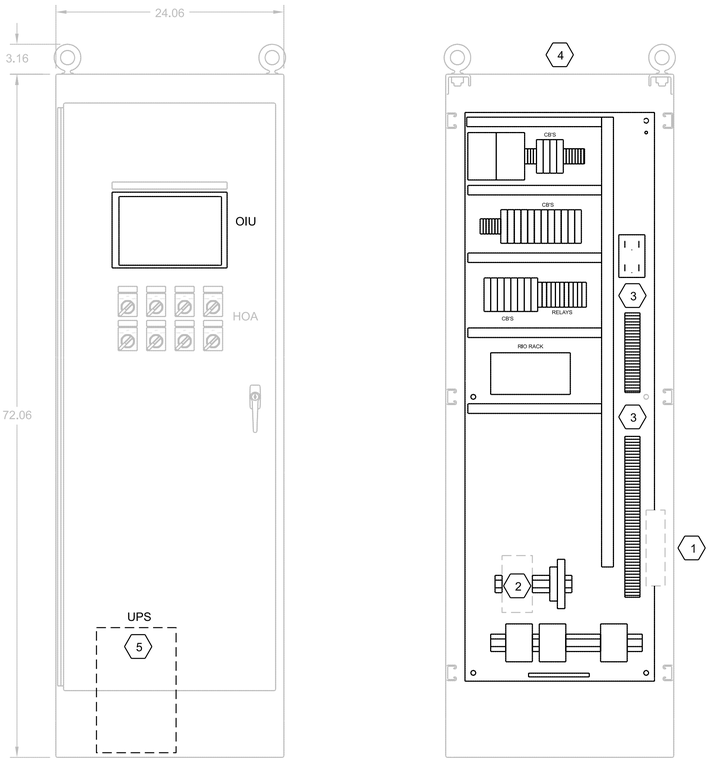
1. WHEN REPLACING THE EXISTING BACK PANEL IN SAMPLE STATION 5, TAKE APPROPRIATE PRECAUTIONS TO PROCECT THE EXISTING FIBER PATCH PANEL AND FIBER CONNECTIONS LOCATED ON SIDE PANEL.
2. OWNER'S EXISTING CISCO VLAN SWITCH TO BE REINSTALLED ON NEW BACK PANEL. PROVIDE DIN RAIL FOR VLAN SWITCH AND ASSOCIATED COMPONENTS TO BE REINSTALLED IN THE SAME LOCATION.
3. FIELD TERMINATIONS MUST BE POSITIONED WITHIN THE ENCLOSURE TO ALLOW TERMINATION OF EXISTING FIELD WIRES.
4. DETAILED BACK PANEL DESIGN TO BE COMPLETED BY PROCESS INSTRUMENTATION AND CONTROL INTEGRATOR AND APPROVED BY THE ENGINEER. PROVIDE AND INSTALL NEW BACK PANEL IN ACCORDANCE WITH SECTION 40 90 00.
5. UPS AND UPS BATTERY TO BE PHYSICALLY SECURED AT BOTTOM OF SAMPLE STATION ENCLOSURE WHILE STILL ALLOWING ACCESS/REMOVAL FOR MAINTENANCE.



HOFFMAN A-722420FS NEMA 12 ENCLOSURE

HOFFMAN A-72P24F1 BACK PANEL

SAMPLE STATION 5 DEMOLITION



HOFFMAN A-722420FS NEMA 12 ENCLOSURE

HOFFMAN A-72P24F1 BACK PANEL

SAMPLE STATION 5 LAYOUT

NO.	DATE	REVISION	BY	APV'D
DSGN	G ERB	DR A ZIEBOWICZ	CHK S BAKKEN	APV'D J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

I&C

SAMPLING STATION 5 CONTROL PANEL LAYOUT DIAGRAM

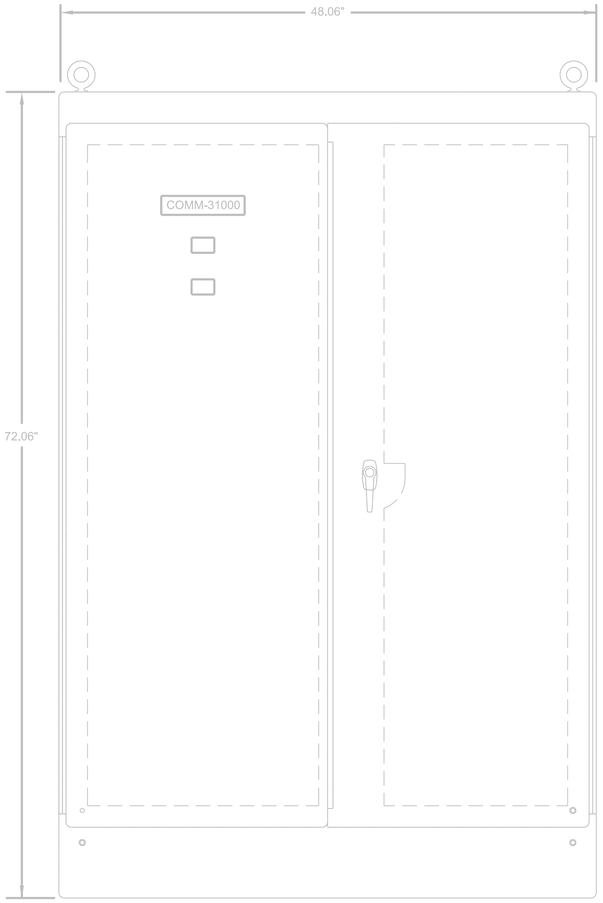
CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-323
SHEET	50

FILENAME: 08-I-323_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 06:05

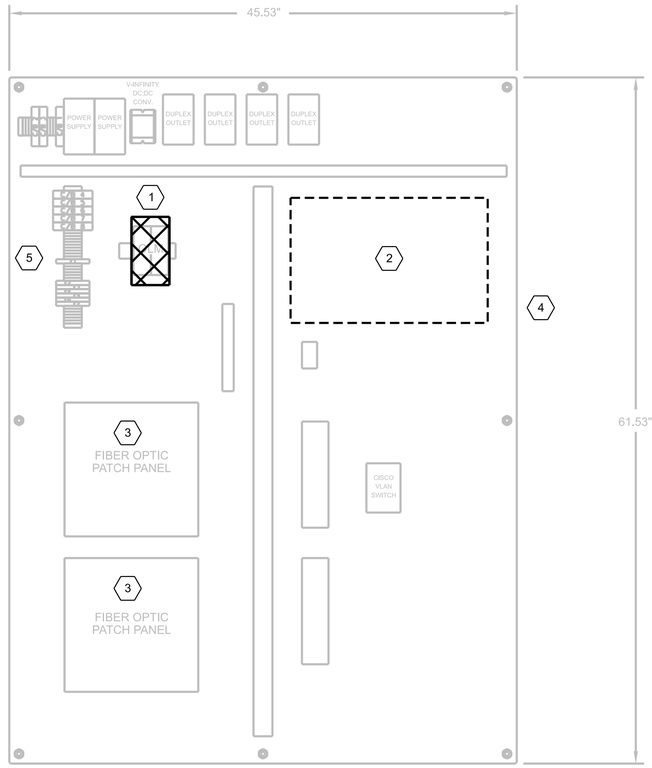
SHEET KEYNOTES

1. REMOVE OLM DEVICES AND RETURN TO OWNER.
2. INSTALL NEW SCALANCE SWITCHES AND Y-SWITCH ON SPARE COMM-31000 BACK PANEL AREA. POSITION SUCH THAT NEW DEVICES DO NOT OBSTRUCT WIRING OR EXISTING COMPONENTS. REFER TO SECTION 40 90 00 FOR DEVICE SPECIFICATIONS.
3. PROVIDE NEW MULTIMODE FIBER OPTIC PATCH CABLES WITH ST TYPE CONNECTORS TO CONNECT TO EXISITNG REDUNDANT FIBER OPTIC RINGS VIA FIBER OPTIC PATCH PANELS. REFERENCE DRAWING 08-I-203.
4. EXISTING SWINGOUT PANEL WITH NETWORK EQUIPMENT NOT DEPICTED.
5. PROVIDE FUSE AND 24VDC CIRCUIT TO THE FOLLOWING: NEW SCALANCE SWITCH IN 31-MCC-01, THREE NEW SCALANCE SWITCHES IN COMM-31000, AND Y-SWITCH IN COMM-31000.



HOFFMAN A-724824FSD NEMA 12 ENCLOSURE

ENCLOSURE - FRONT VIEW



HOFFMAN A-72P48F1 BACK PANEL

BACK PANEL LAYOUT

GARY T. ERB — STATE OF WASHINGTON — 43363 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	DR	CHK	BY
DSGN			G ERB	A ZIEBOWICZ	S BAKKEN	APVD	J KENNEDY	APVD

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

I&C
COMMUNICATION PANEL 31000
LAYOUT DIAGRAM

CONSTRUCTION DOCUMENTS

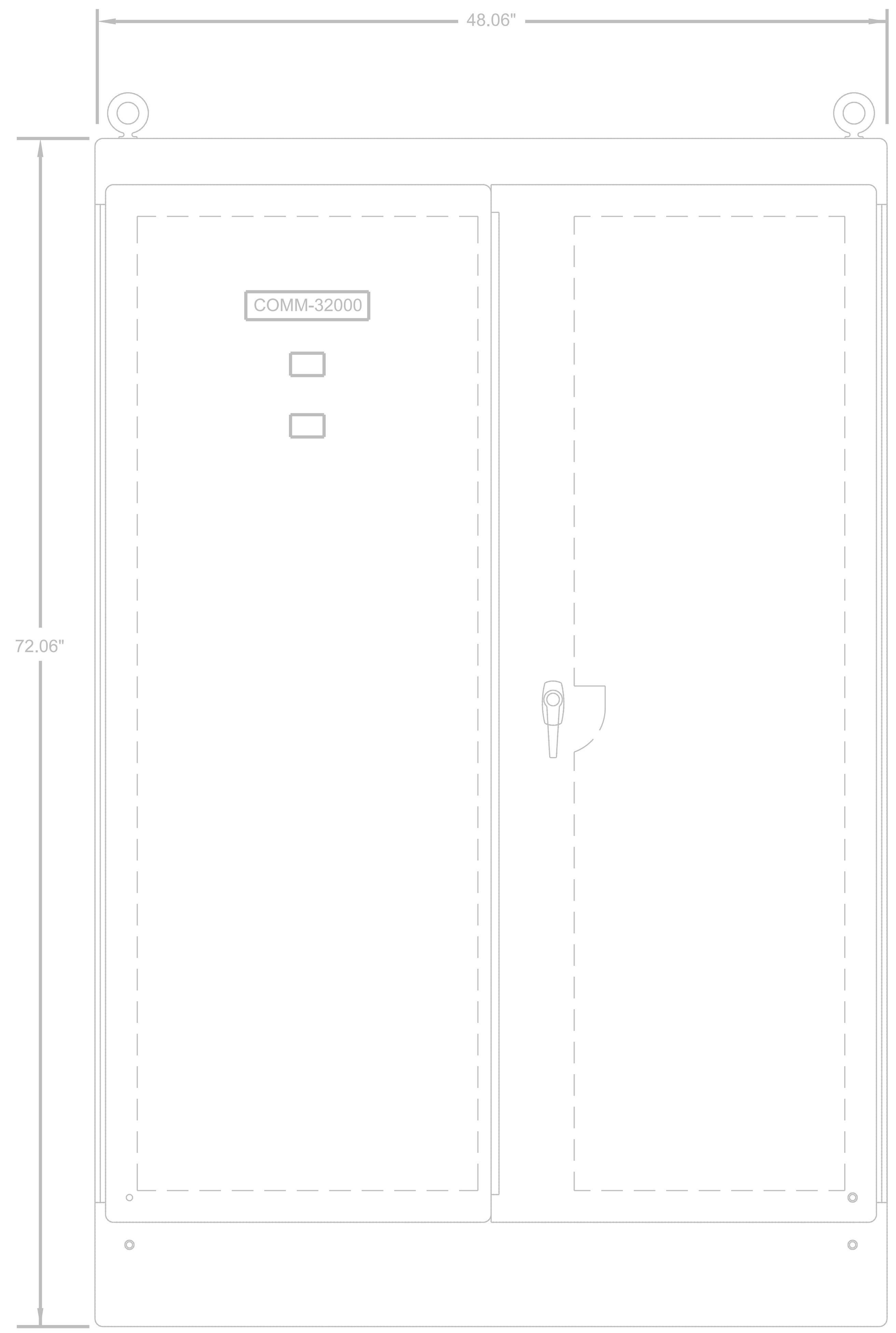
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-331
SHEET	51

FILENAME: 08-I-331_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 06:04

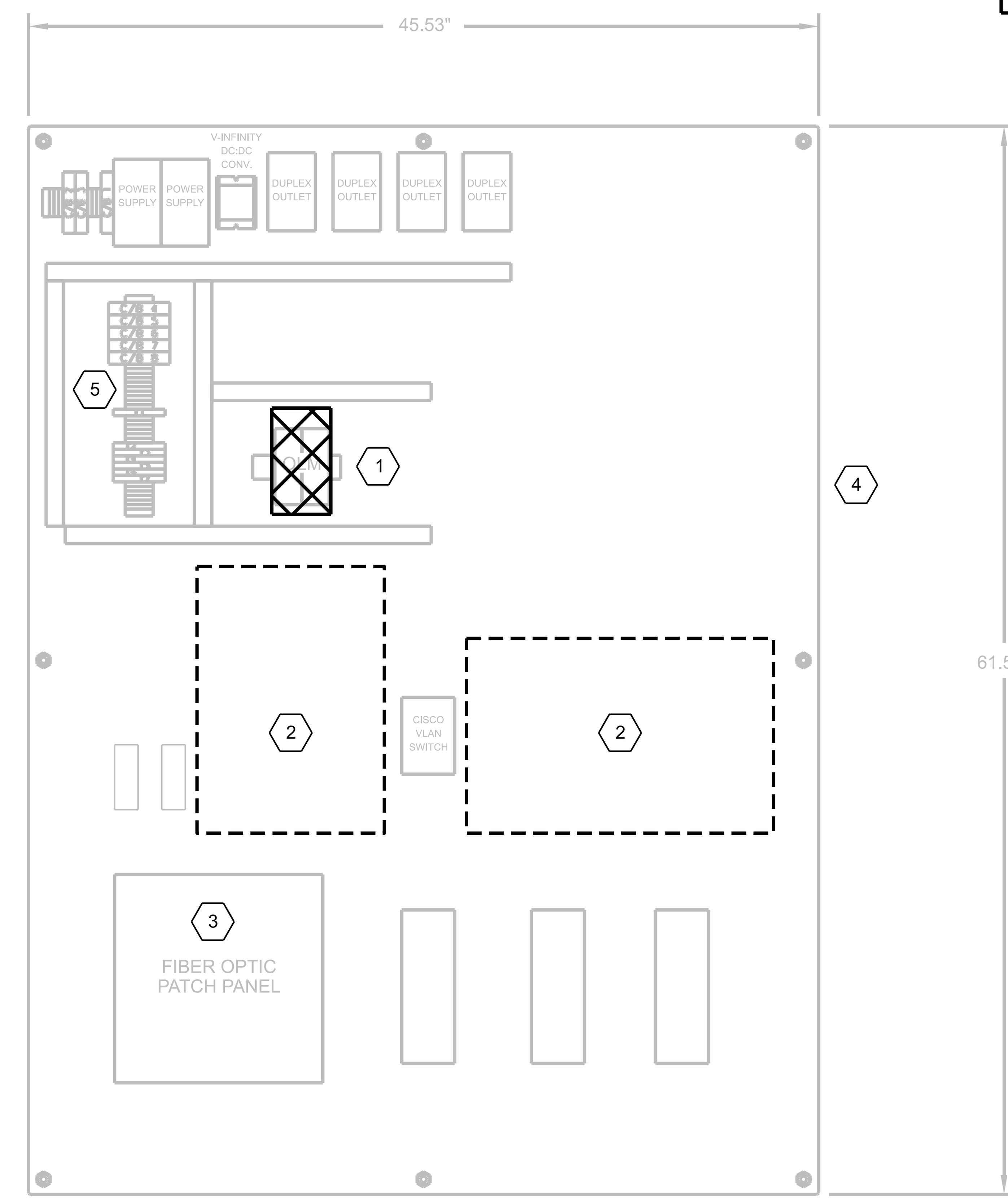
SHEET KEYNOTES

1. REMOVE OLM DEVICES AND RETURN TO OWNER.
2. INSTALL NEW SCALANCE SWITCHES AND Y-SWITCH ON SPARE COMM-32000 BACK PANEL AREA. POSITION SUCH THAT NEW DEVICES DO NOT OBSTRUCT WIRING OR EXISTING COMPONENTS. REFER TO SECTION 40 90 00 FOR DEVICE SPECIFICATIONS.
3. PROVIDE NEW MULTIMODE FIBER OPTIC PATCH CABLES WITH ST TYPE CONNECTORS TO CONNECT TO EXISITNG REDUNDANT FIBER OPTIC RINGS VIA FIBER OPTIC PATCH PANELS. REFERENCE DRAWING 08-I-203.
4. EXISTING SWINGOUT PANEL WITH NETWORK EQUIPMENT NOT DEPICTED.
5. PROVIDE FUSE AND 24VDC CIRCUIT TO THE FOLLOWING: NEW SCALANCE SWITCH IN 32-MCC-01, THREE NEW SCALANCE SWITCHES IN COMM-32000, AND NEW Y-SWITCH IN COMM-32000.



HOFFMAN A-724824FSD NEMA 12 ENCLOSURE

ENCLOSURE - FRONT VIEW



HOFFMAN A-72P48F1 BACK PANEL

BACK PANEL LAYOUT

NO.	DATE	REVISION	BY	APVD

DSGN G ERB | DR A ZIEBOWICZ | CHK S BAKKEN | APVD J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

I&C
COMMUNICATION PANEL 32000
LAYOUT DIAGRAM

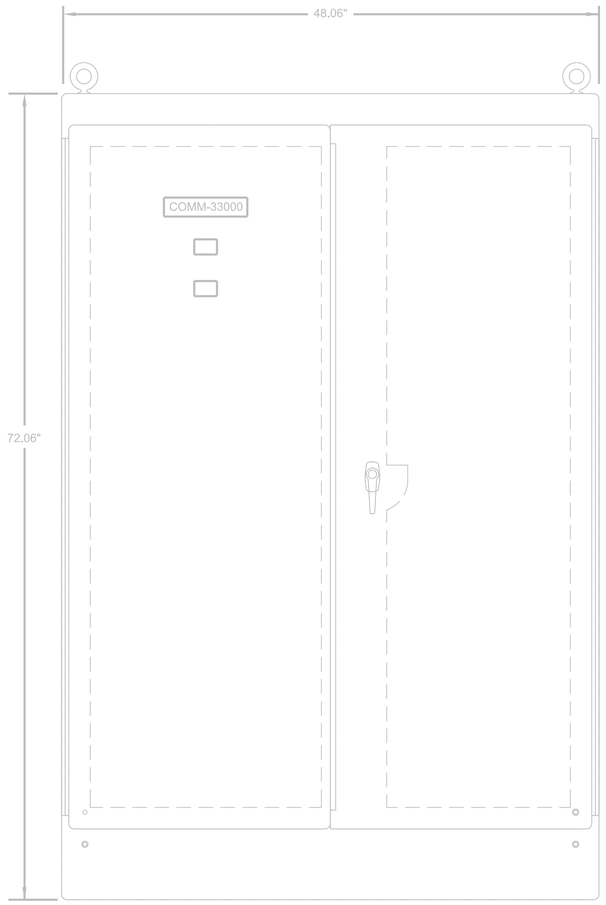
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-332
SHEET	52

CONSTRUCTION DOCUMENTS

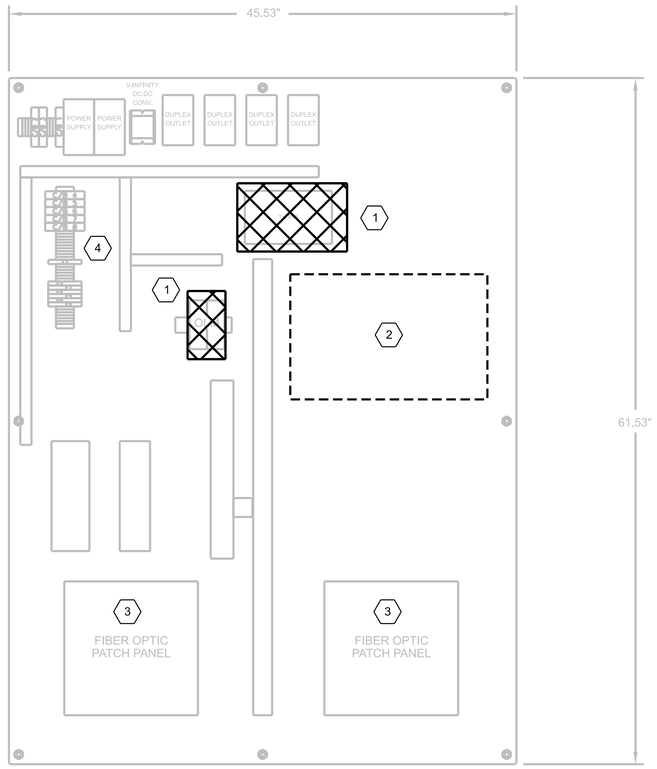
SHEET KEYNOTES

1. REMOVE OLM AND Y-LINK DEVICES AND RETURN TO OWNER.
2. INSTALL NEW SCALANCE SWITCHES AND Y-SWITCH ON SPARE COMM-33000 BACK PANEL AREA. POSITION SUCH THAT NEW DEVICES DO NOT OBSTRUCT WIRING OR EXISTING COMPONENTS. REFER TO SECTION 40 90 00 FOR DEVICE SPECIFICATIONS.
3. PROVIDE NEW MULTIMODE FIBER OPTIC PATCH CABLES WITH ST TYPE CONNECTORS TO CONNECT TO EXISITNG REDUNDANT FIBER OPTIC RINGS V/A FIBER OPTIC PATCH PANELS. REFERENCE DRAWING 08-I-203.
4. PROVIDE FUSE AND 24VDC CIRCUIT TO THE FOLLOWING: THREE NEW SCALANCE SWITCHES IN COMM-33000, AND NEW Y-SWITCH IN COMM-33000.



HOFFMAN A-724824FSD NEMA 12 ENCLOSURE

ENCLOSURE - FRONT VIEW



HOFFMAN A-72P48F1 BACK PANEL

BACK PANEL LAYOUT

NO.	DATE	REVISION	CHK	APVD	BY
DSGN	G ERB	DR	A ZIEBOWICZ	S BAKKEN	APVD	J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

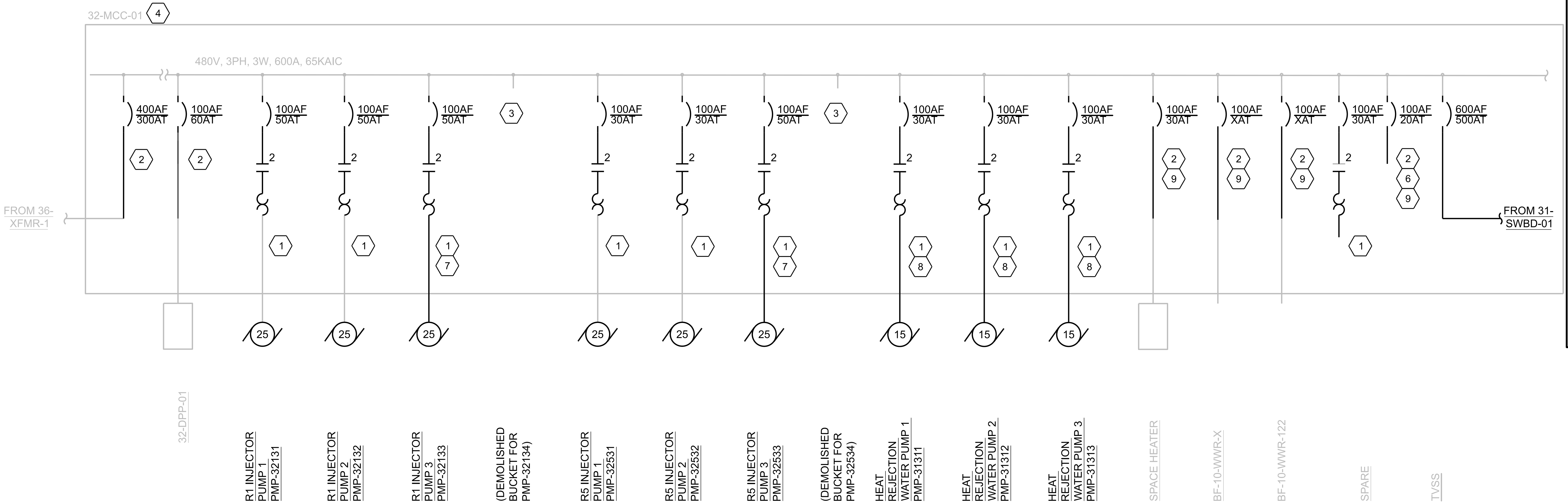
Jacobs

I&C
COMMUNICATION PANEL 33000
LAYOUT DIAGRAM

CONSTRUCTION DOCUMENTS

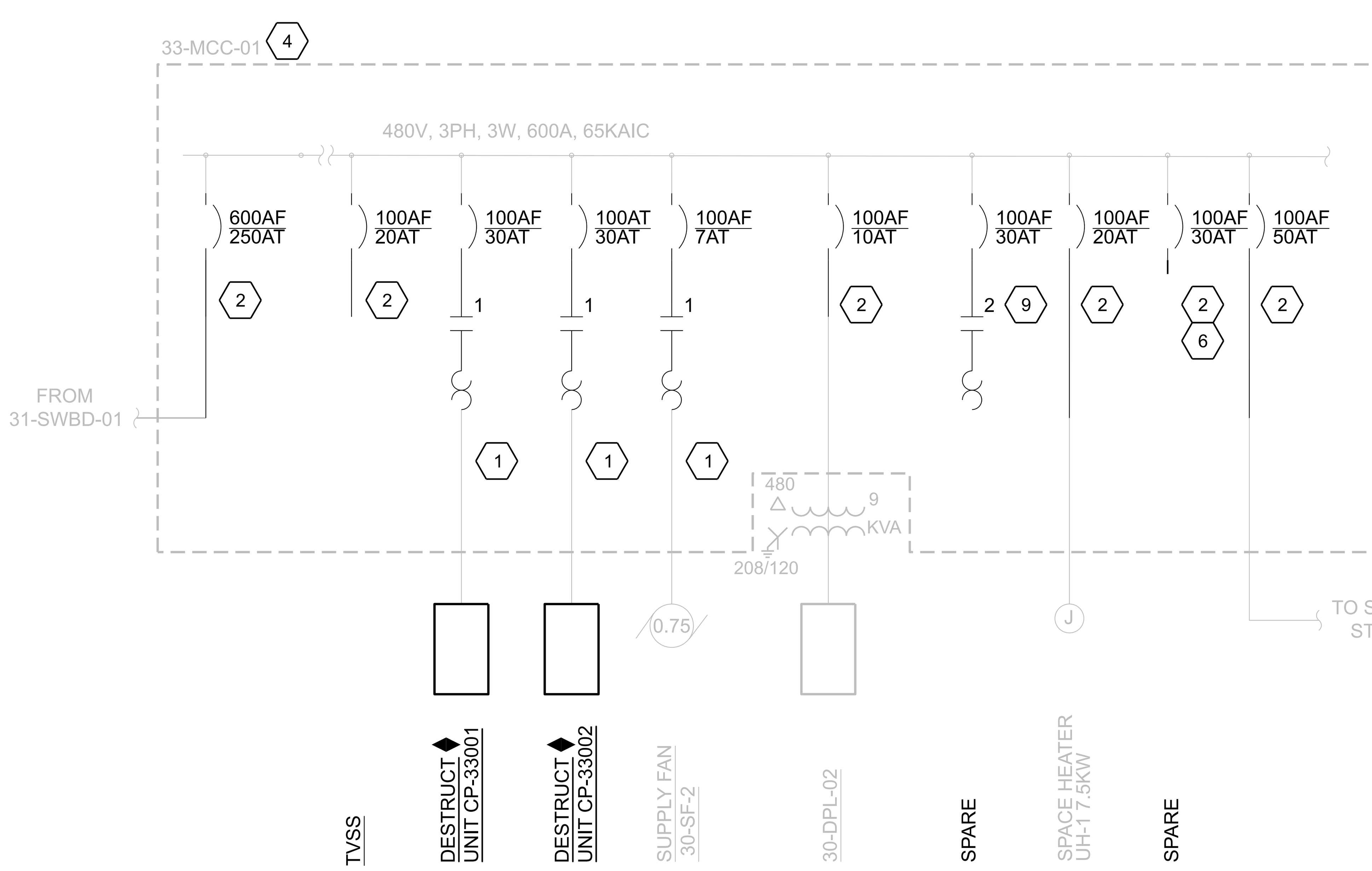
NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	08-I-333
SHEET	53

FILENAME: 08-I-333_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 06:05



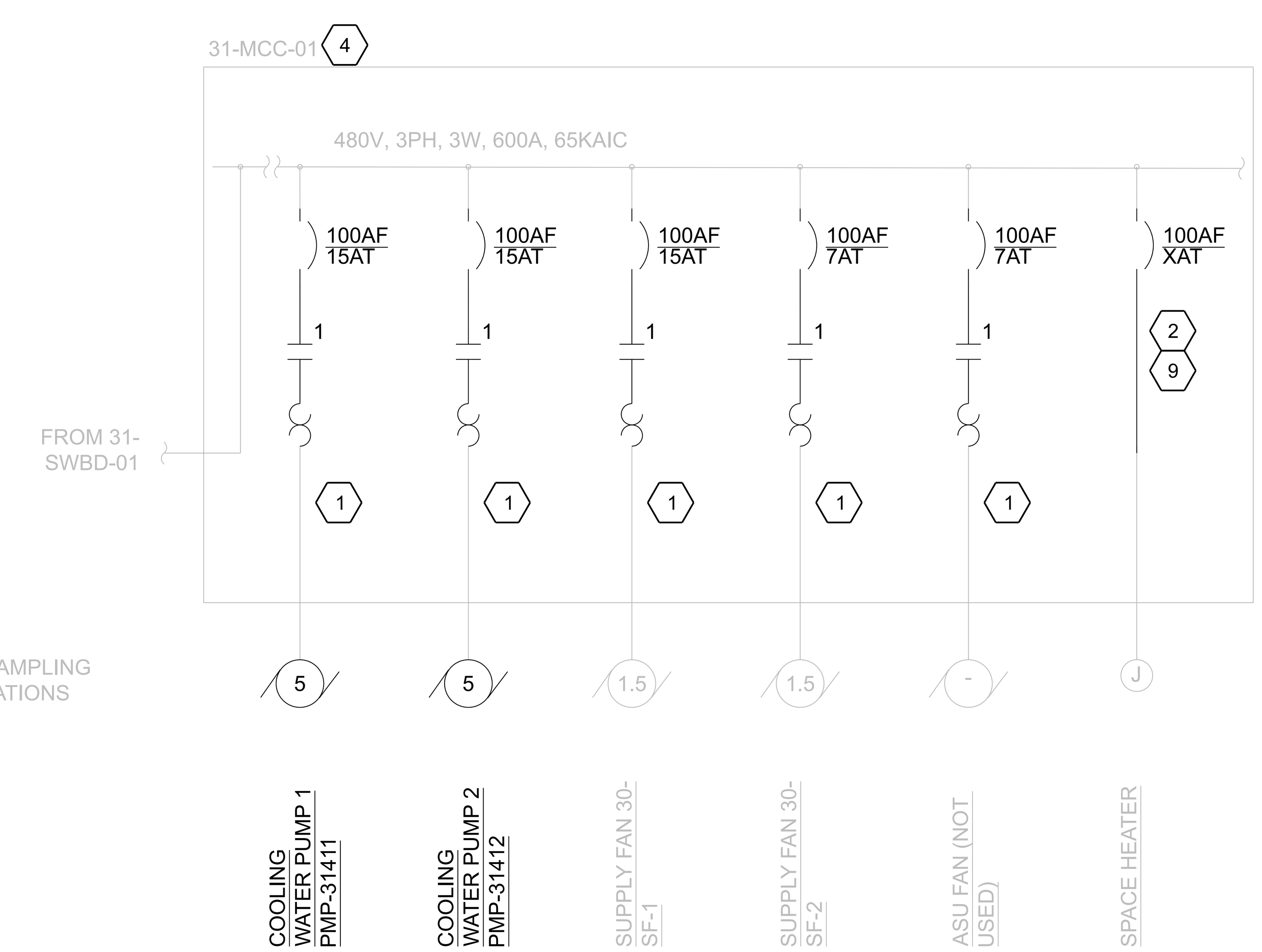
2 OZONE INJECTION MCC ONE-LINE DIAGRAM

NTS



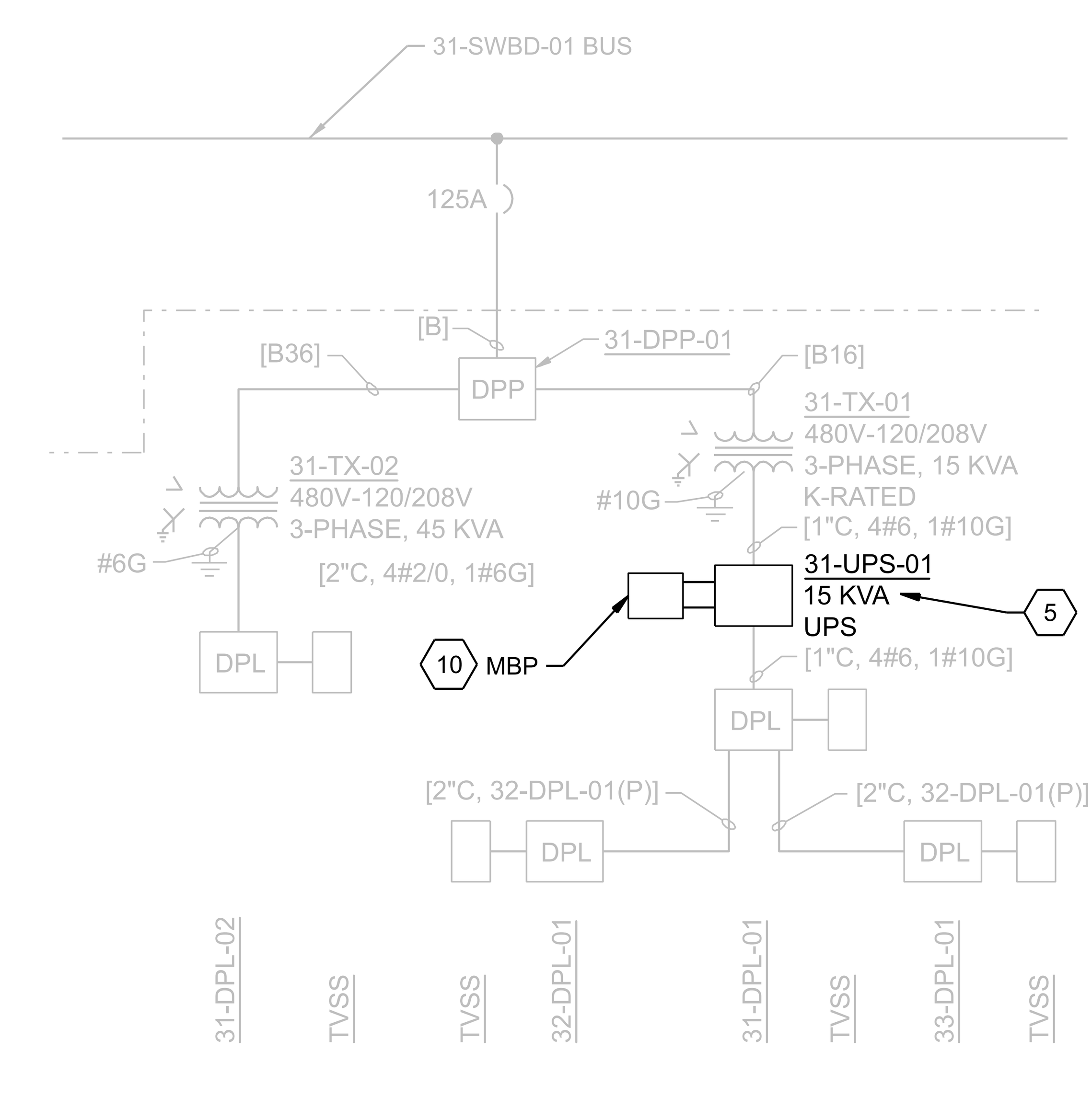
3 OZONE DESTRUCT MCC ONE-LINE DIAGRAM

NTS



1 OZONE GENERATOR MCC ONE-LINE DIAGRAM

NTS



4 PARTIAL SWITCHBOARD 31-SWBD-01 ONE LINE DIAGRAM

NTS

SHEET KEYNOTES

1. PROVIDE NEW REPLACEMENT BUCKETS WITH ALL NEW INTERNALS FOR THE SIEMENS MCC ENCLOSURES THAT WILL REMAIN IN PLACE. COMMUNICTION PROTOCOL SHALL BE UPGRADED FROM PROFIBUS TO PROFINET. COORDINATE WORK WITH S&B INC WHO WIL BE PROVIDING WIRING DIAGRAMS FOR THE BUCKETS.
2. REPLACE THE CIRCUIT BREAKER WITH NEW SIEMENS EQUIVALENT.
3. PUMP IS BEING DEMOLISHED. REBUILD AS SPARE.
4. PERFORM ARC FLASH ANALYSIS AND PROTECTIVE DEVICE COORDINATION STUDY AND PROVIDE NEW LABELS FOR ALL DISTRIBUTION EQUIPMENT. TYP.
5. REPLACE UPS.
6. REPLACE TVSS.
7. REPLACE 7.5HP SIZE 1 STARTER WITH 25HP SIZE 2 STARTER. REPLACE CONDUCTORS WITH 3 #6, #10G.
8. REPLACE 7.5HP SIZE 1 STARTER WITH 15HP SIZE 2 STARTER. REPLACE CONDUCTORS WITH 3 #10, #12G IF NOT AT THIS SIZE OR LARGER.
9. FIELD VERIFY SIZE.
10. PROVIDE WALL-MOUNTED MAINTENANCE BYPASS SWITCH AS PART OF THE UPS REPLACEMENT.

J. ANDERSON — STATE OF WASHINGTON — 41040 — REGISTERED PROFESSIONAL ENGINEER — DALLAS — 12/1/25

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
D ANDERSON	J GARIBAY	D WAGNER	J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

ELECTRICAL
MCC UPGRADE
ONE-LINE DIAGRAMS

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	09-E-601
SHEET	54

CONSTRUCTION DOCUMENTS

FILENAME: 09-E-601_D3885700.dgn PLOT DATE: 3-DEC-2025 PLOT TIME: 03:24

GENERAL SHEET NOTES

1. EXISTING CIRCUITS DENOTED WITH "(e)" AND ALL SPARES ARE EXISTING. ALL OTHERS ARE NEW.

INSTRUMENTATION AND CONTROLS CONDUCTOR AND RACEWAY SCHEDULE

Tag No.	Description	CONDUIT QUANTITY	CONDUIT SIZE	CONDUCTORS POWER	CONDUCTORS DISCRETE	CONDUCTORS ANALOG	P&ID	Status
LIT-35111	LOX Tank 1 level transmitter						08-I-101	Replace
PIT-35111	LOX Tank 1 pressure transmitter						08-I-101	Replace
PSH-35111	LOX Tank 1 pressure switch - high						08-I-101	Replace
LIT-35112	LOX Tank 2 Level Transmitter						08-I-101	Replace
PIT-35112	LOX Tank 2 Pressure Transmitter						08-I-101	Replace
PSH-35112	LOX Tank 2 Pressure Switch - High						08-I-101	Replace
TE-35321 TIT-35321	GOX Temperature Element, Well and Transmitter						08-I-101	Replace
PDIT-35421	GOX Differential Pressure (particulate filter)						08-I-101	Replace
PIT-35511	GOX Feed to Generator Pressure						08-I-101	Replace
FE-31251 FIT-31251	Ozone Generator 1 Cooling Water Supply Flowrate						08-I-102	Replace
PIT-31131	Ozone Generator 1 GOX Pressure Transmitter						08-I-102	Replace
TE-31161 TIT-31161	Ozone Generator 1 Ozone						08-I-102	Replace
TE-31261 TIT-31261	Ozone Generator 1 Cooling Water Return Temperature						08-I-102	Replace
FE-31252 FIT-31252	Ozone Generator 2 Cooling Water Supply Flowrate						08-I-102	Replace
PIT-31132	Ozone Generator 2 GOX pressure transmitter						08-I-102	Replace
TE-31162 TIT-31162	Ozone Generator 2 Ozone Temperature						08-I-102	Replace
TE-31262 TIT-31262	Ozone Generator 2 Cooling Water Return Temperature						08-I-102	Replace
FE-31271 FIT-31271	Power Supply Unit 1 Cooling Water Flowrate						08-I-102	Replace
FE-31272 FIT-31272	Power Supply Unit 2 Cooling Water Flowrate						08-I-102	Replace
AE-31011 AIT-31011	Ambient oxygen						08-I-102	Replace
AE-31021 AIT-31021	Ambient ozone						08-I-102	Replace
TE-31571 TIT-31571	Nitrogen Boost Temperature Element, Well and Transmitter						08-I-103	Replace
PIT-31541	Nitrogen Discharge Pressure						08-I-103	Replace
PSL-31521	Air Receiver Tank Pressure Switch Low						08-I-103	Replace
TSH-31521	Air Receiver Tank Temperature Switch High						08-I-103	Replace
TE-31321 TIT-31321	Open Loop CWS Pump 1 Temperature						08-I-104	Replace
TE-31322 TIT-31322	Open Loop CWS Pump 2 Temperature						08-I-104	Replace
TIT-31323	Open Loop CWS Pump 3 Temperature						08-I-104	Replace
DPSH-31301	Raw Water Strainer 1 Differential Pressure Switch						08-I-104	Replace
DPIT-31301	Raw Water Strainer 1 Differential Pressure Transmitter	1	3/4			2 #16 TSP	08-I-104	New
FI/FSL-31341	Heat Exchanger 1 CWS Flow Indicator						08-I-104	Replace
LSL-31481	Expansion Tank 1 Level Switch Low						08-I-104	Replace
TE-31421 TIT-31421	Coolant Water Pump 1 GCWS Temperature						08-I-104	Replace
DPSH-31302	Raw Water Strainer 2 Differential Pressure Switch						08-I-104	Demo
DPIT-31302	Raw Water Strainer 2 Differential Pressure Transmitter	1	3/4			2 #16 TSP	08-I-104	New
FI/FSL-31342	Heat Exchanger 2 CWS Flow Indicator						08-I-104	Replace
LSL-31482	Expansion Tank 2 Level Switch Low						08-I-104	Replace
TE-31422 TIT-31422	Coolant Water Pump 2 GCWS Temperature						08-I-104	Replace
LSH-31041	Cooling Water Drain Sump Level Switch High						08-I-104	Replace
PE-32121A PI-32121	Ozone to R1 Injector Pressure 1						08-I-105	Replace
PE-32121B PSL-32121	Ozone to R1 Injector Pressure Switch Low 1						08-I-105	Replace
PE-32122B PSL-32122	Ozone to R1 Injector Pressure Switch Low 2						08-I-105	Replace
PSL-32131B	R1 Injector Pump 1 Discharge Pressure Switch Low						08-I-105	Replace
PSL-32132B	R1 Injector Pump 2 Discharge Pressure Switch Low						08-I-105	Replace
PI-32133A	R1 Injector Pump 3 Feed Pressure						08-I-105	Replace
PSL-32133B	R1 Injector Pump 3 Discharge Pressure Switch Low						08-I-105	Replace
FE-32151 FIT-32151	R1 Sidestream Injector 1 Flowrate						08-I-105	Replace
LSH-32141	Ozone to R1 Liquid Separator 1 Level Switch High						08-I-105	Replace
FE-32152 FIT-32152	R1 Sidestream Injector 2 Flowrate						08-I-105	Replace
LSH-32142	Ozone to R1 Liquid Separator 2 Level Switch High						08-I-105	Replace
AE-32011 AIT-32011	Ambient Oxygen Analyzer						08-I-106	Replace
AE-32021 AIT-32021	Ambient Ozone Analyzer						08-I-106	Replace
PE-32521B PSL-32521	Ozone to R5 Injector Pressure Switch Low 1						08-I-106	Replace
PE-32522A PI-32522	OZONE TO R5 INJECTOR PRESSURE 2						08-I-106	Replace
PE-32522B PSL-32522	Ozone to R5 Injector Pressure Switch Low 2						08-I-106	Replace
PSL-32531B	R5 Injector Pump 1 Discharge Pressure Switch Low						08-I-106	Replace
PSL-32532B	R5 Injector Pump 2 Discharge Pressure Switch Low						08-I-106	Replace
PSL-32533B	R5 Injector Pump 3 Discharge Pressure Switch Low						08-I-106	Replace
FE-32551 FIT-32551	R5 Sidestream Injector 1 Flowrate						08-I-106	Replace
LSH-32541	R5 Ozone Liquid Separator 1 Level Switch High						08-I-106	Replace
FE-32552 FIT-32552	R5 Sidestream Injector 2 Flowrate						08-I-106	Replace
LSH-32542	R5 Ozone Liquid Separator 2 Level Switch High						08-I-106	Replace
PDI-33511	Demister 1 Differential Pressure						08-I-107	Replace
PDI-33512	Demister 2 Differential Pressure						08-I-107	Replace
AE-33411 AIT-33411	Ambient Oxygen Analyzer						08-I-108	Replace
AE-33421 AIT-33421	Ambient Ozone Analyzer						08-I-108	Replace
LSH-33011	Off-Gas Destruction Drain Sump Level Switch High						08-I-108	Replace
TSH-33241	RST	1	3/4		2 #14, #14G		08-I-108	New
ES-33001	GLB-ES LOC-ES	1	3/4		4 #14, #14G		08-I-108	New
FE-26241 FIT-26241	Sodium Bisulfite Flow 1						08-I-110	Replace
FE-26242 FIT-26242	Sodium Bisulfite Flow 2						08-I-110	Replace
AE-36121 AIT-36121	Sample Station 1 R1 Ozone Residual						08-I-112	Replace
FE-36131A FIT-36131A	Sample Station 1 R1 Ozone Residual Flowmeter						08-I-112	New
AE-36521 AIT-36521	Sample Station 1 R5 Ozone Residual						08-I-112	Replace
FE-36531A FIT-36531A	Sample Station 1 R5 Ozone Residual Flowmeter	1	3/4			2 #16 TSP	08-I-112	New
DPSH-36111	Sample Station 1 R1 Strainer Differential Pressure						08-I-112	Replace
DPSH-36511	Sample Station 1 R5 Strainer Differential Pressure						08-I-112	Replace
AE-36122 AIT-36122	Sample Station 2 R1 Ozone Residual						08-I-113	Replace
FE-36132A FIT-36132A	Sample Station 2 R1 Ozone Residual Flowmeter	1	3/4			2 #16 TSP	08-I-113	New
AE-36522 AIT-36522	Sample Station 2 R5 Ozone Residual						08-I-113	Replace
FE-36532A FIT-36532A	Sample Station 2 R5 Ozone Residual Flowmeter	1	3/4			2 #16 TSP	08-I-113	New
DPSH-36112	Sample Station 2 R1 Strainer Differential Pressure						08-I-113	Replace
DPSH-36512	Sample Station 2 R5 Strainer Differential Pressure						08-I-113	Replace
AE-36123 AIT-36123	Sample Station 3 R1 Ozone Residual						08-I-114	Replace
FE-36133A FIT-36133A	Sample Station 3 R1 Ozone Residual Flowmeter	1	3/4			2 #16 TSP	08-I-114	New
AE-36523 AIT-36523	Sample Station 3 R5 Ozone Residual						08-I-114	Replace
FE-36533A FIT-36533A	Sample Station 3 R5 Ozone Residual Flowmeter	1	3/4			2 #16 TSP	08-I-114	New
DPSH-36113	Sample Station 3 R1 Strainer Differential Pressure						08-I-114	Replace
DPSH-36513	Sample Station 3 R5 Strainer Differential Pressure						08-I-114	Replace
AE-36124 AIT-36124	Sample Station 4 R1 Ozone Residual						08-I-115	Replace
FE-36134A FIT-36134A	Sample Station 4 R1 Ozone Residual Flowmeter	1	3/4			2 #16 TSP	08-I-115	New
AE-36524 AIT-36524	Sample Station 4 R5 Ozone Residual						08-I-115	Replace
FE-36534A FIT-36534A	Sample Station 4 R5 Ozone Residual Flowmeter	1	3/4			2 #16 TSP	08-I-115	New
DPSH-36114	Sample Station 4 R1 Strainer Differential Pressure						08-I-115	Replace
	COMM-32000 Scalance Switch to Headworks PLC-11000A, PLC-11000B(New Headworks Building Panel)	1	1		(2) CAT6		08-I-201	New
	Headworks PLC-11000A, PLC-11000B to Cabinet A	1	1		(2) RS-485		08-I-201	New
	New Headworks Building Panel Scalance Swith to Cabinet A	1	1		(4) Fiber		08-I-201	New
	Ozone COMM-31000 to CP-31000	2	1		(7) CAT6		08-I-203	New
	Ozone COMM-31000 to Ozone UPS	1	1		CAT6		08-I-203	New
	Ozone COMM-31000 to Ozone Generator CP-31001	1	1		CAT6		08-I-203	New
	Ozone COMM-31000 to Ozone Generator CP-31002	1	1		CAT6		08-I-203	New
	Ozone COMM-31000 to Ozone 31-MCC-01	1	1		CAT6		08-I-203	New
	Ozone Generator COMM-31000 to CP-33001	1	1		CAT6		08-I-203	New
	Ozone Generator COMM-31000 to CP-33002	1	1		CAT6		08-I-203	New
	Ozone Generator COMM-31000 to 33-MCC-01	1	1		CAT6		08-I-203	New
	Ozone Injector COMM-32000 to CP-32000	2	1		(5) CAT6		08-I-203	New
	Ozone Injector COMM-32000 to 32-MCC-01	1	1		CAT6		08-I-203	New
	Ozone Destruct COMM-33000 to CP-33001	1	1		CAT6		08-I-203	New
	Ozone Destruct COMM-33000 to CP-33002	1	1		CAT6		08-I-203	New
	Ozone Destruct COMM-33000 to 33-MCC-01	1	1		(3) CAT6		08-I-203	New
ZS-32054	Roll-up Door Switch							Replace
ZS-32055	Roll-up Door Switch							Replace

INSTRUMENTATION AND CONTROLS CONDUCTOR AND RACEWAY SCHEDULE

NTS

EXISTING — 31-DPL-01

VOLTS: 208V 3-PHASE 4-WIRE — LOCATION:
BUS AMPS: 125A — MOUNTNG: SURFACE
MCB OR MLO: 60 A MCB — FED FROM: 31-UPS-01
AIC RATING: 22k — NEMA: 1

		DESCRIPTION	CB A/P	kVA	A	B	C	kVA	CB A/P	DESCRIPTION		
					LOAD kVA							
C	1	(e)AIT31011, AIT31021	20/1	0.050	0.45			0.400	30/3	(e)PANEL 32-DPL-01	2	D
C	3	(e)AIT35531	20/1	0.025		1.20		1.175	-		4	D
C	5	(e)AIT31061	20/1	0.025			1.08	1.050	-		6	D
N	7	(e)COMM-31000	20/1	1.000	2.08			1.075	30/3	(e)PANEL 33-DPL-01	8	D
N	9	(e)WORKSTATION	20/1	0.300		1.38		1.075	-		10	D
N	11	(e)LP-35220	20/1	0.500			1.53	1.025	-		12	D
C	13	(e)NFW CAMERA	20/1	0.100	0.60			0.500	15/1	(e)TJB31411, 412	14	N
N	15	(e)NFLO RECEPTACLE	20/1	0.500		0.50			15/1	SPARE	16	
N	17	(e)CP31000	20/1	1.000			1.00		20/1	SPARE	18	N
		CONNECTED kVA			3.13	3.08	3.60	CONNECTED kVA PER PHASE				

0.00	RECEPTACLE	50%>10K	0.00	R	PHASE BALANCE A	96	%
0.00	LIGHTING	100%	0.00	L	PHASE BALANCE B	94	%
0.68	CONTINUOUS	125%	0.84	C	PHASE BALANCE C	109	%
9.13	NON-CONTINUOUS, HVAC, CYCLING, MOTORS	100%	9.13	N			
0.00	LARGEST MOTOR	125%	0.00	LM	BUS LOADING A	45	%
0.00	MOTORS EXCLUDING LARGEST	100%	0.00	M	BUS LOADING B	44	%
0.00	NON-COINCIDENTAL	0%	0.00	NC	9.80 CONNECTED kVA — BUS LOADING C	50	%
0.00	HEATING ONLY	0% IF< CO, 100%	0.00	HO			
0.00	COOLING ONLY	0% IF< HO, 100%	0.00	CO			
			9.97	DEMAND kVA			
	DIVERSIFIED (MIXED LOADS PER NEC INCLUDED ABOVE)		28	AMPS AT 208/120 VOLTS			

EXISTING — 32-DPL-01

VOLTS: 208V 3-PHASE 4-WIRE — LOCATION:
BUS AMPS: 250A — MOUNTNG: SURFACE
MCB OR MLO: 30 A MLO — FED FROM: 31-DPL-01
AIC RATING: 22k — NEMA: 1

		DESCRIPTION	CB A/P	kVA	A	B	C	kVA	CB A/P	DESCRIPTION		
					LOAD kVA							
C	1	(e)FIT32111, FIT32112	15/1	0.050	0.08			0.025	15/1	(e)INSTR. AT INJ32541	2	C
C	3	(e)FIT32511, FIT32512	15/1	0.050		0.08		0.025	15/1	(e)INSTR. AT INJ32542	4	C
C	5	(e)INSTR. AT INJ32141	15/1	0.025			0.05	0.025	15/1	(e)INSTR. AT INJ32543	6	C
C	7	(e)INSTR. AT INJ32142	15/1	0.025	0.33			0.300	20/1	(e)SCADA WORKSTATION	8	N
C	9	(e)INSTR. AT INJ32143	15/1	0.025		0.08		0.050	15/1	(e)AIT32011, AIT32021	10	C
N	11	(e)COMM-32000	20/1	1.000			1.00		15/1	SPARE	12	
	13	SPARE	15/1		0.00				15/1	SPARE	14	
N	15	(e)SECURITY DOOR ACCESS	20/1	0.025		1.03		1.000	20/1	CP-11000	16	N
	17	SPACE					0.00			SPACE	18	
		CONNECTED kVA			0.40	1.18	1.05	CONNECTED kVA PER PHASE				

0.00	RECEPTACLE	50%>10K	0.00	R	PHASE BALANCE A	47	%
0.00	LIGHTING	100%	0.00	L	PHASE BALANCE B	135	%
0.30	CONTINUOUS	125%	0.38	C	PHASE BALANCE C	118	%
2.33	NON-CONTINUOUS, HVAC, CYCLING	100%	2.33	N			
0.00	LARGEST MOTOR	125%	0.00	LM	BUS LOADING A	12	%
0.00	MOTORS EXCLUDING LARGEST	100%	0.00	M	BUS LOADING B	34	%
0.00	NON-COINCIDENTAL	0%	0.00	NC	2.63 CONNECTED kVA — BUS LOADING C	30	%
0.00	HEATING ONLY	0% IF< CO, 100%	0.00	HO			
0.00	COOLING ONLY	0% IF< HO, 100%	0.00	CO			
			2.70	DEMAND kVA			
	DIVERSIFIED (MIXED LOADS PER NEC INCLUDED ABOVE)		8	AMPS AT 208/120 VOLTS			

EXISTING — 33-DPL-01

VOLTS: 208V 3-PHASE 4-WIRE — LOCATION:
BUS AMPS: 250A — MOUNTNG: SURFACE
MCB OR MLO: 30 A MLO — FED FROM: 31-DPL-01
AIC RATING: 22k — NEMA: 1

		DESCRIPTION	CB A/P	kVA	A	B	C	kVA	CB A/P	DESCRIPTION		
					LOAD kVA							
C	1	(e)AIT33421	15/1	0.050	0.08			0.025	15/1	(e)INSTR. AT INJ32541	2	C
C	3	(e)AIT33111	15/1	0.050		0.08		0.025	15/1	(e)INSTR. AT INJ32542	4	C
	5	SPARE	15/1				0.03	0.025	15/1	(e)INSTR. AT INJ32543	6	C
	7	SPARE	15/1		0.00				20/1	SPARE	8	
	9	SPARE	15/1			1.00		1.000	20/1	(e)COMM-33000	10	N
	11	SPARE	15/1				1.00	1.000	20/1	CP33001	12	N
	13	SPARE	15/1		1.00			1.000	20/1	CP33002	14	N
	15	SPARE	20/1			0.00			15/1	SPARE	16	
	17	SPACE					0.00			SPACE	18	
		CONNECTED kVA			1.08	1.08	1.03	CONNECTED kVA PER PHASE				

0.00	RECEPTACLE	50%>10K	0.00	R	PHASE BALANCE A	102	%
0.00	LIGHTING	100%	0.00	L	PHASE BALANCE B	102	%
0.18	CONTINUOUS	125%	0.22	C	PHASE BALANCE C	96	%
3.00	NON-CONTINUOUS, HVAC, CYCLING	100%	3.00	N			
0.00	LARGEST MOTOR	125%	0.00	LM	BUS LOADING A	30	%
0.00	MOTORS EXCLUDING LARGEST	100%	0.00	M	BUS LOADING B	30	%
0.00	NON-COINCIDENTAL	0%	0.00	NC	3.18 CONNECTED kVA — BUS LOADING C	29	%
0.00	HEATING ONLY	0% IF< CO, 100%	0.00	HO			
0.00	COOLING ONLY	0% IF< HO, 100%	0.00	CO			
			3.22	DEMAND kVA			
	DIVERSIFIED (MIXED LOADS PER NEC INCLUDED ABOVE)		9	AMPS AT 208/120 VOLTS			

PANEL SCHEDULES

NTS

J. ANDERSON — STATE OF WASHINGTON — 41040 — REGISTERED PROFESSIONAL ENGINEER — 12/7/25

NO.	DATE	DSGN
		D ANDERSON
DR		J GARIBAY
CHK		D WAGNER
APVD	REVISION	J KENNEDY
BY	APVD	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

ELECTRICAL

SCHEDULES

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

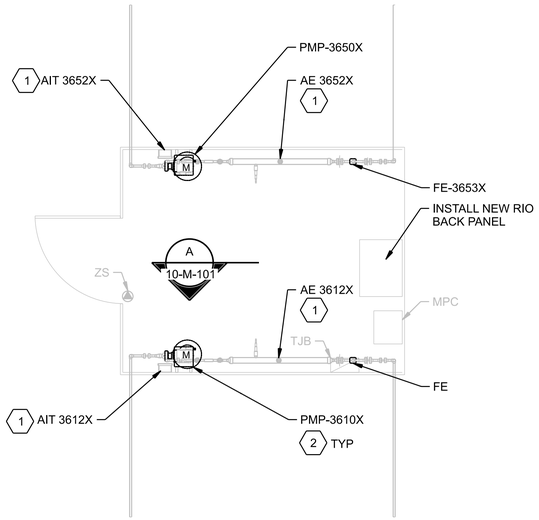
DATE	DECEMBER 2025
PROJ	D3885700
DWG	09-E-603
SHEET	55

CONSTRUCTION DOCUMENTS

FILENAME: 09-E-603_D3885700.dgn PLOT DATE: 8-DEC-2025 PLOT TIME: 03:55

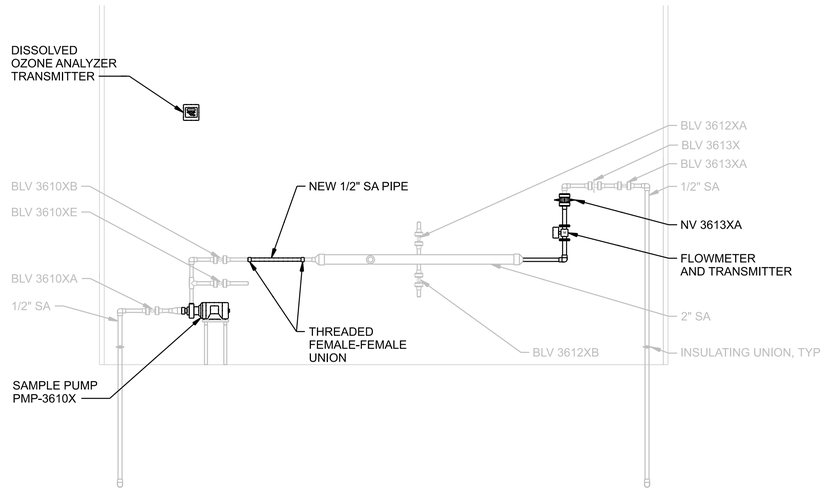
SHEET KEYNOTES

1. DISCONNECT, REPLACE, AND RECONNECT INSTRUMENT WITH NEW. SEE P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
2. WHERE TAG NUMBER SHOWS 'X', 'X' IS THE SAMPLE STATION NUMBER (2-4).



OZONE IN-LINE CONTACTOR AND SAMPLE STATION X PLAN (2)

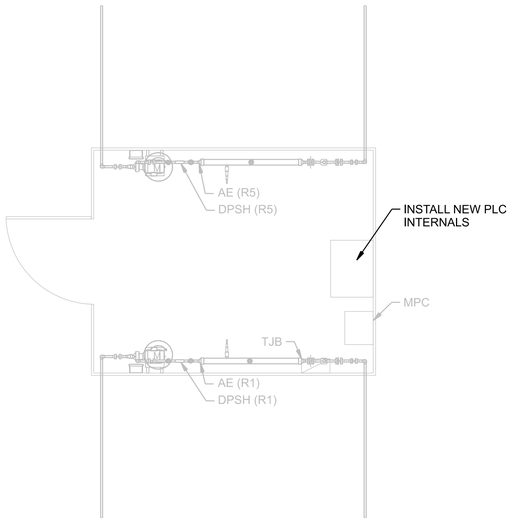
3/8"=1'-0"



A SECTION

3/4"=1'-0"

10-M-101



OZONE IN-LINE CONTACTOR AND SAMPLE STATION 5 PLAN

3/8"=1'-0"

NO.	DATE	DSGN	REVISION	CHK	APVD	BY
		T YOUNG	J.SETNIK	A.GAO	APVD	J.KENNEDY

CONSTRUCTION DOCUMENTS

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

IN-LINE OZONE CONTACTOR

PROCESS MECHANICAL SAMPLE STATION PLAN, SECTION AND DETAILS

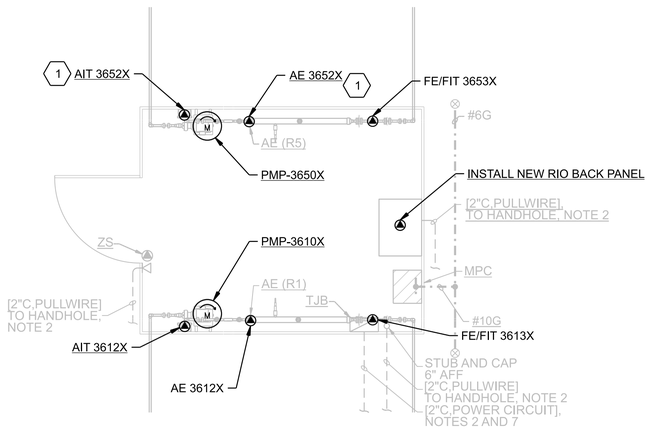
NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

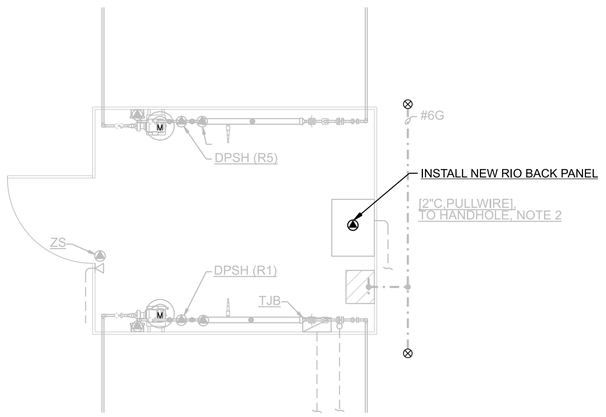
DATE	DECEMBER 2025
PROJ	D3885700
DWG	10-M-101
SHEET	56

FILENAME: 10-M-101_D3885700.dgn PLOT DATE: 25-NOV-2025 PLOT TIME: 03:48



OZONE IN-LINE CONTACTOR AND SAMPLE STATION X PLAN (2)

3/8"=1'-0"



OZONE IN-LINE CONTACTOR AND SAMPLE STATION 5 PLAN

3/8"=1'-0"

GENERAL NOTES

1. REPLACED INSTRUMENTS OR REPLACED EQUIPMENT SHALL HAVE CONDUCTORS REPLACED BACK TO THE SOURCE AS WELL IF FAILED TESTING. CONDUIT SHALL BE MANDRELED, SWABBED WITH A CLEAN CLOTH. CONDUITS NO LONGER BEING USED SHALL BE IDENTIFIED AS SPARE WITH ORIGIN AND DESTINATION INDICATED.

SHEET KEYNOTES

1. CONNECT REPLACEMENT INSTRUMENT. SEE P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
2. WHERE TAG NUMBER SHOWS 'X', 'X' IS THE SAMPLE STATION NUMBER (2-4).

J. ANDERSON
STATE OF WASHINGTON
21040
REGISTERED
PROFESSIONAL ENGINEER
12/7/25

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		D ANDERSON	J GARIBAY	D WAGNER	APVD	J KENNEDY	

CONSTRUCTION DOCUMENTS

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

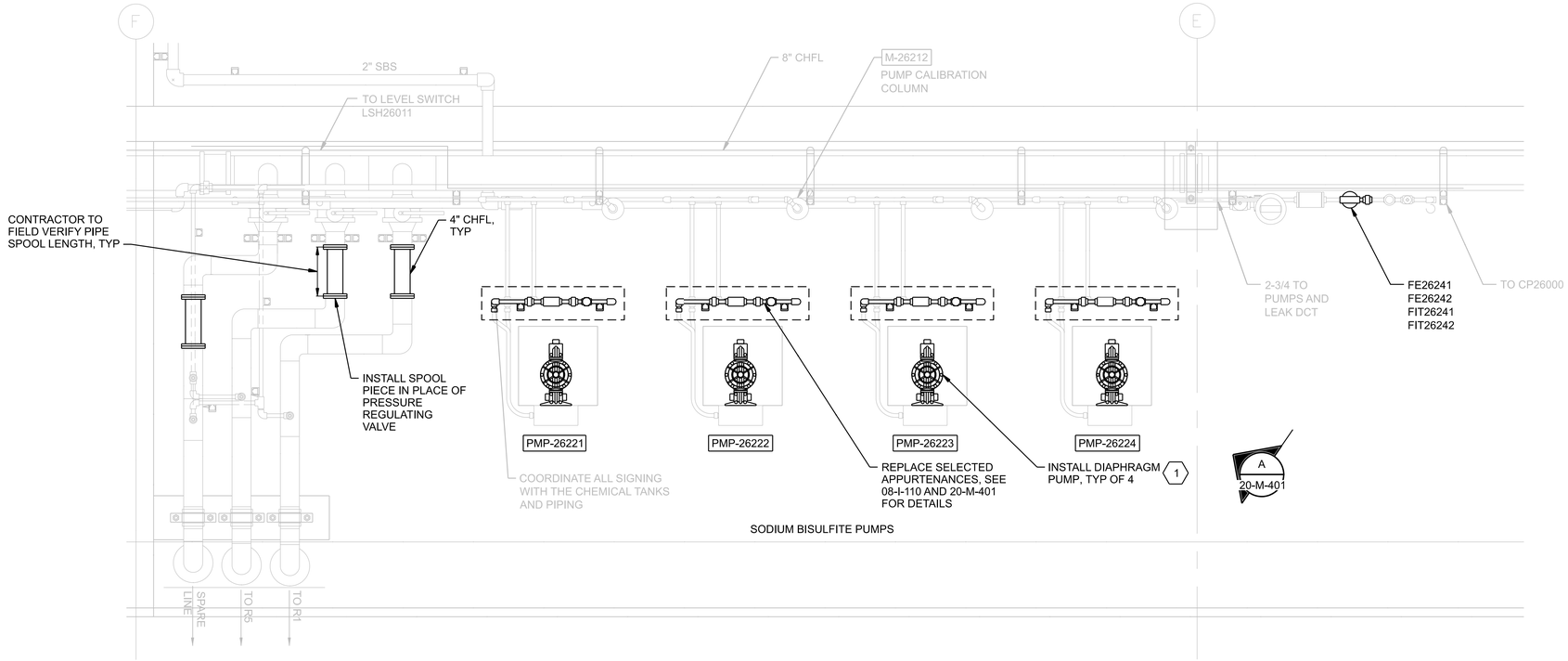
IN-LINE OZONE CONTACTOR
ELECTRICAL PLANS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	10-E-101
SHEET	57

SHEET KEYNOTES

1. MOUNT DIAPHRAGM PUMPS ON EXISTING CONCRETE PEDESTAL. SEE 44 44 13.01 SUPPLEMENT 01 AND SUPPLEMENT 02 FOR PUMP DETAILS.



SODIUM BISULFITE PUMPS PLAN

3/4"=1'-0"

NO.	DATE	DSGN	DR	CHK	APVD	BY
		T YOUNG	J SETNIK	A GAO	APVD	J KENNEDY

REVISION

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

SODIUM BISULFITE

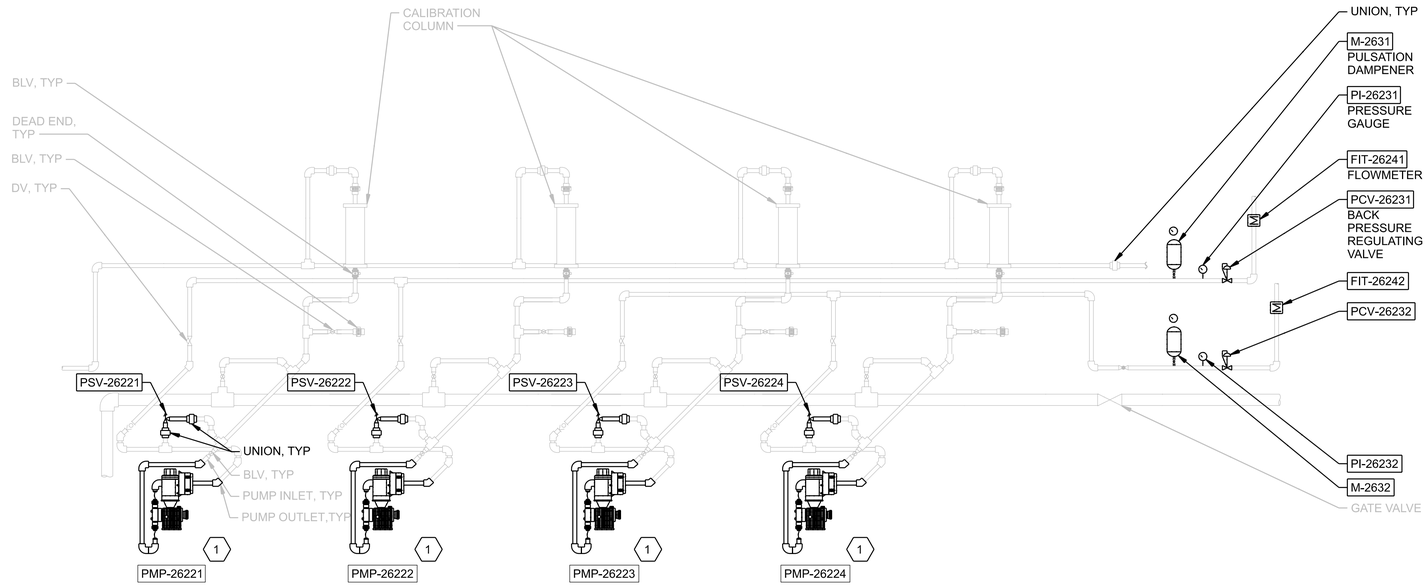
PROCESS MECHANICAL
SODIUM BISULFITE PUMPS PLAN

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	20-M-101
SHEET	58

FILENAME: 20-M-101_D3885700.dgn PLOT DATE: 25-NOV-2025 PLOT TIME: 03:47

SHEET KEYNOTES

1. MOUNT DIAPHRAGM PUMPS ON EXISTING CONCRETE PEDESTAL. SEE 44 44 13.01 SUPPLEMENT 01 AND SUPPLEMENT 02 FOR PUMP DETAILS.



A ISOMETRIC
NTS

20-M-101

NO.	DATE	DSGN	DR	CHK	APVD	BY
		T YOUNG	J.SETNIK	A.GAO	APVD	J.KENNEDY

REVISION

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

SODIUM BISULFITE

PROCESS MECHANICAL
SODIUM BISULFITE PUMPS DETAILS

NTS

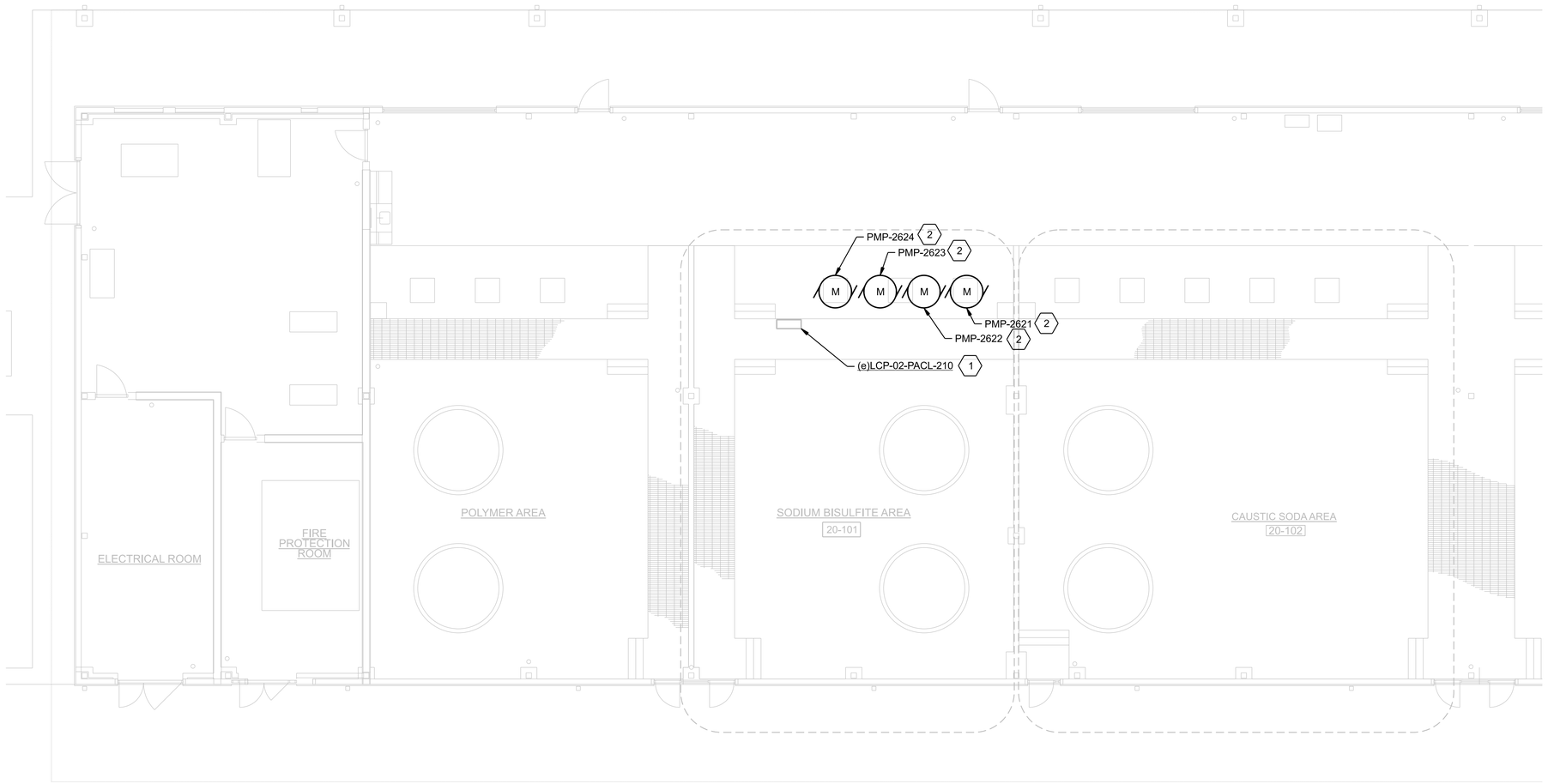
VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	20-M-401
SHEET	59

SHEET KEYNOTES

1. REPLACE TWO 1HP VFDs IN THE CONTROL PANEL, THAT POWER THE DIAPHRAGM PUMPS (PMP-2621, PMP-2622, PMP-2623, AND PMP-2624)
2. REMOVE CONNECTIONS TO EXISTING PUMP MOTOR AND RECONNECT TO REPLACEMENT PUMP MOTOR.



N

CHEMICAL AREA PLAN
1/8"=1'-0"

J. ANDERSON — STATE OF WASHINGTON — 41040 — REGISTERED PROFESSIONAL ENGINEER — 12/7/25

NO.	DATE	DR	REVISION	CHK	APVD
DSGN	D ANDERSON	J GARIBAY		D WAGNER	J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

SODIUM BISULFITE AND CAUSTIC SODA
ELECTRICAL
CHEMICAL AREA PLAN

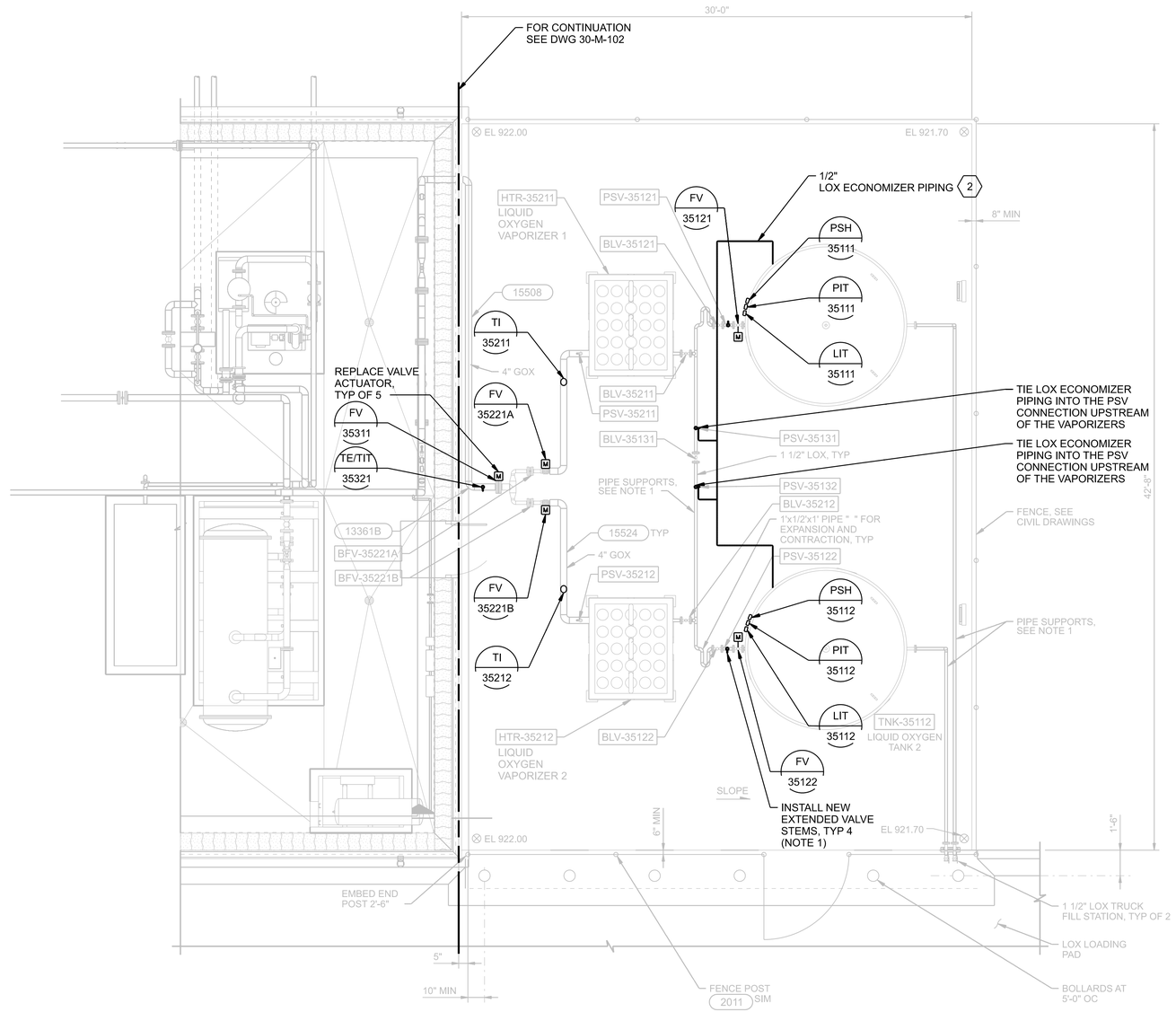
CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ADJUST SCALE ACCORDINGLY	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	20-E-101
SHEET	60

FILENAME: 20-E-101_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 10:14

GENERAL SHEET NOTES

1. INSTALL ALL NEW PIPING INSULATION ON LOX PIPING. CONTRACTOR TO CONFIRM THAT EXISTING PIPE SUPPORTS ARE COMPATIBLE WITH THE REPLACEMENT PIPING INSULATION.
2. REPLACE PIPING DOWNSTREAM OF ISOLATION VALVE ASSOCIATED WITH VAPOR DISCHARGE OF ECONOMIZER.



LOX AREA PLAN

1/4"=1'-0"

NO.	DATE	REVISION	BY	APVD
DSGN	T YOUNG	DR J.SETNIK	CHK A.GAO	APVD J.KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OZONE GENERATOR BUILDING
PROCESS MECHANICAL
LOX AREA PLAN

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	30-M-101
SHEET	61

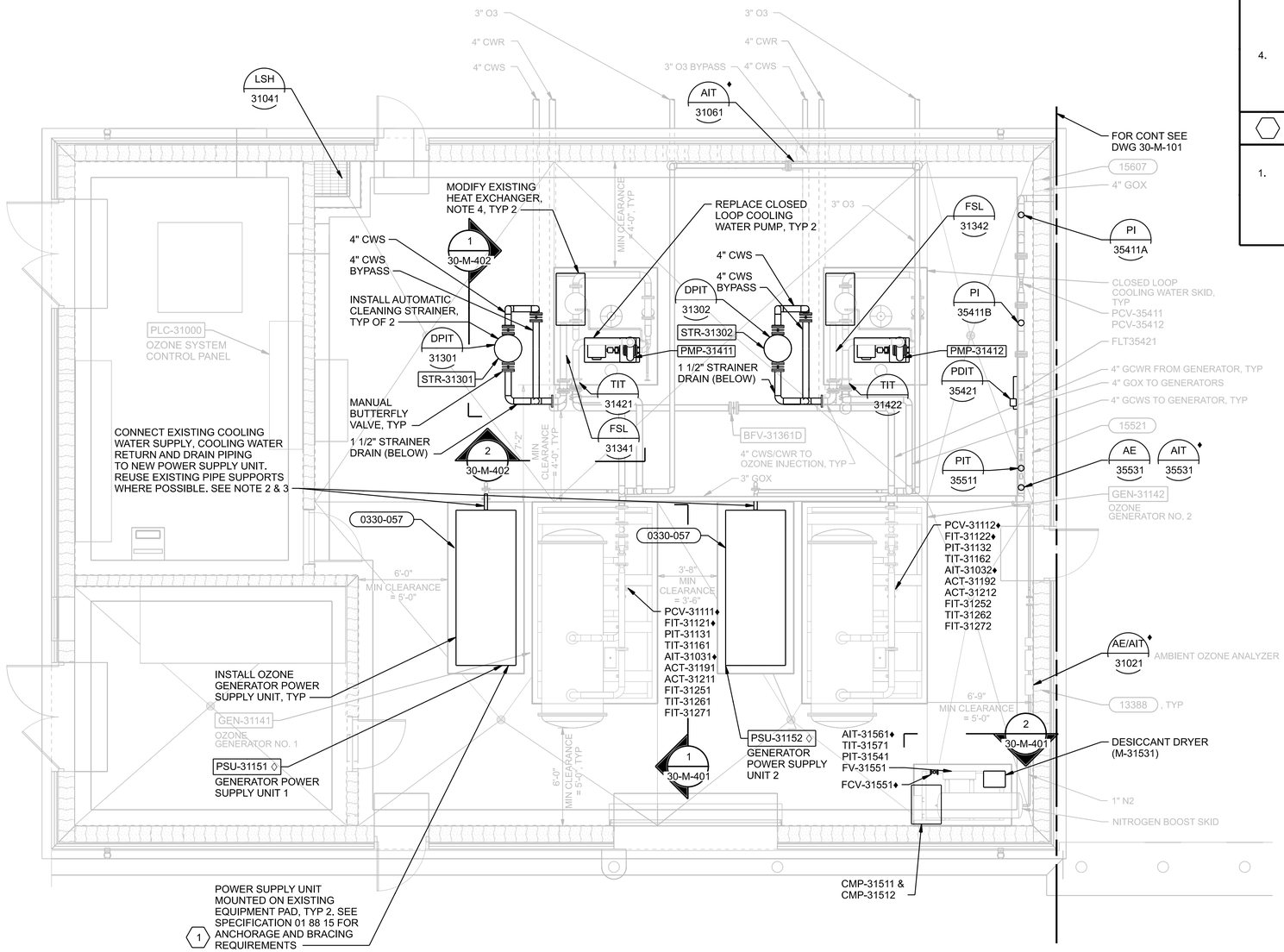
CONSTRUCTION DOCUMENTS

GENERAL SHEET NOTES

1. TAG NUMBERS FOR SKID-MOUNTED EQUIPMENT ARE SHOWN ON P&IDS.
2. REPLACE ALL PIPE INSULATION THAT IS REMOVED FOR THE POWER SUPPLY UNIT REPLACEMENT. SEE SPECIFICATION 40 42 13.
3. CONTRACTOR TO REUSE EXISTING PIPING CONNECTION WHERE POSSIBLE. CONTRACTOR TO PROVIDE ANY THREADED 1-1/2" CARBON STEEL PIPING REQUIRED TO CONNECT TO THE REPLACEMENT POWER SUPPLY UNIT TO THE COOLANT WATER SYSTEM IF THE CONNECTIONS POINTS ARE IN A DIFFERENT GEOMETRY THAN THE ORIGINAL POWER SUPPLY UNIT.
4. CONTRACTOR TO CLEAN EXISTING HEAT EXCHANGER PLATES AND INSTALL NEW PLATES TO ACHIEVE A HEAT TRANSFER RATE OF 740,000 BTU/HR.

SHEET KEYNOTES

1. MOUNT PSU WITH 4" CLEARANCE TO TOP AND BOTTOM IN ORDER TO CENTER THE NEW PSU ON THE EXISITNG PAD. MOUNT PSU WITH A SIDE CLEARANCE OF 9" TO MAINTAIN >3" SEPERATION BETWEEN EXISITNG ANCHORS AND NEW ANCHORS.



N

PLAN

1/4"=1'-0"

NO.	DATE	DSGN	REVISION	BY	APVD
		T YOUNG	J SETNIK	DR	A GAO
			CHK		APVD
					J KENNEDY

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

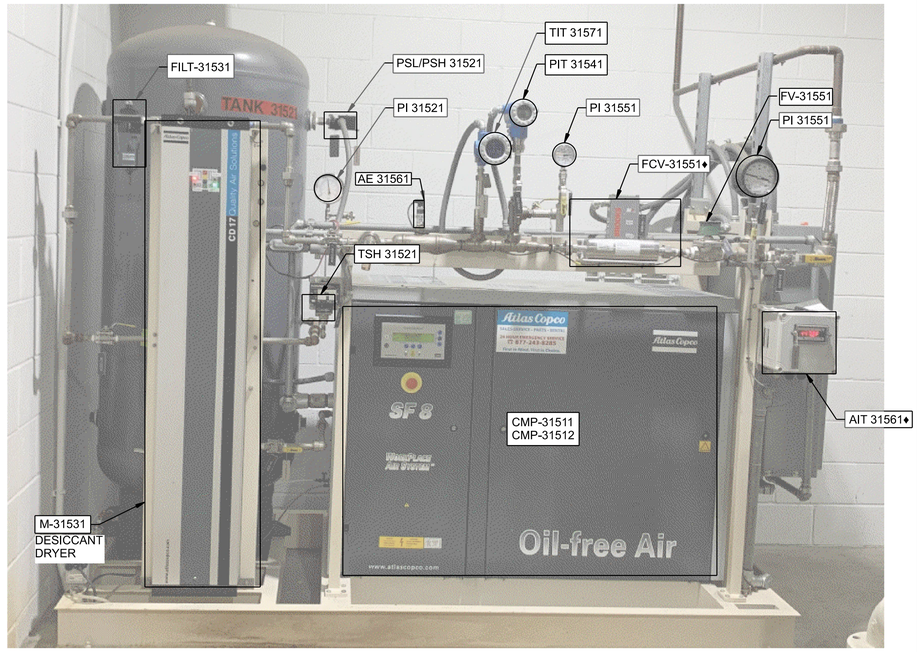
Jacobs

OZONE GENERATOR BUILDING
PROCESS MECHANICAL
OZONE GENERATOR BUILDING PLAN

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	30-M-102
SHEET	62

1 PHOTO DETAIL
NTS
30-M-102



2 PHOTO DETAIL
NTS
30-M-102

NO.	DATE	DSGN	REVISION	CHK	APVD	BY	APVD
		T YOUNG	J.SETNIK	A.GAO	J.KENNEDY	J.KENNEDY	

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

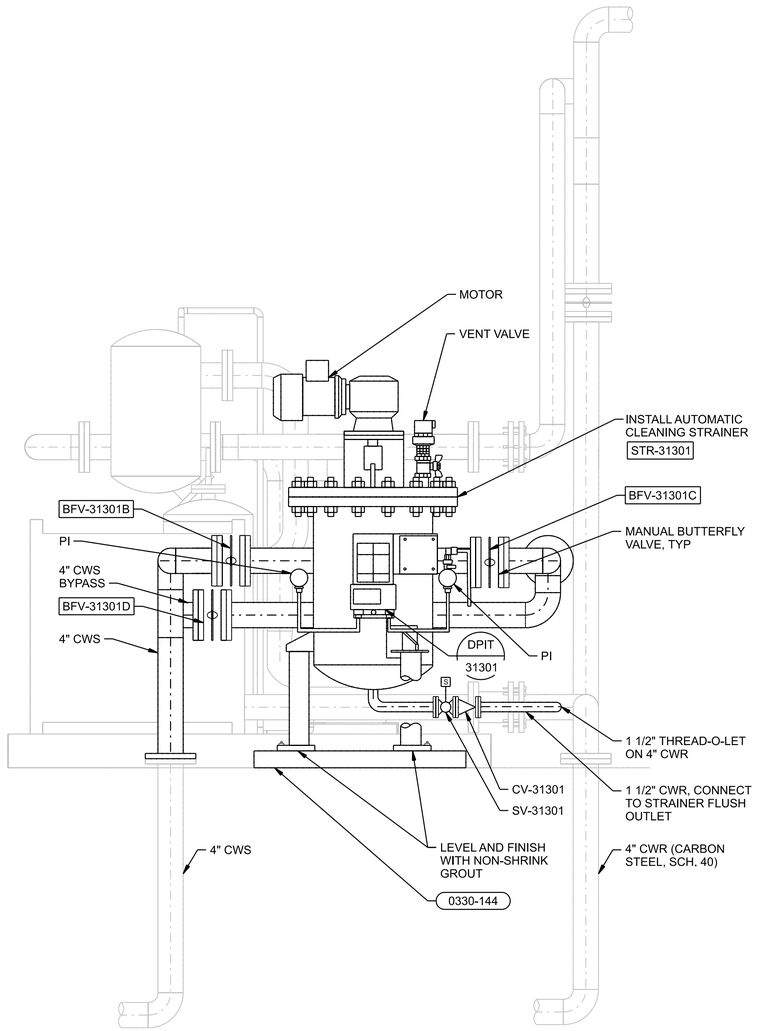
OZONE GENERATOR BUILDING
PROCESS MECHANICAL
OZONE GENERATOR BUILDING DETAILS

CONSTRUCTION DOCUMENTS

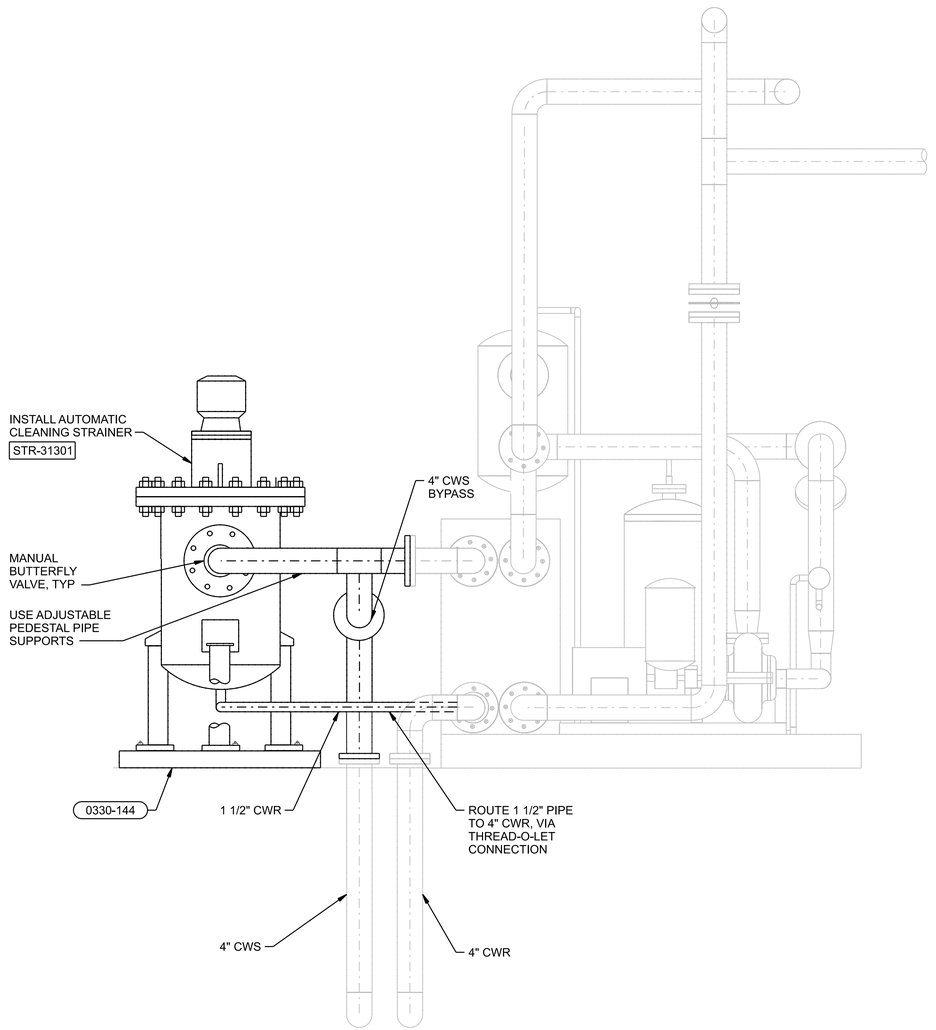
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	30-M-401
SHEET	63

FILENAME: 30-M-401_D3885700.dgn PLOT DATE: 25-NOV-2025 PLOT TIME: 03:46



A SECTION
1"=1' - 0"
30-M-102



B SECTION
1"=1' - 0"
30-M-102

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		T YOUNG	J.SETNIK	A.GAO	APVD	J.KENNEDY	

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OZONE GENERATOR BUILDING
PROCESS MECHANICAL SECTIONS

CONSTRUCTION DOCUMENTS

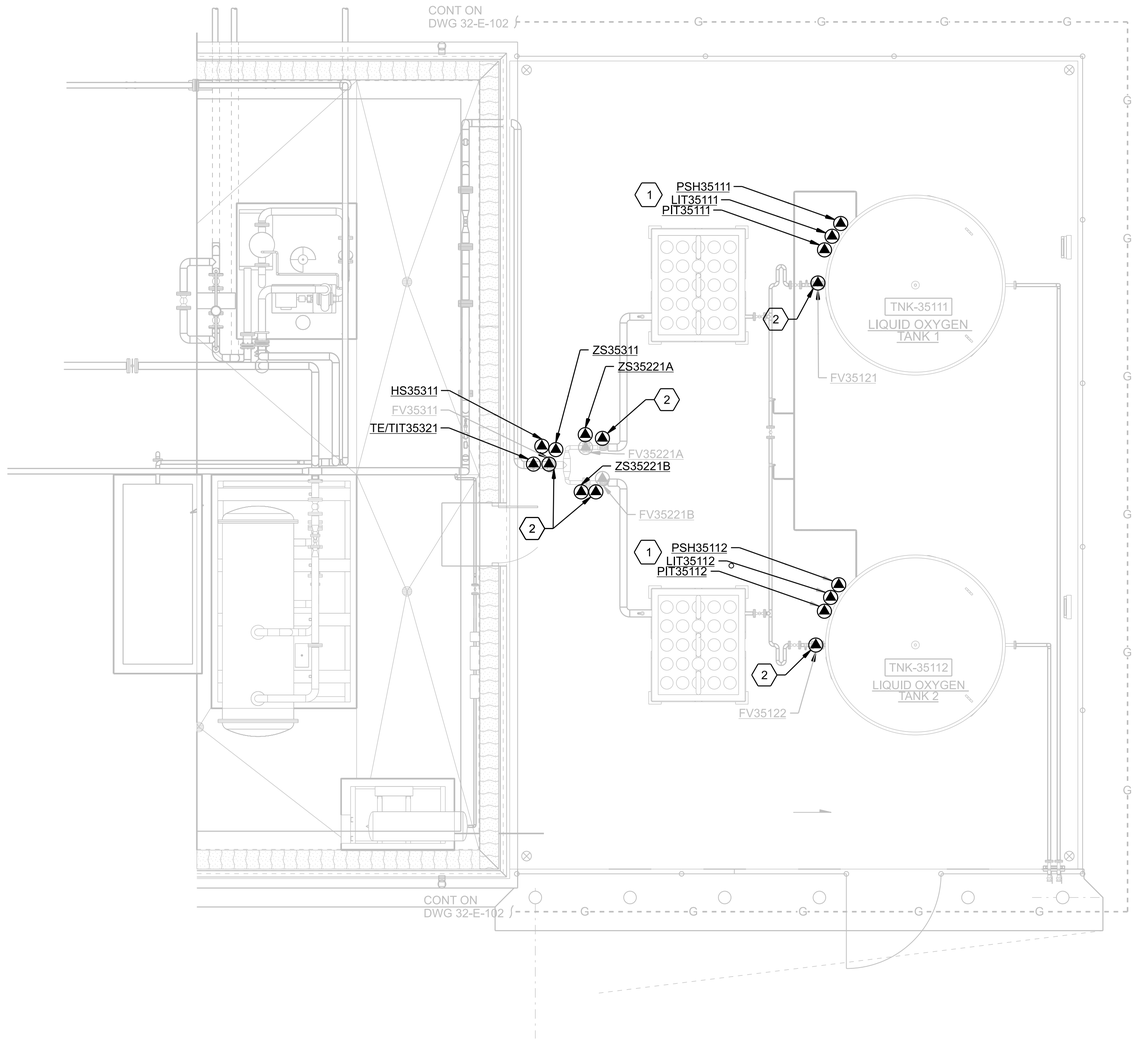
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	30-M-402
SHEET	64

FILENAME: 30-M-402_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 08:41

SHEET KEYNOTES

1. CONNECT REPLACEMENT INSTRUMENT. SEE P&I DRAWINGS FOR ADDITIONAL REQUIREMENTS. SEE SPECIFICATIONS FOR TESTING EXISTING CONDUCTORS AND CONDUITS FOR REUSE OR REPLACEMENT.
2. REMOVE CONNECTIONS TO EXISTING VALVE ACTUATOR AND RECONNECT TO REPLACEMENT ACTUATOR. SEE RACEWAY SCHEDULE FOR CONDUCTORS AND CONDUIT REQUIREMENTS.



LOX AREA PLAN

1/4"=1'-0"

J. ANDERSON — STATE OF WASHINGTON — 21641 — REGISTERED PROFESSIONAL ENGINEER — 12/7/25

NO.	DATE	REVISION	BY	APVD
DSGN	D ANDERSON	DR J GARIBAY	CHK D WAGNER	APVD J KENNEDY

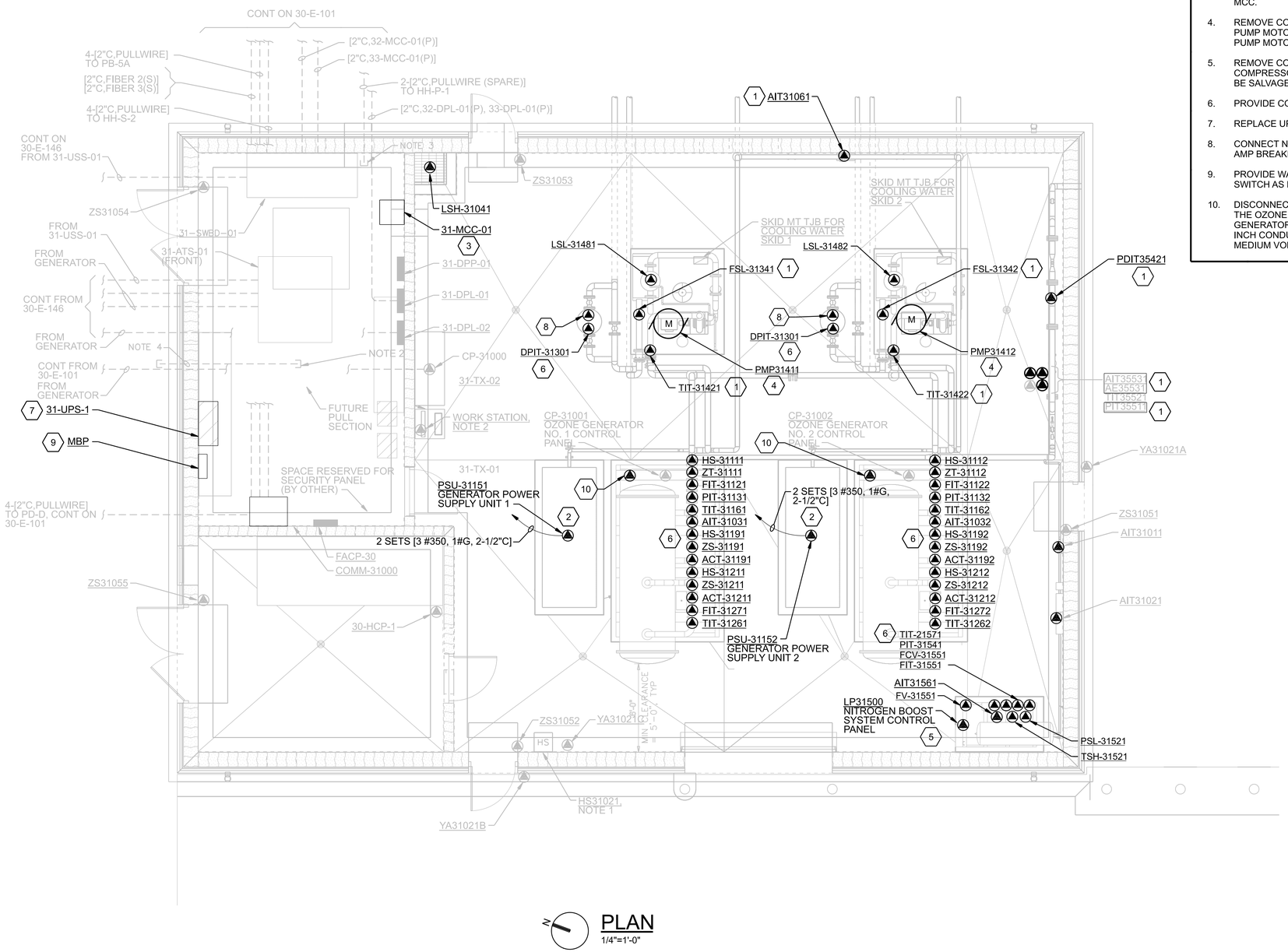
GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OZONE GENERATOR BUILDING
ELECTRICAL
LOX AREA PLAN

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	30-E-101
SHEET	65



PLAN

1/4"=1'-0"

SHEET KEYNOTES

1. DISCONNECT, REPLACE, AND RECONNECT INSTRUMENT WITH NEW. SEE P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
2. DISCONNECT 600-AMP FEEDER FROM OZONE GENERATOR POWER SUPPLY UNIT. REPLACE CONDUCTORS BACK TO SWITCHBOARD. INSTALL NEW OVERHEAD CONDUIT AND CONDUCTORS FROM SWITCHBOARD 31-SWBD-01 TO PSU. SEE GENERAL NOTE ON REUSING CONDUIT. SALVAGE CONTROL PANELS TO OWNER.
3. SEE SHEET 09-E-602 FOR MODIFICATIONS TO THE MCC.
4. REMOVE CONNECTIONS TO EXISTING WATER PUMP MOTOR AND RECONNECT TO REPLACEMENT PUMP MOTOR.
5. REMOVE CONNECTIONS TO NITROGEN BOOST COMPRESSORS SO THAT THE COMPRESSORS CAN BE SALVAGED TO OWNER.
6. PROVIDE CONNECTIONS TO INSTRUMENTS.
7. REPLACE UPS.
8. CONNECT NEW BASKET STRAINER TO A SPARE 20 AMP BREAKER IN PANEL 31-DLP-02.
9. PROVIDE WALL-MOUNTED MAINTENANCE BYPASS SWITCH AS PART OF THE UPS REPLACEMENT.
10. DISCONNECT THE MEDIM VOLTAGE FEEDER FROM THE OZONE POWER SUPPLY UNIT TO TTHE OZONE GENERATOR. INSTALL NEW OVERHEAD THREE-INCH CONDUIT FOR INSTALLATION OF THE NEW MEDIUM VOLTAGE CNDUCTORS.

DALLAS J. ANDERSON
STATE OF WASHINGTON
41040
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD

DSGN	DR	CHK	APVD
D ANDERSON	J GARIBAY	D WAGNER	J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OZONE GENERATOR BUILDING
ELECTRICAL
OZONE GENERATOR BUILDING PLAN

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

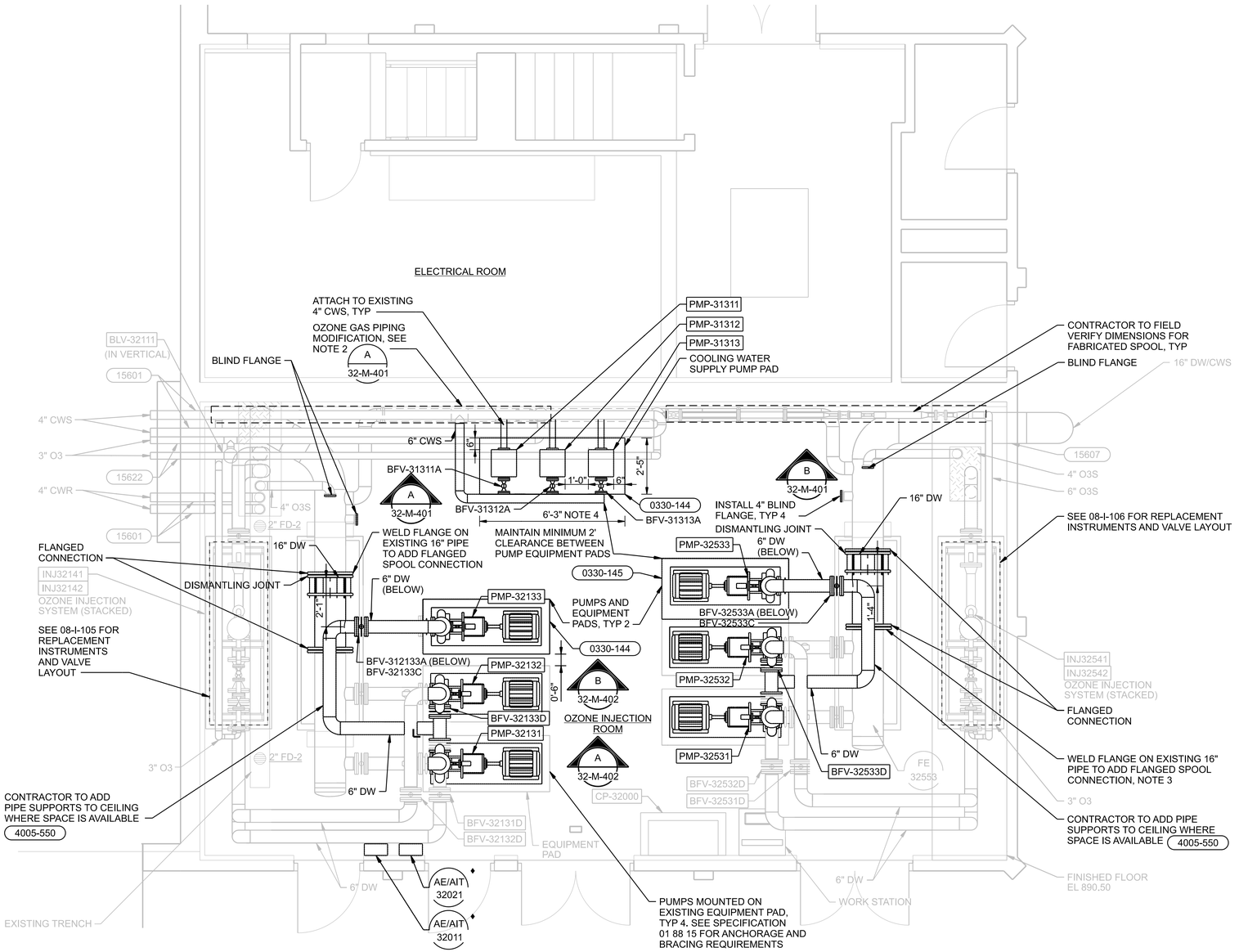
DATE	DECEMBER 2025
PROJ	D3885700
DWG	30-E-102
SHEET	66

CONSTRUCTION DOCUMENTS

FILENAME: 30-E-102_D3885700.dgn
PLOT DATE: 20-MAR-2026
PLOT TIME: 04:07

GENERAL SHEET NOTES

1. REPLACE ELECTRIC VALVE ACTUATOR FOR ALL NOTED VALVES.
2. CLEAN ALL STAINLESS STEEL PIPING INTENDED FOR OZONE SERVICE IN ACCORDANCE WITH SPECIFICATION 40 27 00.
3. REINFORCE EXISTING 16" DW PIPE WITH SHOULDER TYPE C OR D PER ANSI/AWWA C606 FOR STEEL PIPE.
4. DIMENSIONS PUMP EQUIPMENT PADS ARE APPROXIMATE. VERIFY DIMENSIONS ONCE PUMPS ARE SELECTED AND ANCHOR LOCATIONS ARE CONFIRMED, IN ACCORDANCE WITH STANDARD DETAIL 0330-144.
5. WELDING ACTIVITIES MUST ONLY OCCUR DURING THE OZONE OUTAGE WINDOW, AS DESCRIBED IN SPECIFICATION 01 31 13 PROJECT COORDINATION.



MIDDLE FLOOR PLAN

3/8"=1'-0"

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		T YOUNG	J SETNIK	A GAO	APVD	J KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

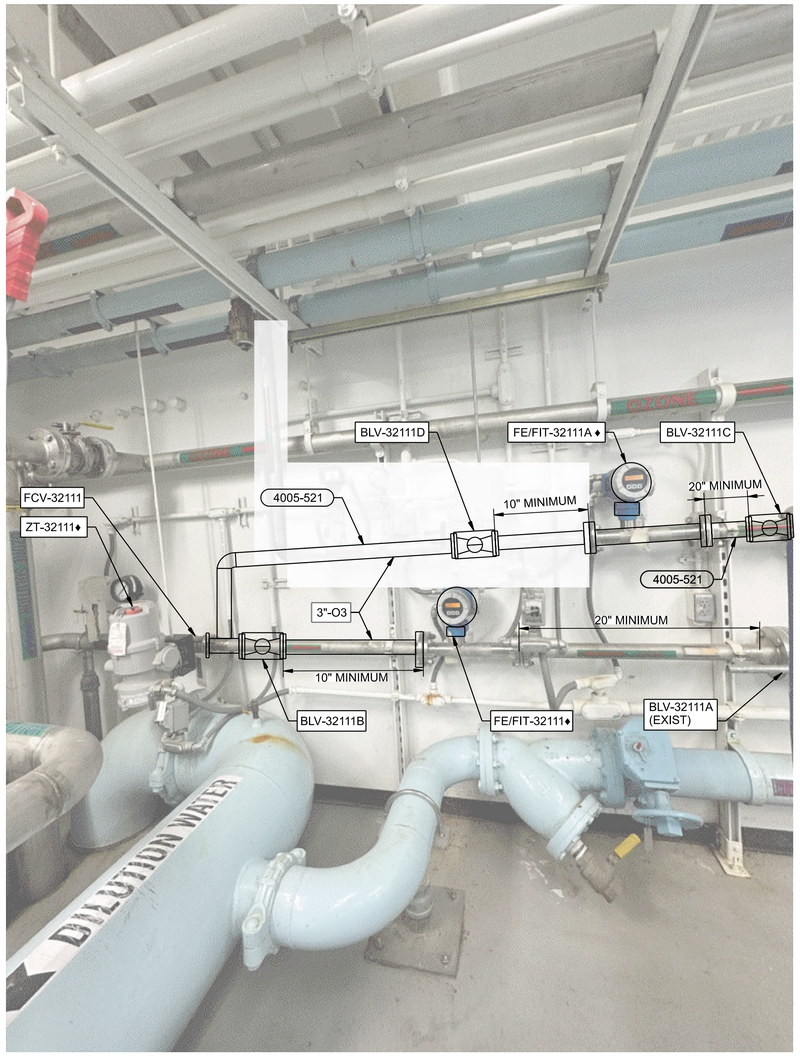
Jacobs

OLD HEADWORKS CONTROL BUILDING
PROCESS MECHANICAL
MIDDLE FLOOR PLAN

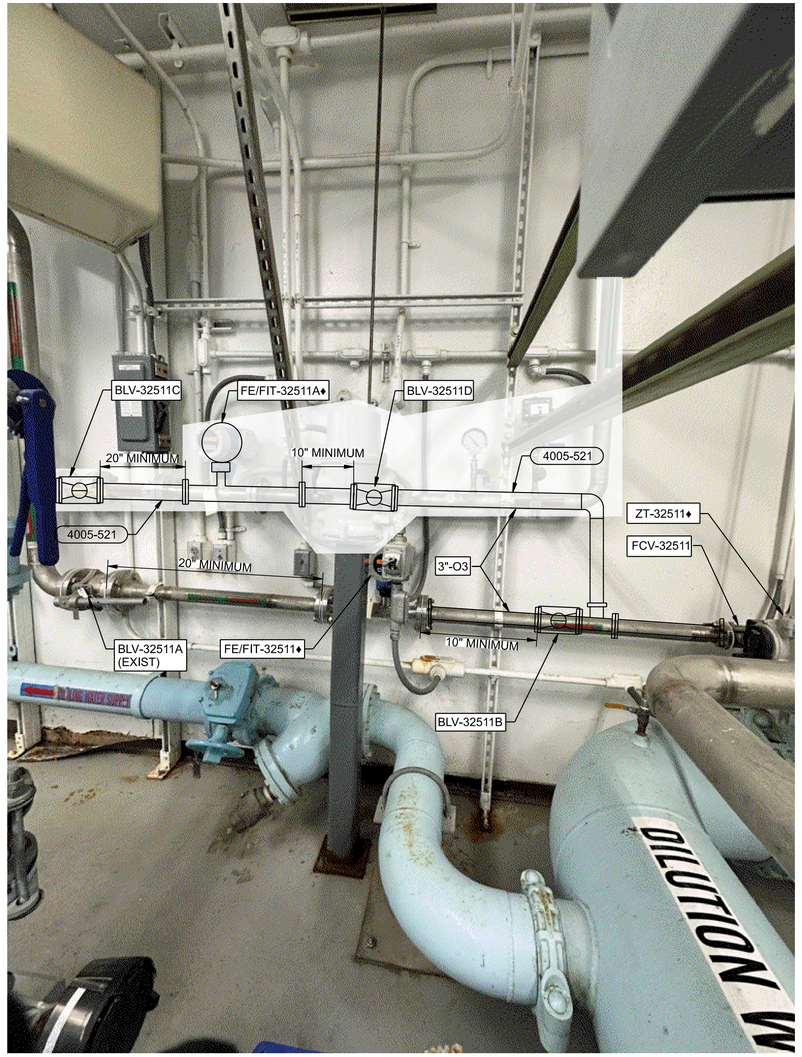
CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-M-101
SHEET	67

FILENAME: 32-M-101_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 07:28



1 DETAIL
NTS
32-M-101



2 DETAIL
NTS
32-M-101

NO.	DATE	REVISION	BY	APVD
DSGN	T YOUNG	DR J.SETNIK	CHK A.GAO	APVD J.KENNEDY

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

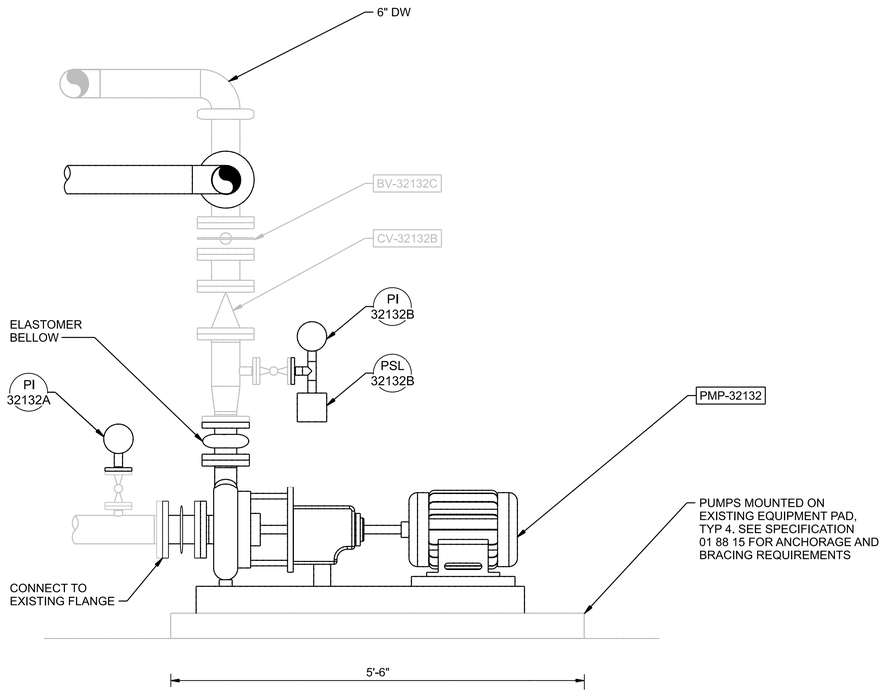
Jacobs

OLD HEADWORKS CONTROL BUILDING
PROCESS MECHANICAL INJECTION ROOM DETAIL

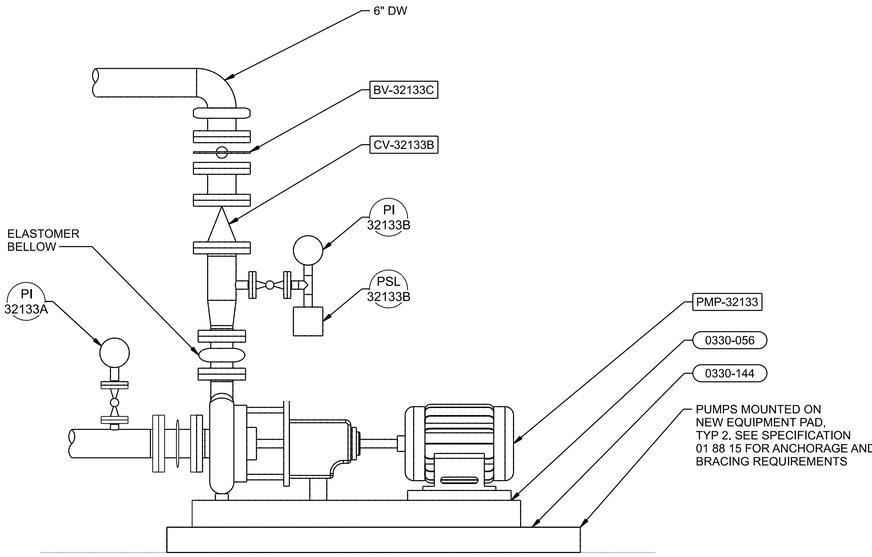
CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-M-401
SHEET	68



A SECTION
1"=1'-0"
32-M-101



B SECTION
1"=1'-0"
32-M-101

JOSHUA STEPHEN KENNEDY
STATE OF WASHINGTON
53744
REGISTERED
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	REVISION	CHK	APVD	BY	APVD
		T YOUNG	J.SETNIK		A.GAO		J.KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

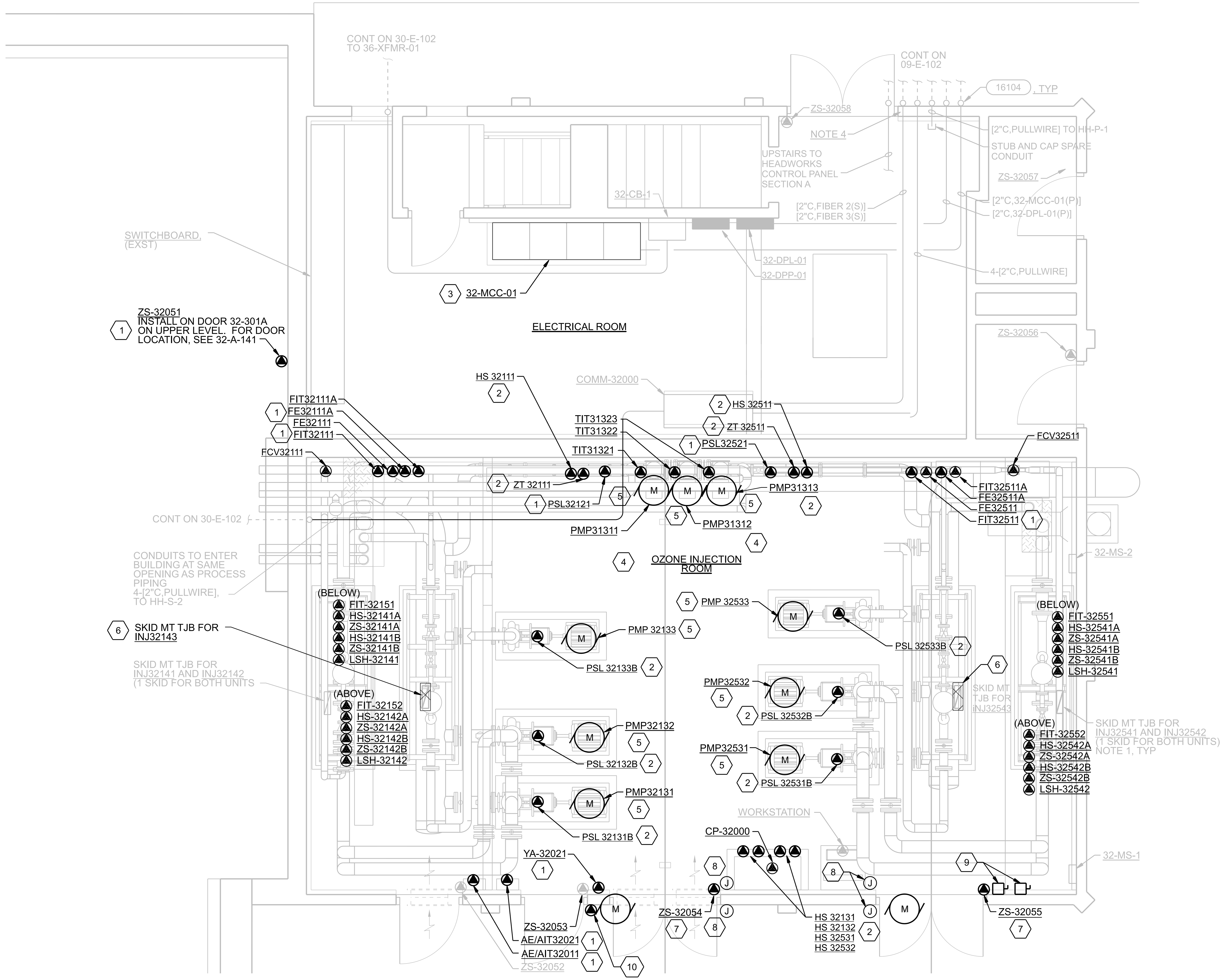
Jacobs

OLD HEADWORKS CONTROL BUILDING
PROCESS MECHANICAL INJECTION ROOM DETAIL

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-M-402
SHEET	69

FILENAME: 32-M-402_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 07:28



MIDDLE FLOOR PLAN

3/8"=1'-0"

SHEET KEYNOTES

1. DISCONNECT, REPLACE, AND RECONNECT INSTRUMENT WITH NEW. SEE P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE CONNECTIONS TO NEW INSTRUMENT. SEE P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
3. SEE SHEET 09-E-602 FOR MODIFICATION TO THE MCC.
4. REMOVE CONNECTIONS TO EXISTING WATER PUMP MOTOR. PUMP WILL BE REMOVED AND NOT REPLACED. REMOVE CONDUIT BACK TO FIRST JUNCTION BOX OR FITTING AND CAP AND REMOVE CONDUCTORS BACK TO SOURCE.
5. REMOVE CONNECTIONS TO EXISTING WATER PUMP MOTOR AND RECONNECT TO REPLACEMENT PUMP MOTOR.
6. REMOVE CONNECTIONS TO OZONE INJECTION SKID, SO THAT THE SKID CAN BE DEMOLISHED
7. REPLACE DOOR POSITION SWITCHES PER ROLL-UP DOOR MANUFACTURER INSTRUCTIONS.
8. INSTALL KEYPADS AND DOOR OPERATOR CONTROL STATIONS PER ROLL-UP DOOR MANUFACTURER INSTRUCTIONS.
9. PROVIDE HEAVY DUTY 30-AMP LOCKABLE NON-FUSED DISCONNECT FOR ROLL-UP DOOR. PROVIDE SINGLE HOMERUN FOR THE PAIR OF DOORS, 3#12, #12G, 3/4"C., TO A SPARE 20/3 BREAKER IN PANEL 32-DPP -01.
10. PROVIDE NEMA 3R WARNING LIGHT WITH RED LENS SIMILAR TO EXISTING ON THE INTERIOR SIDE OF WALL. CONNECT TO YA-32021/INTERIOR LIGHT. CORE THROUGH EXTERIOR WALL TO RUN CONDUIT OUTSIDE.

DALLAS J. ANDERSON STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISION	BY	APVD

DSGN D ANDERSON
DR J GARIBAY
CHK D WAGNER
APVD J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OLD HEADWORKS CONTROL BUILDING
ELECTRICAL
MIDDLE FLOOR PLAN

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

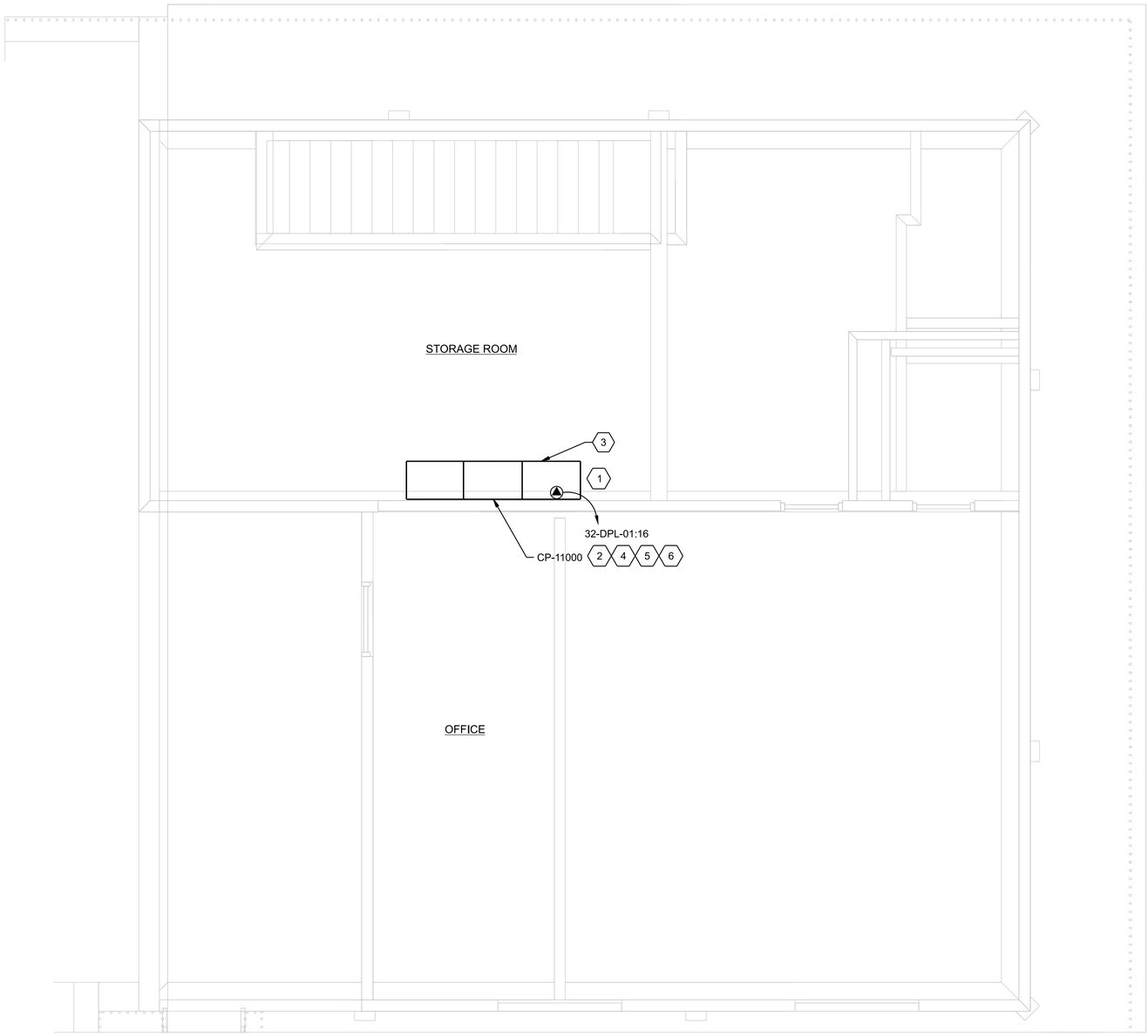
DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-E-101
SHEET	70

CONSTRUCTION DOCUMENTS

FILENAME: 32-E-101_D3885700.dgn PLOT DATE: 3-MAR-2026 PLOT TIME: 09:41

SHEET KEYNOTES

1. PROVIDE 2' X 9' 3-SECTION HEADWORKS CONTROL PANELS. INSTALL SEISMIC MOUNTING BRACKETS PER MANUFACTURER'S INSTRUCTIONS AND PROJECT SPECIFICATIONS. DO NOT OBSTRUCT LIGHT SWITCH. LEAVE 4" LATERAL CLEARANCE BETWEEN PANEL AND SWITCH.
2. ROUTE CONDUIT FROM THE NEW CONTROL PANEL TO THE EXISTING IN THE ATTIC ABOVE. AVOID ROUTING CONDUIT AWAY FROM THE CENTER OF THE BUILDING AS THE ROOF SLOPES DOWNWARD ON ALL SIDES.
3. RELOCATE THERMOSTAT PRESENTLY LOCATED WHERE CONTROL CABINET WILL BE INSTALLED. COORDINATE NEW THERMOSTAT LOCATION WITH OWNER.
4. TYPICAL OF ALL CONTROL PANELS, SEE THE INSTRUMENTATION AND CONTROLS RACEWAY SCHEDULE FOR CAT6 CABLING IN ADDITION TO INSTRUMENTATION CABLING.
5. PRIOR TO DRILLING FOR POST INSTALLED ANCHORS, LOCATE VOIDS, REINFORCING STEEL, PT TENDONS, PIPES, CONDUITS, AND ALL OTHER EMBEDDED ITEMS USING SCANNING EQUIPMENT USING A METHOD APPROPRIATE FOR THE DEPTH OF THE HOLE, THICKNESS OF CONCRETE, AND DEPTH OF REINFORCING.
6. REMOVE SURFACE RACEWAY RUNNING ABOVE COUNTER.



UPPER FLOOR PLAN

3/8"=1'-0"

J. ANDERSON
STATE OF WASHINGTON
41040
REGISTERED PROFESSIONAL ENGINEER
12/7/25

NO.	DATE	DSGN	DR	CHK	APVD
		D ANDERSON	J GARIBAY	D WAGNER	APVD

REVISION BY: J KENNEDY

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

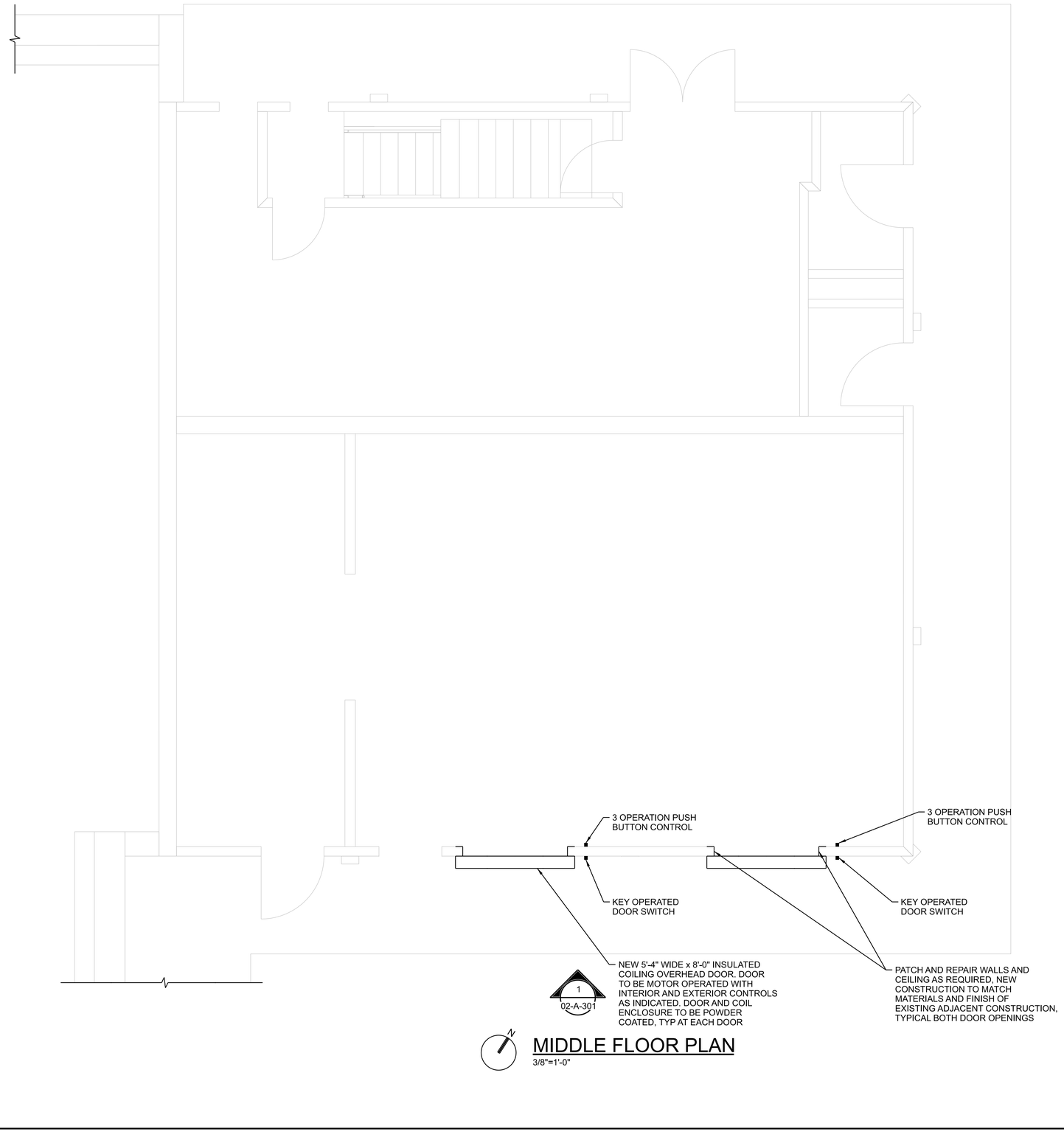
OLD HEADWORKS CONTROL BUILDING
ELECTRICAL
UPPER FLOOR PLAN

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-E-102
SHEET	71

FILENAME: 32-E-102_D3885700.dgn PLOT DATE: 3-DEC-2025 PLOT TIME: 06:42



MIDDLE FLOOR PLAN

3/8"=1'-0"

23015280
REGISTERED ARCHITECT
MORGAN SHOEMAKER
STATE OF WASHINGTON
DIGITALLY SIGNED ON DEC 15, 2025

NO.	DATE	REVISION	BY	APVD
DSGN	J RESEIGH	DR K KOTARSKA	CHK M SHOEMAKER	APVD J KENNEDY

CONSTRUCTION DOCUMENTS

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

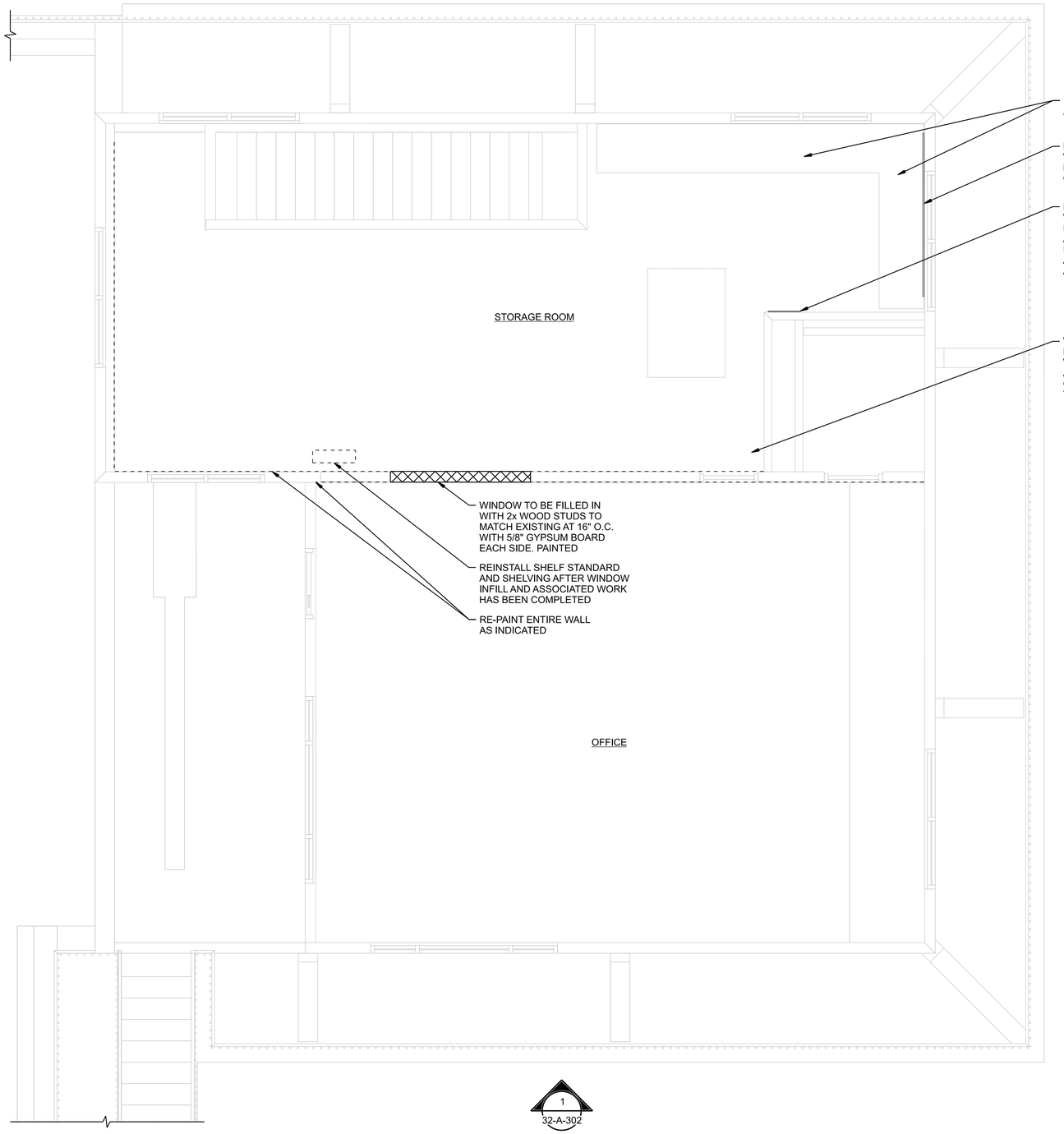
OLD HEADWORKS CONTROL BUILDING
ARCHITECTURAL
MIDDLE FLOOR PLAN

NTS

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-A-101
SHEET	72

FILENAME: 32-A-101_D3885700.dgn PLOT DATE: 15-DEC-2025 PLOT TIME: 06:11



UPPER FLOOR PLAN

3/8"=1'-0"

GENERAL NOTES

1. ALL WORK TO COMPLY WITH LOCAL, STATE AND FEDERAL BUILDING CODES AND SAFETY REGULATIONS.
2. CONTRACTOR TO VERIFY ALL SITE CONDITION PRIOR TO COMMENCING ANY WORK OR ORDERING ANY MATERIALS.
3. CONTRACTOR RESPONSIBLE FOR ALL WORK DETAILED IN THE CONSTRUCTION DOCUMENTS. ANY MODIFICATIONS OR DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS REQUIRE WRITTEN PERMISSION FROM THE ARCHITECT/OWNER.
4. ALL MILLWORK MODIFICATIONS SHALL MEET THE CURRENT STANDARDS OF THE ARCHITECTURAL WOODWORK INSTITUTE (AWI) OR EQUIVALENT INDUSTRY STANDARDS, TYPICALLY "COMMERCIAL" GRADE.
5. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE WORK OF ALL THE TRADES TO AVOID INTERFERENCES. CHANGES REQUIRED DUE TO A LACK OF COORDINATION SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.
6. PROTECT EXISTING CABINETS NOT BEING MODIFIED, AS WELL AS ADJACENT FINISHES AND FURNISHINGS. USE TEMPORARY BARRIERS FOR DUST CONTROL.
7. ENSURE NEW CONSTRUCTION ALIGNS WITH EXISTING SURFACES.
8. APPLY MILDEW-RESISTANT SILICONE SEALANT WHERE MILLWORK MEETS THE WALL.
9. MAINTAIN A CLEAN SITE DAILY AND PERFORM A THOROUGH FINAL CLEANING.
10. REMEDY DEFECTS FROM FAULTY WORKMANSHIP FOR ONE YEAR AFTER FINAL ACCEPTANCE.

23015280 REGISTERED ARCHITECT
MORGAN SHOEMAKER
STATE OF WASHINGTON
DIGITALLY SIGNED ON DEC 9, 2025

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
		J RESEIGH	K KOTARSKA	M SHOEMAKER			J KENNEDY

REVISION

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

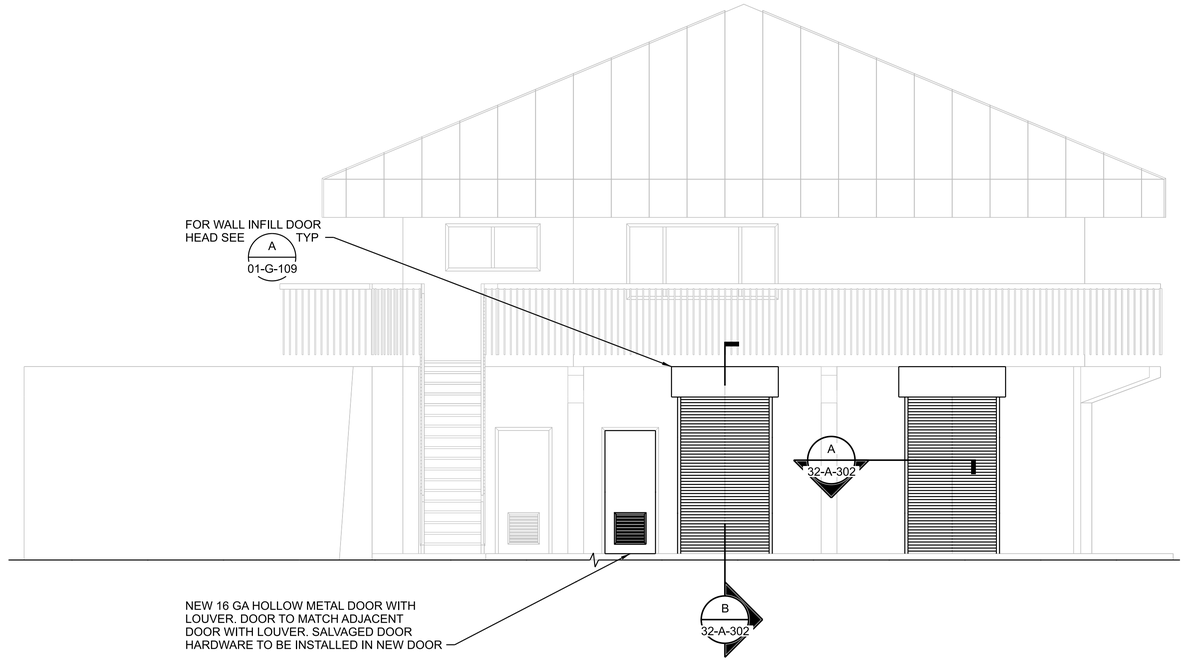
Jacobs

OLD HEADWORKS CONTROL BUILDING
ARCHITECTURAL
UPPER FLOOR PLAN

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-A-102
SHEET	73

FILENAME: 32-A-102_D3885700.dgn PLOT DATE: 4-DEC-2025 PLOT TIME: 01:16



1 SOUTH ELEVATION

1/4"=1'-0"

32-A-101
32-A-102

23015280 REGISTERED ARCHITECT
MORGAN SHOEMAKER
STATE OF WASHINGTON
DIGITALLY SIGNED ON DEC 15, 2025

NO.	DATE	REVISION	DR	CHK	APVD	BY	APVD
DSGN	J RESEIGH		K KOTARSKA	M SHOEMAKER		J KENNEDY	

Jacobs

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

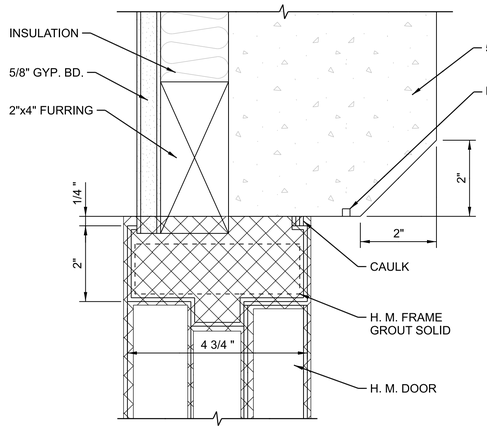
OLD HEADWORKS CONTROL BUILDING
ARCHITECTURAL
SOUTH ELEVATION

CONSTRUCTION DOCUMENTS

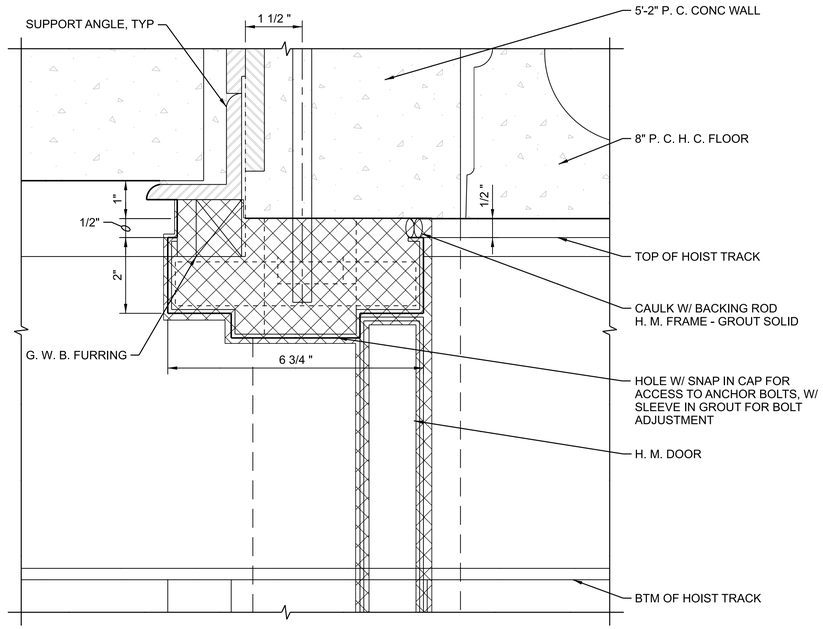
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-A-301
SHEET	74

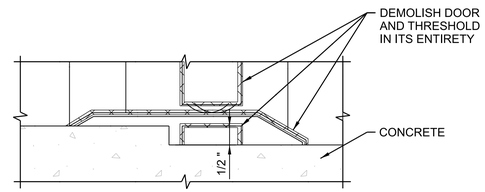
FILENAME: 32-A-301_D3885700.dgn PLOT DATE: 15-DEC-2025 PLOT TIME: 06:11



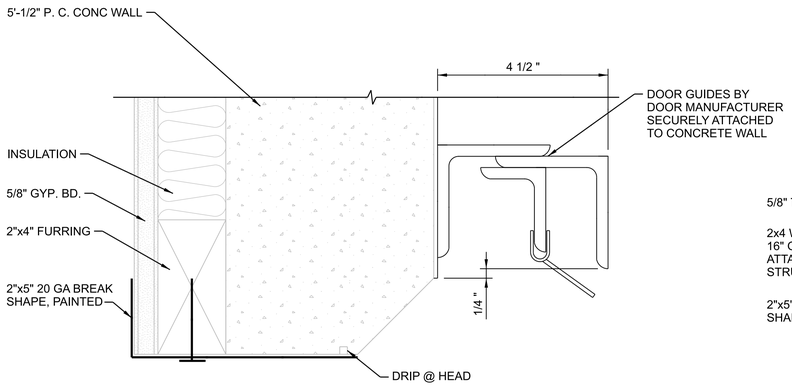
1 DEMOLITION EXTERIOR DR. FRAME JAMB
6"=1'-0"
02-D-301



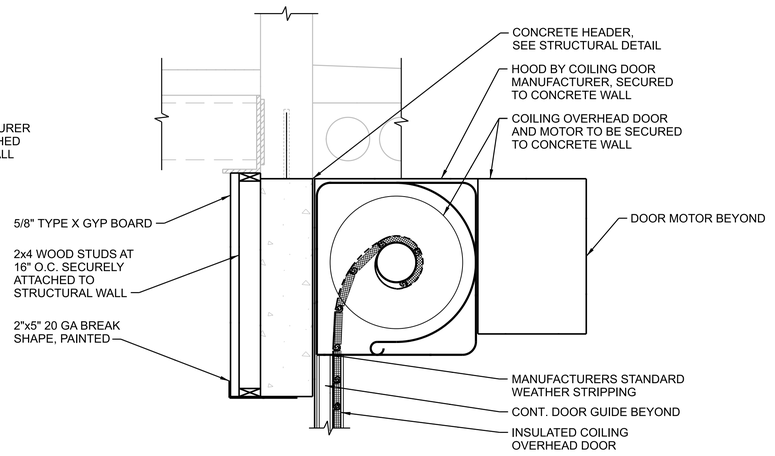
2 DEMOLITION DOOR HEAD
6"=1'-0"
02-D-301



3 DEMOLITION EXTERIOR DR. THRESHOLD
6"=1'-0"
02-D-301



A EXTERIOR DR. FRAME JAMB - SECTION VIEW
6"=1'-0"
32-A-301



B WALL INFILL - DOOR HEAD - SECTION VIEW
1 1/2"=1'-0"
32-A-301

23015280 REGISTERED ARCHITECT
MORGAN SHOEMAKER
STATE OF WASHINGTON
DIGITALLY SIGNED ON DEC 15, 2025

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		J RESEIGH	K KOTARSKA	M SHOEMAKER		J KENNEDY	

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

OLD HEADWORKS CONTROL BUILDING
ARCHITECTURAL
SECTIONS AND DETAILS

Jacobs

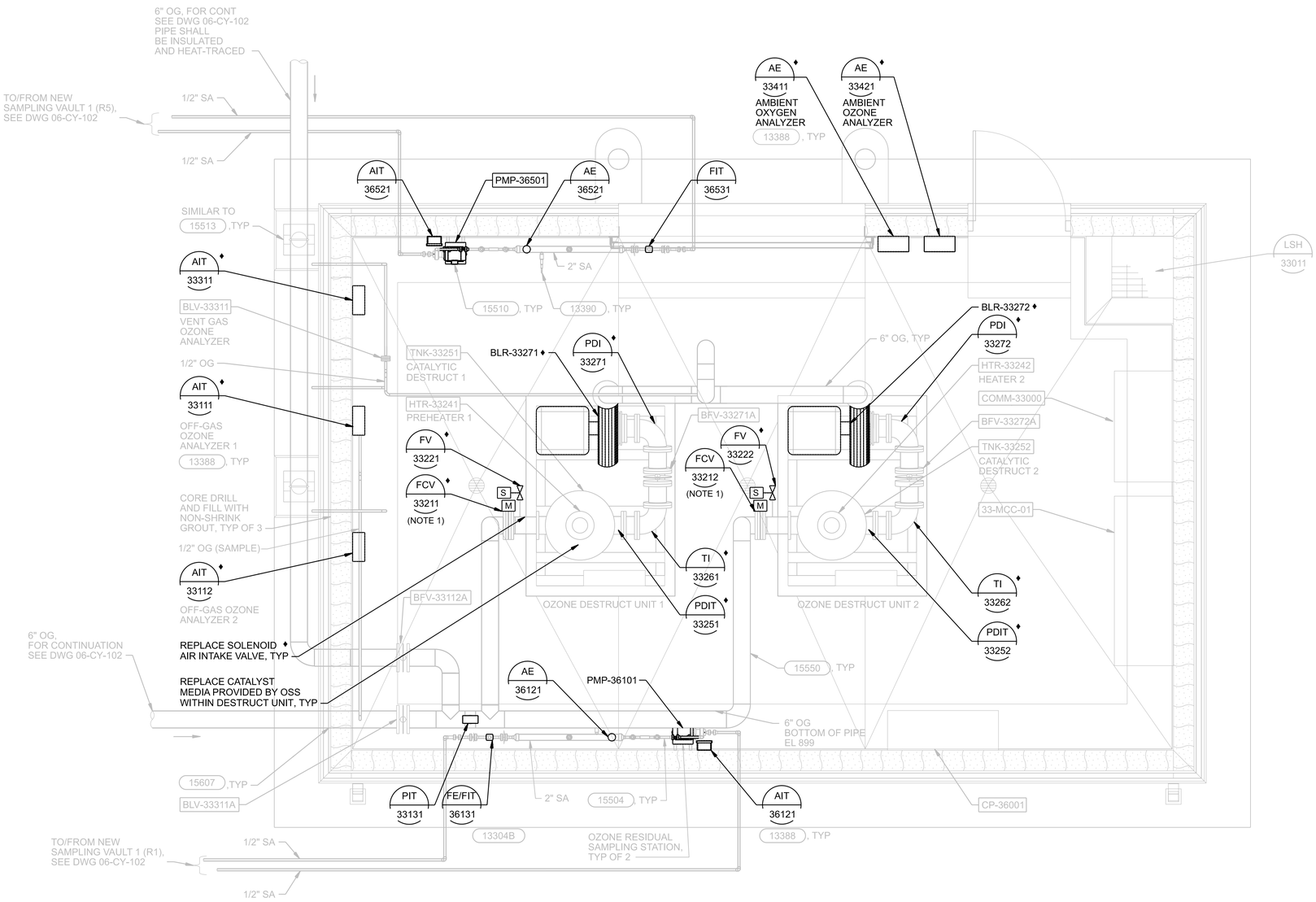
NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	32-A-302
SHEET	75

FILENAME: 32-A-302_D3885700.dgn PLOT DATE: 15-DEC-2025 PLOT TIME: 06:11

GENERAL SHEET NOTES

1. REPLACE ELECTRIC VALVE ACTUATOR FOR ALL NOTED VALVES.
2. CLEAN ALL STAINLESS STEEL PIPING INTENDED FOR OZONE SERVICE IN ACCORDANCE WITH SPECIFICATION 40 27 00.



N

PLAN

1/2"=1'-0"

NO.	DATE	DSGN	REVISION	BY	APVD
		T YOUNG	J SETNIK	DR	CHK
			A GAO		APVD
			J KENNEDY		BY

JOSHUA STEPHEN KENNEDY — STATE OF WASHINGTON — 53744 — REGISTERED PROFESSIONAL ENGINEER

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

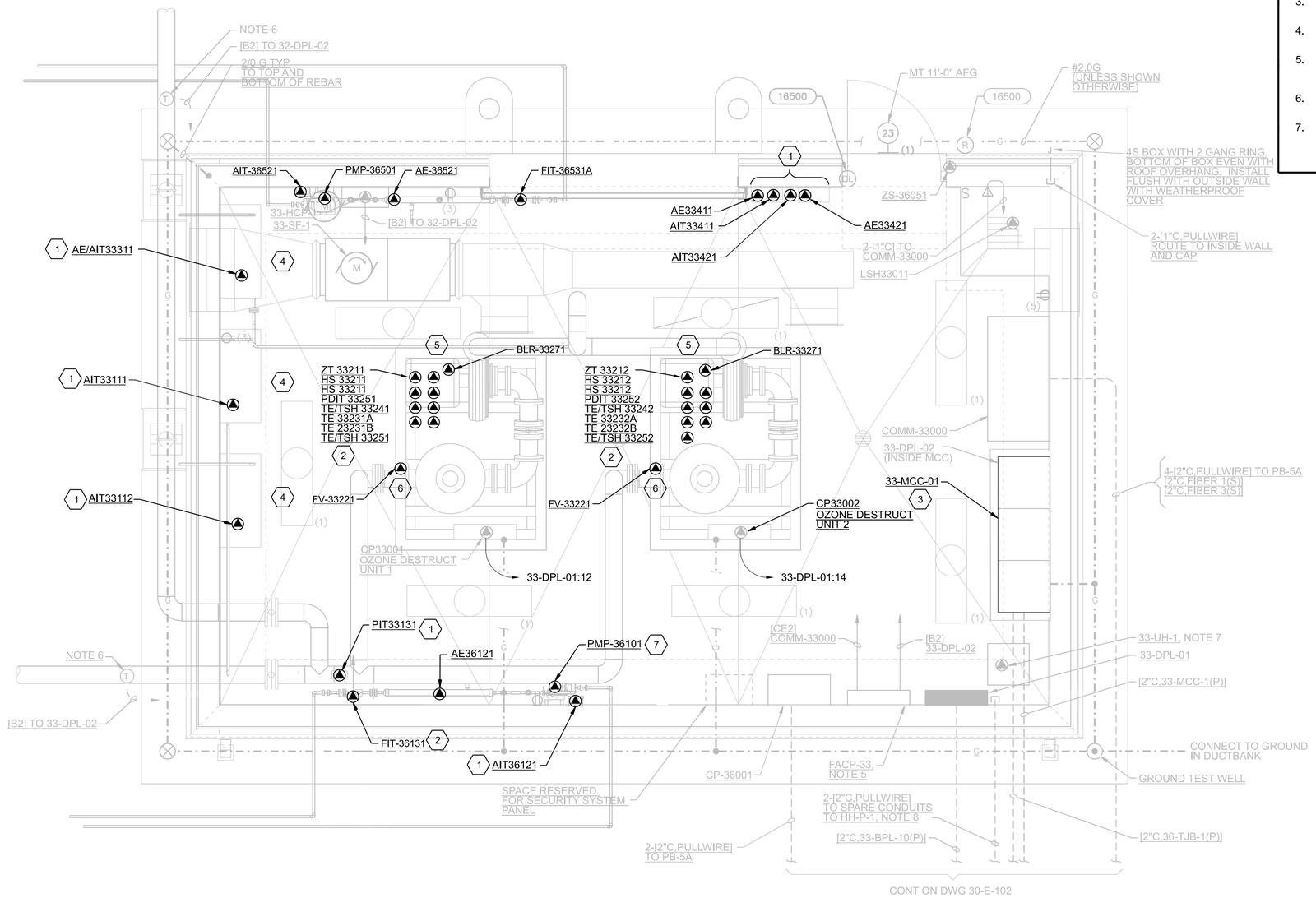
OZONE DESTRUCT BUILDING
PROCESS MECHANICAL PLAN

CONSTRUCTION DOCUMENTS

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	33-M-101
SHEET	76

SHEET KEYNOTES

1. DISCONNECT, REPLACE, AND RECONNECT INSTRUMENT WITH NEW. SEE P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE CONNECTIONS TO NEW INSTRUMENT. SEE P&ID DRAWINGS FOR ADDITIONAL REQUIREMENTS.
3. SEE SHEET 09-E-602 FOR MODIFICATIONS TO THE MCC.
4. REMOVE CONNECTIONS TO ANALYZER PANELS. REMOVE CODUCTORS BACK TO SOURCE.
5. REMOVE CONNECTIONS TO DESTRUCT BLOWER. REMOVE CODUCTORS BACK TO SOURCE.
6. REMOVE CONNECTIONS TO SOLENOID VALVE. REMOVE CODUCTORS BACK TO SOURCE.
7. PROVIDE 120-VOLT CIRCUIT FROM PANEL 33-DPL-01 TO PROVIDE UPS BACKED POWER TO CABINET.



PLAN
1/2"=1'-0"

J. ANDERSON — STATE OF WASHINGTON — 4140 — REGISTERED PROFESSIONAL ENGINEER — 12/7/25

NO.	DATE	DSGN
DR	D ANDERSON	
CHK	J GARIBAY	
APVD	D WAGNER	
BY	APVD	J KENNEDY

REVISION

CONSTRUCTION DOCUMENTS

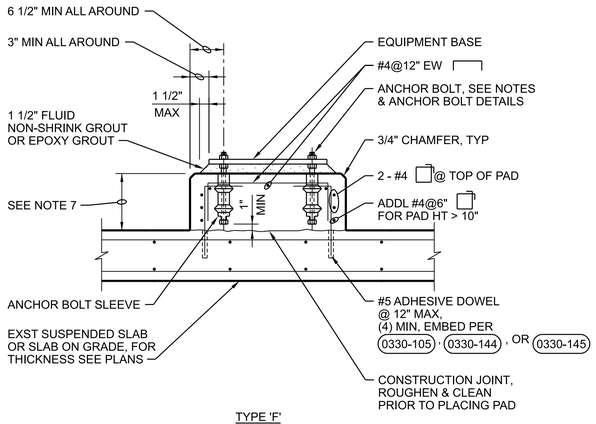
GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

OZONE DESTRUCT BUILDING
ELECTRICAL PLAN

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1"	
DATE	DECEMBER 2025
PROJ	D3885700
DWG	33-E-101
SHEET	77

FILENAME: 33-E-101_D3885700.dgn PLOT DATE: 2-DEC-2025 PLOT TIME: 10:13



TYPE 'F'

NOTES:

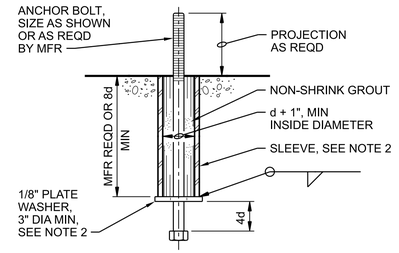
1. PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS OR AS INDICATED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER AND AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE OR OTHER ACCEPTABLE MEANS, MATCHING THE BASE PLATE, WHILE PAD IS BEING PLACED.
3. ANCHOR BOLT SLEEVES SHALL BE USED TO PROVIDE MINIMUM ANCHOR BOLT MOVEMENT OF 1/2" IN ALL HORIZONTAL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER.
4. ANCHOR BOLT SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT AFTER BOLTS ARE ALIGNED. SEE 0330-057
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS INDICATED OTHERWISE.
6. WEDGES, SHIMS, OR LEVELING NUTS SHALL BE USED TO SUPPORT THE BASE WHILE THE GROUT IS PLACED. WEDGES OR SHIMS SHALL BE REMOVED AFTER GROUT IS SET AND PACK VOID WITH GROUT.
7. HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT ABOVE SUPPORTING SLAB (SEE TABLE BELOW).
8. AT CONTRACTOR'S OPTION, CONCRETE ANCHORS MAY BE USED IN LIEU OF CAST-IN-PLACE ANCHOR BOLTS FOR EQUIPMENT ANCHOR BOLTS LESS THAN 3/4" DIAMETER WHEN APPROVED BY THE EQUIPMENT MANUFACTURER AND APPROVED BY THE ENGINEER. ANCHORS SHALL BE INSTALLED WITH 4" MINIMUM EDGE DISTANCE IN EACH DIRECTION.

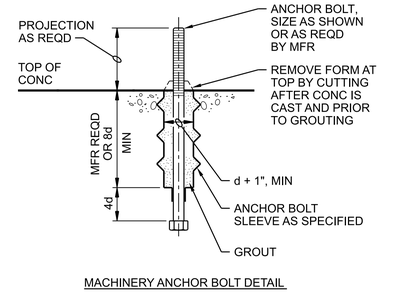
AB DIA (IN.)	1/2	5/8	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
MIN PAD HT (IN.)	7	8 1/2	10	11	12 1/2	15	16 1/2	18	21	24

CONCRETE EQUIPMENT PAD - TYPE 'F'

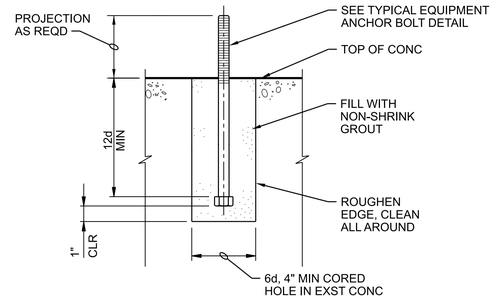
NTS

0330-056

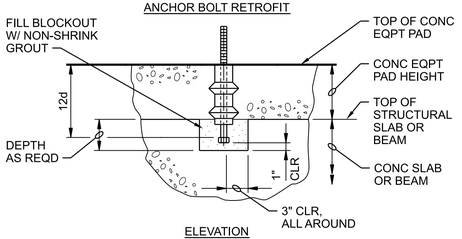




MACHINERY ANCHOR BOLT DETAIL



ANCHOR BOLT RETROFIT



ELEVATION

ANCHOR BOLT BLOCKOUT

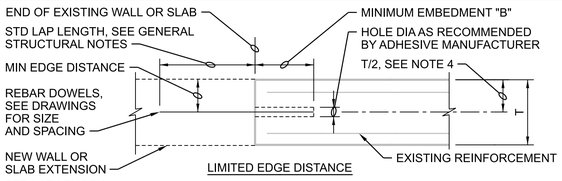
NOTES:

1. FOR CONCRETE EQUIPMENT PAD DETAILS AND NOTES NOT SHOWN SEE 0330-056
2. MATERIAL TO MATCH BOLT.

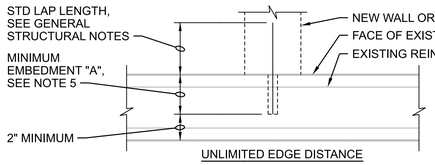
ANCHOR BOLT DETAILS

NTS

0330-057



LIMITED EDGE DISTANCE



UNLIMITED EDGE DISTANCE

DOWEL SIZE	MINIMUM EDGE DISTANCE	MINIMUM EMBEDMENT "A"	MINIMUM EMBEDMENT "B"
#3	2 1/2"	5"	8"
#4	3 1/2"	7"	11"
#5	4"	8"	13"
#6	5"	10 1/2"	16"
#7	6"	12 1/2"	20"
#8	7"	14"	22"
#9	7 1/2"	15"	24"

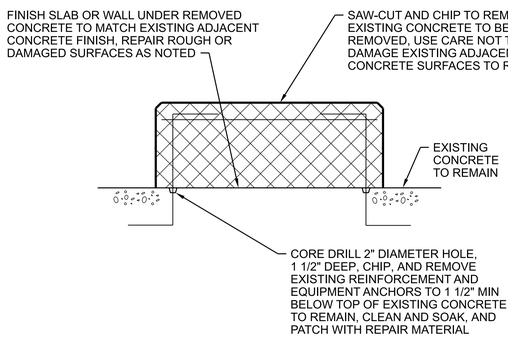
NOTES:

1. CONFORM TO REQUIREMENTS OF SPECIFICATION SECTION 03 63 00, CONCRETE DOWELING.
2. FOLLOW ADHESIVE MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
3. USE MINIMUM EMBEDMENTS SHOWN, EXCEPT USE MANUFACTURER'S MINIMUM RECOMMENDED EMBEDMENT IF GREATER.
4. LOCATE DOWELS CENTERED IN WALL OR SLAB UNLESS OTHERWISE NOTED ON DRAWINGS. WHERE 2 ROWS OF DOWELS INDICATED, STAGGER SPACING & LOCATE ALTERNATING DOWELS AT MINIMUM EDGE DISTANCE FROM OPPOSITE FACES.
5. PROVIDE MINIMUM EMBEDMENT "A" SHOWN IN TABLE UNLESS SHORTER EMBEDMENT DEPTH IS CALLED OUT ON DRAWINGS OR DETAILS.

ADHESIVE DOWEL

NTS

0330-105



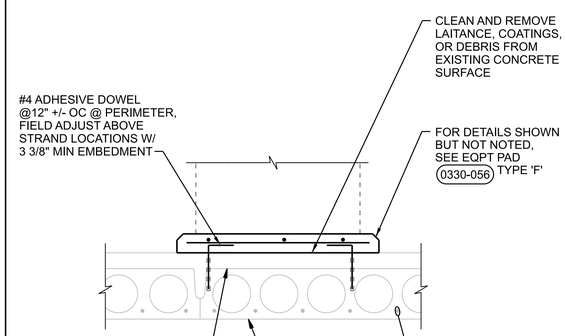
NOTES:

1. REMOVE CONCRETE OUT TO SOUND CONCRETE.
2. IF CHIPPING INTO THE SURFACE OF THE EXISTING SLAB OR WALL TO REMAIN IS REQUIRED, MAKE EDGES PERPENDICULAR TO THE SURFACE. DO NOT FEATHER EDGES.
3. FILL DEFECTIVE AREA WITH AN APPROVED PREPACKAGED REPAIR MATERIAL TO MATCH APPEARANCE OF ADJACENT CONCRETE SURFACES.
4. USE APPROVED BONDING AGENT ON SURFACES TO BE PATCHED PRIOR TO PLACING REPAIR MATERIAL.
5. DEMONSTRATE METHODS FOR REPAIR USING ACTUAL MATERIALS, METHODS, AND CURING PROCEDURES REQUIRED BY MATERIAL MANUFACTURERS. CONSULT WITH BONDING AGENT MANUFACTURER AND REPAIR MATERIAL MANUFACTURER ON TECHNIQUES.

CONCRETE DEMOLITION

NTS

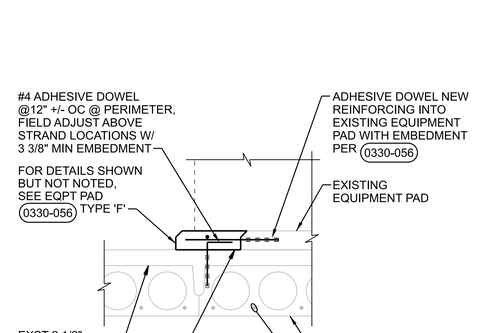
0330-143



EQUIPMENT PAD TO HOLLOWCORE SLAB

NTS

0330-144



POST-INSTALLED ADHESIVE DOWELS REQUIREMENTS:

1. VOIDS, REINFORCING STEEL, PT TENDONS, PIPES, CONDUITS, AND ALL OTHER EMBEDDED ITEMS SHALL BE LOCATED USING SCANNING EQUIPMENT PRIOR TO DRILLING, USING A METHOD APPROPRIATE FOR THE DEPTH OF HOLE, THICKNESS OF CONCRETE, AND DEPTH OF REINFORCING.
2. A MINIMUM OF 1 1/2" CLEAR SHALL BE MAINTAINED TO THE EXISTING REINFORCEMENT BARS, PT-TENDONS, PIPES, CONDUIT, AND ALL OTHER EMBEDDED ITEMS.
3. ADHESIVE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE ADHESIVE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND ICC-ES REPORT.
4. SPECIAL INSPECTION OF ADHESIVE DOWEL INSTALLATION SHALL BE IN CONFORMANCE WITH THE CONTRACT DOCUMENTS.

EQUIPMENT PAD EXTENSION ON HOLLOWCORE SLAB

NTS

0330-145

JOHN A. CARREON
STATE OF WASHINGTON
12/04/25
56772
STRUCTURAL ENGINEER
PROFESSIONAL ENGINEER

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		J CARREON	K KOTARSKA	J RYAN		J KENNEDY	

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

STRUCTURAL

STANDARD DETAILS

CONSTRUCTION DOCUMENTS

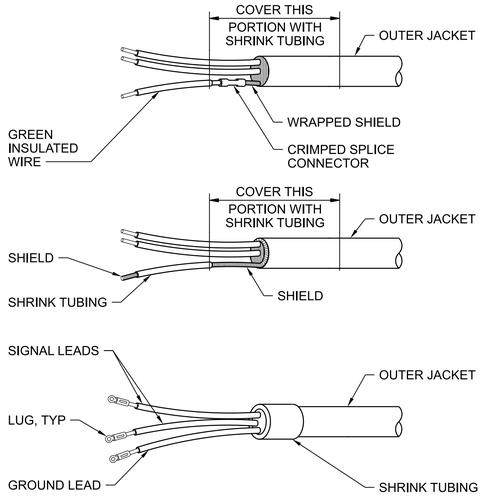
NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	100-SD-101
SHEET	78

FILENAME: 100-SD-101_D3885700.dgn PLOT DATE: 28-NOV-2025 PLOT TIME: 06:31

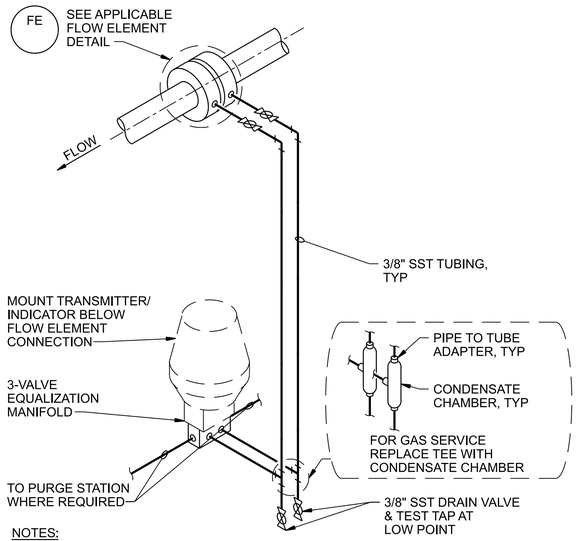


NOTES:
1. ALL SHIELDED INSTRUMENTATION CABLE SHALL BE TERMINATED IN ACCORDANCE WITH THIS DETAIL WHERE GROUNDING IS REQUIRED.

TERMINATION OF SHIELDED INSTRUMENTATION CABLE

NTS

2605-100b

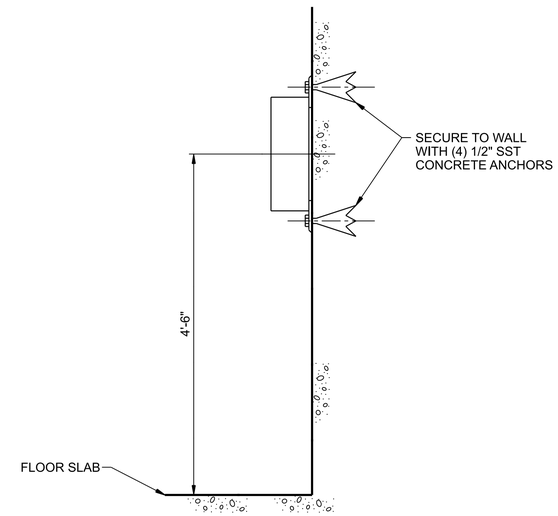


NOTES:
1. FOR LIQUID SERVICE, SLOPE ALL LINES DOWNWARD TOWARD INSTRUMENT.
2. FOR GAS SERVICE, SLOPE ALL LINES DOWNWARD TOWARD CONDENSATE CHAMBER.
3. ALL LINES SHALL HAVE A CONTINUOUS SLOPE OF 1/4" PER FOOT MIN (1" PER FOOT PREFERRED).

PRESSURE DIFFERENTIAL TRANSMITTER/INDICATOR FOR FLOW SERVICE

NTS

4091-206



NOTES:
1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORAGES AS SPECIFIED.

WALL MOUNTED PANEL OR INSTRUMENT INSTALLATION

NTS

4091-388

J. ANDERSON — STATE OF WASHINGTON — 41040 — REGISTERED PROFESSIONAL ENGINEER — 12/7/25

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
		D ANDERSON	J GARIBAY	D WAGNER			J KENNEDY

REVISION

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

ELECTRICAL

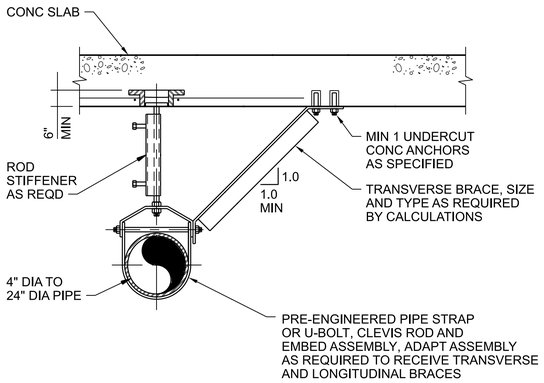
STANDARD DETAILS

CONSTRUCTION DOCUMENTS

NTS
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	100-SD-102
SHEET	79

FILENAME: 100-SD-102_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 10:24



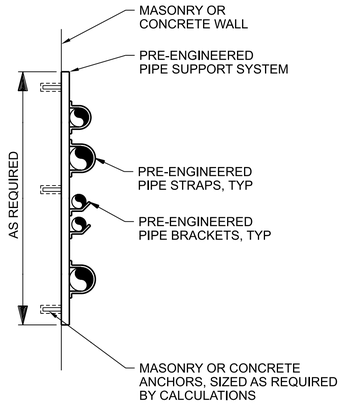
NOTES:

1. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORS AS SPECIFIED.
2. LONGITUDINAL BRACE BEYOND (NOT SHOWN) AS REQUIRED BY CALCULATIONS.

OVERHEAD PIPE HANGER

NTS

4005-550



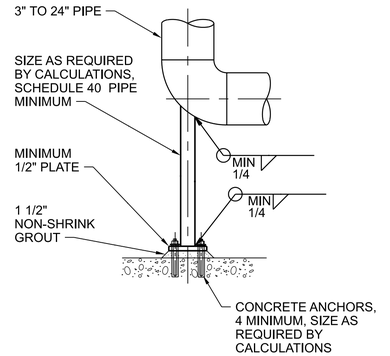
NOTES:

1. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED.
2. SUBMIT FINAL DESIGN DRAWINGS AND CALCULATIONS OF SUPPORTS AND ANCHORAGES AS SPECIFIED.

STACKED PIPE WALL SYSTEM

NTS

4005-521



PIPE DIAMETER	SUPPORT DIAMETER	PLATE THICKNESS	ANCHOR BOLT DIAMETER
3"	2 1/2"	3/8"	3/8"
4" THRU 12"	3"	3/8"	1/2"
14" AND 16"	4"	3/8"	1/2"
18" AND 20"	6"	1/2"	5/8"

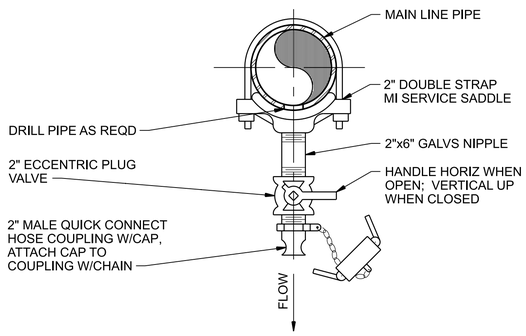
NOTES:

1. MINIMUM COMPONENT AND CONNECTION SIZES SHOWN. FURNISH LARGER SIZES IF REQUIRED BY CALCULATIONS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT

NTS

4005-516



NOTES:

1. FOR LINE SIZE 2" AND SMALLER, FITTINGS AND VALVES SHALL BE SAME SIZE AS LINE.
2. PROVIDE AT ALL PIPE LOW POINTS WHETHER SHOWN OR NOT.
3. FOR CONNECTION TO STEEL PIPE WELD THREAD-O-LET TO PIPE. FOR DI PIPE USE 2" DOUBLE STRAP MI SERVICE SADDLE.

LINE DRAIN VALVE INSTALLATION

NTS

4027-191

JOSHUA STEPHEN KENNEDY — STATE OF WASHINGTON — 53744 — REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	DSGN	REVISION	BY	APVD
		T YOUNG	J.SETNIK	CHK	A.GAO
		DR		BY	APVD
				J KENNEDY	

CONSTRUCTION DOCUMENTS

GREEN RIVER FILTRATION FACILITY
OZONE SYSTEM REPLACEMENT
CITY OF TACOMA, WA
TACOMA, WA

Jacobs

PROCESS MECHANICAL

STANDARD DETAILS

NTS

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	DECEMBER 2025
PROJ	D3885700
DWG	100-SD-103
SHEET	80

FILENAME: 100-SD-103_D3885700.dgn PLOT DATE: 27-NOV-2025 PLOT TIME: 07:25