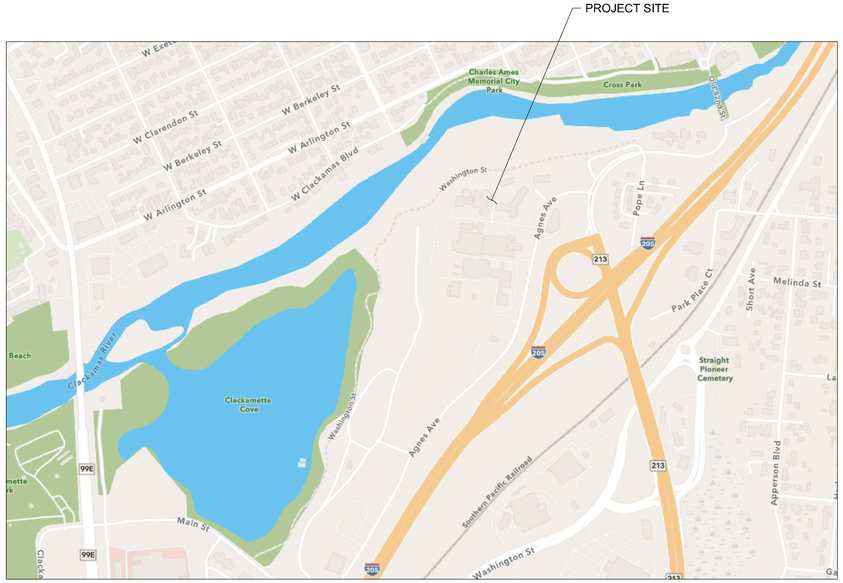
AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

100% DESIGN SUBMITTAL
SEPTEMBER 2026



N

VICINITY MAP
NTS



N

LOCATION MAP
NTS

REGISTERED PROFESSIONAL ENGINEER — Digital Signature — 72710PE — OREGON — BARRY R REICHELDERFER — EXP. 12/31/26

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
		P DANKO	P DANKO	B REICHELDERFER			T DYE

REVISION

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

GENERAL
COVER SHEET, LOCATION AND VICINITY MAPS

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0001
SHEET	1

FILENAME: 001-G-0001_D3900000.dgn PLOT DATE: 09\03\2026 PLOT TIME: 11:54:56 AM

SHEET NUMBER	DRAWING NUMBER	DISCIPLINE	DRAWING TITLE
1	001-G-0001	GENERAL	COVER SHEET, LOCATION AND VICINITY MAPS
2	001-G-0002	GENERAL	INDEX TO DRAWINGS
3	001-G-0003	GENERAL	ABBREVIATIONS
4	001-G-0004	GENERAL	ABBREVIATIONS AND SYMBOLS
5	001-G-0005	GENERAL	STRUCTURAL ABBREVIATIONS
6	001-G-0010	GENERAL	STRUCTURAL NOTES
7	001-G-0040	GENERAL	PROCESS MECHANICAL LEGEND
8	001-G-0070	GENERAL	ELECTRICAL LEGEND
9	001-G-0071	GENERAL	ELECTRICAL AREA CLASSIFICATION AND MATERIALS OF CONSTRUCTION
10	001-G-0080	GENERAL	INSTRUMENTATION AND CONTROL LEGEND - 1
11	001-G-0081	GENERAL	INSTRUMENTATION AND CONTROL LEGEND - 2
12	001-G-0082	GENERAL	INSTRUMENTATION AND CONTROL EQUIPMENT TAGGING
13	001-G-0090	GENERAL	PROCESS MECHANICAL PIPING SCHEDULE
14	001-G-0091	GENERAL	PROCESS MECHANICAL VALVE SCHEDULES
15	001-G-0092	GENERAL	PROCESS MECHANICAL VALVE SCHEDULES
16	005-C-1000	CIVIL	OVERALL SITE PLAN, ACCESS, AND STAGING
17	008-N-0001	INSTRUMENTATION AND CONTROL	AERATION FIBER BACKBONE BLOCK DIAGRAM
18	008-N-0002	INSTRUMENTATION AND CONTROL	AERATION NETWORK BLOCK DIAGRAM
19	008-N-0003	INSTRUMENTATION AND CONTROL	AERATION / RAS NETWORK PATCHING DIAGRAM
20	008-N-0100	INSTRUMENTATION AND CONTROL	CONTROL PANEL CP-3B ELEVATIONS
21	008-N-0101	INSTRUMENTATION AND CONTROL	CONTROL PANEL WIRING TYPICAL
22	008-N-0102	INSTRUMENTATION AND CONTROL	REMOTE I/O PANEL CP-3B-RIO-1 ELEVATIONS
23	008-N-0103	INSTRUMENTATION AND CONTROL	REMOTE I/O PANEL CP-3B-RIO-2 ELEVATIONS
24	008-N-0104	INSTRUMENTATION AND CONTROL	REMOTE I/O PANEL CP-3B-RIO-3 ELEVATIONS
25	008-N-0105	INSTRUMENTATION AND CONTROL	REMOTE I/O PANEL WIRING TYPICAL
26	008-N-0107	INSTRUMENTATION AND CONTROL	ACP PANEL ELEVATIONS TYPICAL
27	008-N-3200	INSTRUMENTATION AND CONTROL	AERATION BASINS 1-4 - P&ID
28	008-N-3201	INSTRUMENTATION AND CONTROL	AERATION BASIN 1 - P&ID
29	008-N-3202	INSTRUMENTATION AND CONTROL	AERATION BASIN 2 - P&ID
30	008-N-3203	INSTRUMENTATION AND CONTROL	AERATION BASIN 3 - P&ID
31	008-N-3204	INSTRUMENTATION AND CONTROL	AERATION BASIN 4 - P&ID
32	008-N-3205	INSTRUMENTATION AND CONTROL	AERATION BASINS 1 AND 2 GALLERY - P&ID
33	008-N-3206	INSTRUMENTATION AND CONTROL	AERATION BASINS 3 AND 4 GALLERY - P&ID
34	008-N-3400	INSTRUMENTATION AND CONTROL	RAS FLOW CONTROL - P&ID
35	320-SX-1010	STRUCTURAL	DEMOLITION - TOP OF BASINS - OVERALL
36	320-SX-3001	STRUCTURAL	DEMOLITION - SECTION
37	320-S-1010	STRUCTURAL	TOP OF BASINS - OVERALL
38	320-S-3001	STRUCTURAL	SECTION AND DETAILS
39	320-DX-1010	PROCESS MECHANICAL	DEMOLITION - TOP OF BASINS - OVERALL
40	320-DX-3001	PROCESS MECHANICAL	DEMOLITION SECTION A
41	320-DX-3002	PROCESS MECHANICAL	DEMOLITION SECTION B
42	320-D-1000	PROCESS MECHANICAL	AERATION BASINS
43	320-D-1010	PROCESS MECHANICAL	TOP OF BASINS - OVERALL
44	320-D-1011	PROCESS MECHANICAL	TOP OF BASINS - 1 AND 2
45	320-D-1012	PROCESS MECHANICAL	TOP OF BASINS - 3 AND 4
46	320-D-1020	PROCESS MECHANICAL	LOWER BASINS - OVERALL
47	320-D-1021	PROCESS MECHANICAL	LOWER BASINS - 1 AND 2
48	320-D-1022	PROCESS MECHANICAL	LOWER BASINS - 3 AND 4
49	320-D-1030	PROCESS MECHANICAL	BASIN GALLERIES - OVERALL
50	320-D-1031	PROCESS MECHANICAL	GALLERIES - BASINS 1 AND 2
51	320-D-1032	PROCESS MECHANICAL	GALLERIES - BASINS 3 AND 4
52	320-D-3001	PROCESS MECHANICAL	SECTION A - TYPICAL SECTION VIEW - ALP MANIFOLD SIDE OF BASIN
53	320-D-3002	PROCESS MECHANICAL	SECTION B - TYPICAL SECTION VIEW - FLUSH VALVE SIDE OF BASIN
54	320-D-3003	PROCESS MECHANICAL	SECTION C - TYPICAL SECTION VIEW - BASINS 1 THRU 4 LOOKING WEST
55	320-D-5001	PROCESS MECHANICAL	ALP CONTROL MANIFOLDS DETAILS
56	320-EX-1010	ELECTRICAL	DEMOLITION - TOP OF BASINS - OVERALL
57	320-EX-1030	ELECTRICAL	DEMOLITION - BASIN GALLERIES - OVERALL
58	320-EX-5001	ELECTRICAL	DEMOLITION - DETAILS
59	320-E-1010	ELECTRICAL	TOP OF BASINS - OVERALL
60	320-E-1011	ELECTRICAL	TOP OF BASINS - 1 AND 2
61	320-E-1012	ELECTRICAL	TOP OF BASINS - 3 AND 4
62	320-E-1030	ELECTRICAL	BASIN GALLERIES - OVERALL
63	320-E-1031	ELECTRICAL	GALLERIES - BASINS 1 AND 2
64	320-E-1032	ELECTRICAL	GALLERIES - BASINS 3 AND 4
65	320-E-3001	ELECTRICAL	BASIN GALLERIES - SECTION
66	320-E-3002	ELECTRICAL	BASIN GALLERIES - SECTION
67	320-E-6001	ELECTRICAL	RISER DIAGRAM
68	320-E-6002	ELECTRICAL	RISER DIAGRAM
69	320-E-6003	ELECTRICAL	MCC-6C ONE-LINE AND ELEVATION
70	320-E-6010	ELECTRICAL	PANEL SCHEDULES
71	320-E-6020	ELECTRICAL	CONDUIT SCHEDULES
72	320-E-6021	ELECTRICAL	CONDUIT SCHEDULES
73	900-E-5001	ELECTRICAL	STANDARD DETAILS
74	900-D-5001	PROCESS MECHANICAL	STANDARD DETAILS
75	900-N-5001	INSTRUMENTATION AND CONTROL	STANDARD DETAILS
76	900-N-5002	INSTRUMENTATION AND CONTROL	STANDARD DETAILS

REGISTERED PROFESSIONAL ENGINEER — Digital Signature — 72710PE — OREGON — JANUARY 9, 2009 — BARRY R REICHELDERFER — EXP. 12/31/26

NO.	DATE	REVISION	DR	CHK	APVD	BY	APVD
DSGN	P DANKO		P DANKO	B REICHELDERFER			T DYE

© JACOBS 2025. ALL RIGHTS RESERVED.
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.

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

GENERAL

INDEX TO DRAWINGS

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0002
SHEET	

FILENAME: 001-G-0002_D3900000.dgn PLOT DATE: 09\10\2026 PLOT TIME: 10:10:11 AM

A	AMMETER, AMPERES, AWNINGS
AB	ANCHOR BOLT, ABOVE
ABDN	ABANDON
AC	ACOUSTICAL, ACOUSTICAL CEILING
AC	ALTERNATING CURRENT
AC	ASPHALTIC CONCRETE
ACFL	ACCESS FLOORING
ACI	AMERICAN CONCRETE INSTITUTE
ACMU	ACOUSTICAL CONCRETE MASONRY UNIT, ACOUSTICAL CMU
ACP	ACOUSTICAL PANELS
ACST	ACOUSTICAL
ACT	ACOUSTICAL TILE
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJACENT
ADW	DRY WEATHER AVERAGE
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AG	ACOUSTICAL, ACOUSTICAL GLASS
AGGR	AGGREGATE
AHR	ANCHOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AJ	ADJUSTABLE
AL	ALUMINUM
ALKY	ALKALINITY
ALTN/ALT	ALTERNATE
AM	AUTO-MANUAL
AMRD	ACOUSTICAL METAL ROOF DECKING
ANDZ	ANODIZE
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
AR	ANALOG RELAY
AS	AS SELECTED
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AUX	AUXILIARY
AVG	AVERAGE
AWW	WET WEATHER AVERAGE
@	AT
B	BELL
BAL	BALANCE
BETW	BETWEEN
BF	BLIND FLANGE, BOTTOM FACE
BFV	BUTTERFLY VALVE
BL	BASELINE
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BLK	BLOCK
BM	BEAM, BENCHMARK
BO	BOTTOM OF
B.O.B.	BOTTOM OF BEAM
BLL	BOTTOM LOWER LAYER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BRKR	BREAKER
BSP	BLACK STEEL PIPE
BUL	BOTTOM UPPER LAYER
BV	BALL VALVE, BLOCK VENT
BVC	BEGINNING OF VERTICAL CURVE
C	CONDUIT, CASEMENT
°C	DEGREE CELSIUS
C TO C	CENTER TO CENTER
CAB	CABINET
CB	CATCH BASIN, CIRCUIT BREAKER
CC	CENTER OF CIRCLE
CC	CONTROL CABLE
CCP	CENTRAL CONTROL PANEL
CCS	CENTRAL CONTROL SYSTEM
CDF	CONTROLLED DENSITY FILL
CE	CONSTRUCTION ENTRANCE
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEM	CHEMICAL
CHKD	CHECKERED
CI	CAST IRON
CIP	CAST IRON PIPE, CAST IN PLACE
CIP	CULVERT INLET PROTECTION
CISP	CAST IRON SOIL PIPE
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE
CLDI	CEMENT LINED DUCTILE IRON
CLSF	CONTROLLED LOW STRENGTH FILL
CLG	CEILING
CLR	CLEAR, CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CMP	CENTRAL MONITORING PANEL
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNTR	COUNTER
CO	CLEANOUT, CARBON MONOXIDE
COL	COLUMN, COLOR
CONC	CONCRETE
COND	CONDENSATE
CONDTN	CONDITIONED
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUED, CONTINUOUS, CONTINUATION
CONTR	CONTRACTOR
COORD	COORDINATE
COP	COPPER
CP	CENTER PIVOT
CP-X	CONTROL PANEL NO. X
CPLG	COUPLING
CPRSR	COMPRESSOR
CPT	CONTROL POWER TRANFORMER, CARPET
CPVC	CHLORINATED PVC
CR	CONTROL RELAY
CRS	COLD ROLLED STEEL
CRS	CONSTRUCTION ROAD STABILIZATION
CS	CHLORINE SOLUTION
CT	CERAMIC TILE
CT	CURRENT TRANSFORMER
CTC	COMPUTER TERMINAL CABINET
CTR	CENTER
CTRD	CENTERED
CTSK	COUNTERSUNK
CU	CUBIC
CU FT	CUBIC FOOT
CU IN	CUBIC INCH
CUH	COPPER TUBING, HARD DRAWN
CV	CHECK VALVE
CWR	CABINET DOOR MOUNTED WASTE RECEPTACLE
CY, CU YD	CUBIC YARD
CWS	CLEAN WATER SERVICES
D	DEEP, DRAIN
d	PENNY NAIL SIZE
DA	DUAL ACTION
DAS	DATA ACQUISTION SYSTEM
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DET	DETAIL
DF	DOUGLAS FIR, DRINKING FOUNTAIN
DDI	DROP INLET
DH	DOUBLE HUNG
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DISCH	DISCHARGE
DL	DEAD LOAD
DN	DOWN
DO	DISSOLVED OXYGEN
DOL	DIRECT-ON-LINE
DP, DPNL	DISTRIBUTION PANEL
DR	DOOR
DS	DOWNSPOUT / DISTRIBUTION SUPPLY
DWG	DRAWING
DWL	DOWEL
E	EAST, EMPTY
EA	EACH, EXHAUST AIR
EB, EBCT	EMPTY BED CONTACT TIME
ECC	ECCENTRIC
EE	EMERGENCY EYEWASH
EDF	EGG-SHAPED DIGESTER FACILITY
EF	EACH FACE, EXHAUST FAN
EFF	EFFICIENCY, EFFICIENT
EFL	EFFLUENT
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EL	ELEVATION
ELB	ELBOW
ELC	ELECTRICAL LOAD CENTER
ELEC	ELECTRIC, ELECTRICAL
ENGR	ENGINEER
EOP	EDGE OF PAVEMENT
ESC	EROSION AND SEDIMENT CONTROL
EP	EXPLOSION PROOF, EDGE OF PAVING
EQL	EQUAL
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
ESC	EROSION AND SEDIMENT CONTROL
ETM	ELAPSED TIME METER
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXP	EXPANSION, EXPOSED
EXP AB	EXPANSION ANCHOR BOLT
EXP JT	EXPANSION JOINT
EXST, EXIST	EXISTING
EXT	EXTERIOR
° F	DEGREE FAHRENHEIT
FB	FLAT BAR
F, FU	FUSE
F, FX	FIXED
FAP	FIRE ALARM PANEL
FC	FLEXIBLE CONDUIT
FCA	FLANGED COUPLING ADAPTER
FCL2	FREE CHLORINE RESIDUAL
FCO	FLOOR CLEANOUT
FCTY	FACTORY
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FDN	FOUNDATION
FDR	FEEDER
FE	FILTER EFFLUENT
FEXT	FIRE EXTINGUISHER
FF	FINISHED FLOOR
FG	FINISH GRADE, FLOAT GLASS
FIT	FLOW INDICATING TRANSMITTER
FH	FLAT HEAD
FHY	FIRE HYDRANT
FIG	FIGURE
FL	FLOW LINE
FLG	FLANGE
FL	FLOOR
FLEX	FLEXIBLE
FLH	FLAT HEAD
FLTR	FILTER
FLUOR	FLUORESCENT
FNSH	FINISH
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FP	FIELD PANEL
FPM	FEET PER MINUTE
FR	FORWARD REVERSE
FRP	FIBERGLASS REINFORCED PLASTIC
FSHS	FOLDING SHOWER SEAT
FT	FOOT OR FEET
FTG	FOOTING
FU	FIXTURE UNIT
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
FWD	FORWARD
G, GND	GROUND
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GB	GYPSUM BOARD
GC	GROOVED COUPLING
GCMU	GLAZED CONCRETE MASONRY UNITS
GFA	GROOVED FLANGE ADAPTER
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GH	GREENHOUSE
GL	GLASS
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPS	GLOBAL POSITION SYSTEM
GRTG	GRATING
GSB	GYPSUM SOFFIT BOARD
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GVL	GRAVEL
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
H	HIGH, HORN OR HOWLER
H2S	HYDROGEN SULFIDE
H.A.S.	HEADED ANCHOR STUD
HC	HOLLOW CORE WOOD
HCL	HYDROCHLORIC ACID
HDG	HOT DIPPED GALVANIZED
HDNR	HARDENER
HDNS	HARDNESS
HDR	HEADER
HDW	HARDWARE
HGL	HYDRAULIC GRADE LINE
HK	HOOK
HGT	HEIGHT
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HK	HOOK
HM	HOLLOW METAL
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HORIZ	HORIZONTAL
HP	HORSEPOWER
HPT	HIGH POINT
HPU	HYDRAULIC POWER UNIT
HR	HOSE RACK, HANDRAIL
HV	HOSE VALVE
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
HWL	HIGH WATER LEVEL
IC	INTERRUPTING CAPACITY
ID	INDUCED DRAFT, INSIDE DIAMETER
IE	INVERT ELEVATION
I.F.	INSIDE FACE
IG	INSULATING, INSULATING GLASS
IN	INCH
INCAND	INCANDESCENT
INFL	INFLUENT
INJS	INJECTIONS
INST	INSTANTANEOUS
INSTM	INSTRUMENT, INSTRUMENTATION
INSUL	INSULATION
INVT	INVERT
IP	INLET PROTECTION, INSTRUMENTATION PANEL
IRRIG	IRRIGATION
ITG	INSULATED TEMPERED GLASS
ITX	ISOLATION TRANSFORMER
IU	INTAKE UNIT
IW	IRRIGATION WELL
J	JALOUSIE
JA	JAL-AWNING
JB	JUNCTION BOX
JAN	JANITOR
JCT	JUNCTION
JT	JOINT
K	KEY GROUP, KEY INTERLOCK
KIP	THOUSAND POUNDS
KIT	KITCHEN
K-PL	KICKPLATE
kPa	KILOPASCAL
KSK	KITCHEN SINK
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KW	KILOWATT
L	ANGLE, LENGTH
LA	LIGHTNING ARRESTER
LAB	LABORATORY
LAM	LAMINATE
LAT	LATITUDE
LB	POUND
LC	LIGHTING CONTACTOR
LD	COMBINATION LOUVER/DAMPER
LDG	LOADING DOCK
LEL	LOWER EXPLOSIVE LIMIT
LF	LINEAR FEET
LG	LONG
LH	LEFT HAND
LL	LIVE LOAD
LHR	LEFT HAND REVERSE
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG	LONGITUDINAL
LOS	LOCK-OUT STOP PUSHBUTTON
LP	LIGHT POLE, LIGHTING PANEL, LOCAL PANEL
LPT	LOW POINT
LR	LATCHING RELAY
LR	LOCAL-REMOTE
LR	LONG RADIUS
LS	LABORATORY SINK
LT	LEFT
LTG, LTS	LIGHTS OR LIGHTING
LTX	LIGHTING TRANSFORMER
LWL	LOW WATER LEVEL
MA	MANUAL-AUTO
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MASONRY CLEARANCE
MC	MODULATE-CLOSE
MCC	MOTOR CONTROL CENTER
MCJ	MASONRY CONTROL JOINT
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MFD	MANUFACTURED
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE, MOUNTING HEIGHT
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MLO	MAIN LUGS ONLY
MMDW	DRY WEATHER MAXIMUM MONTH
MMP	MECHANICAL MOUNTING PANEL
MMWW	WET WEATHER MAXIMUM MONTH
MO	MANUAL OPERABLE, MASONRY OPENING
MP	METAL PANEL
MPa	MEGAPASCAL
MPU	MULTIPURPOSE UNIT
MS	MANUFACTURER'S STANDARD
MSC	MANUFACTURER SUPPLIED CABLE
MSR	GROUPED MOTOR CONTROL
MT	MOUNT
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MTS	MILL TYPE STEEL PIPE
MU	MULCHING
MV	MERCURY VAPOR
MWS	MAXIMUM WATER SURFACE
N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NA	NON-AUTOMATIC
NC	NORMALLY CLOSED
NEUT	NEUTRAL
NG	NATURAL GAS
NGVD	NATIONAL GEODETIC VERTICAL DATUM
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NO., #	NUMBER
NOM	NOMINAL
NP	NON-PROTECTED
NPT	NATIONAL PIPE THREADS
NS	NON-SHRINK
NTS	NOT TO SCALE
O2	OXYGEN
O TO O	OUT TO OUT
OA	OVERALL, ODOROUS AIR
OC	ON CENTER
OC	OPEN-CLOSE (O)
OCA	OPEN-CLOSE-AUTO
OCR	OPEN-CLOSE-REMOTE
OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
O.F.	OUTSIDE FACE
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OL	OVERLOAD RELAY
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OP	OPAQUE PANEL, OUTLET PROTECTION
OPER	OPERATOR
OPNG	OPENING
OPP	OPPOSITE
OSA	OUTSIDE AIR
OSC	OPEN-STOP-CLOSE
OSD	OPEN SITE DRAIN
OWSJ	OPEN WEB STEEL JOIST
OZ	OUNCE
P	PROJECTED PILASTER, PIPE
PAVT	PAVER TILE
PB	PUSHBUTTON SWITCH
PC	POINT OF CURVE, PHOTOCELL
PC	PRECAST CONCRETE PANEL
PCCP	PRESTRESSED CONCRETE CYLINDER PIPE
PCV	PRESSURE CONTROL VALVE
PD	PUMPED DRAIN
PE	PLAIN END
PED	PEDESTAL, PEDESTRIAN
PEP	POLYETHYLENE PIPE
PEN.	PENETRATION
PFC	POUNDS PER CUBIC FOOT
PH	PENTHOUSE
pH	HYDROGEN ION CONCENTRATION
PH	PHASE
PIT	POINT OF INTERSECTION, PILOT TUBE TEST STATION
PJF	PREMOULDED JOINT FILLER
PL	PLATE (STEEL)
PL	PROPERTY LINE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER, PLASTIC
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLYWD	PLYWOOD
PNL	PANEL
PP	POWER POLE
P-P	PUSH-PULL
PPL	POLYPROPYLENE LINED
PR	PAIR
PRC	POINT OF REVERSE CURVE
PRCST	PRECAST
PREFAB	PREFABRICATION
PRES	PRESSURE
PRI	PRIMARY
PRM	PERMANENT REFERENCED MARKER
PROJ	PROJECTION
PROP	PROPERTY
PS	PLASTIC SHEET, POLYCARBONATE SHEET
PS	PAINT SYSTEM
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PT	POINT OF TANGENCY
PT	POTENTIAL TRANSFORMER
PT	PRESSURE TREATED
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
QAA	AVERAGE FLOW
QMM	MAXIMUM 30 DAY FLOW
QPI	PEAK INSTANTANEOUS FLOW
QPP	PEAK PUMPING FLOW
QT	QUARRY TILE
R	RISER
R OR RAD	RADIUS
RA	RETURN AIR
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RCPT	RECEPTACLE
RD	ROAD, ROOF DRAIN
RDCR	REDUCER
RDW	REDWOOD
RECIR	RECIRCULATION
REF	REFER OR REFERENCE
REFR	REFRIGERATE, REFRIGERANT
REINF	REINFORCED, REINFORCING, REINFORCE
REQD	REQUIRED
RESIL	RESILIENT
RFS	ROLL-UP FIRE SHUTTER
RH	RIGHT HAND
RH	RODHOLE
RHR	RIGHT HAND REVERSE
RL	RAIN LEADER
RLD	RAIN LOAD
RLS	RUBBER LINED STEEL
RM	ROOM
RO	ROUGH OPENING
ROL	RAISE-OFF-LOWER
RPM	REVOLUTIONS PER MINUTE
RR	RIPRAP

REGISTERED PROFESSIONAL ENGINEER — OREGON — 72710PE — Digital Signature — BARRY R REICHELDERFER — EXP. 12/31/26

NO.	DATE	DSGN	DR	CHK	REVISION	BY	APVD
	P DANKO		P DANKO	B REICHELDERFER	APVD		T DYE

© JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

GENERAL
ABBREVIATIONS

100% DESIGN SUBMITTAL

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

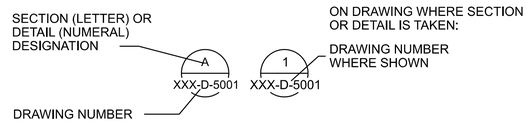
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0003
SHEET	3

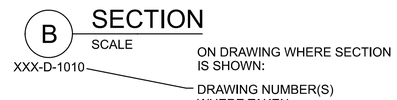
FILENAME: 001-G-0003_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:45

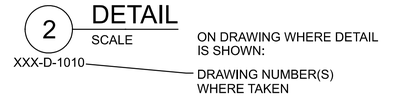
RRUB	RADIAL RUBBER
RS	RIGID STEEL
RST	REINFORCING STEEL
RT	RIGHT
RTN	RETURN
RTO	REGENERATIVE THERMAL OXIDIZER
RUB	RUBBER
RUBC	RUBBER CUSHIONED FLOORING
RUBS	RUBBER ESD CONTROL FLOORING
R/W	RIGHT OF WAY
S	SLOPE, SOUTH, SWITCH
SA	SUPPLY AIR
SATC	SUSPENDED ACCUSTICAL TILE CEILING
SB	SEDIMENT BASIN
SC	SHOWER CURTAIN, SOLID CORE WOOD
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCC	SOLID CORE
SCFM	STANDARD CUBIC FEED PER MINUTE
SCHED	SCHEDULE
SCU	SPEED CONTROL UNIT
SDP	SUB-DISTRIBUTION PANEL
SDWK	SIDEWALK
SEC	SECONDARY
SECT	SECTION
SED	SEDIMENTATION
SEW	SEWAGE
SG	LAMINATED SAFETY GLASS, SAFETY
SGWB	SUSPENDED GYPSUM WALL BOARD
SH	SHEET
SHA	SURFACE HARDENING AGENT
SHS	SOLIDS HANDLING SYSTEM
SIM	SIMILAR
SK	SINK
SL	SNOW LOAD
SLR	SEALER
SMLS	SEAMLESS EPOXY
SOI	SPRAY- ON INSULATION
SOLN	SOLUTION
SP	SPACE OR SPACES, SPANDREL PANEL, STORMPROOF
SPEC, SPECS	SPECIFICATIONS
SPD	SUMP PUMP DISCHARGE
SPG	SPACING
SPLY	SUPPLY
SQ	SQUARE
SQ FT	SQUARE FOOT, FEET
SQ IN	SQUARE INCH
SR	SHORT RADIUS
SS	START-STOP
SST	STAINLESS STEEL
SSC	SUPERVISORY SET POINT CONTROL
ST	STORM DRAIN
ST	STRAIGHT
STA	STATUS, STATION
STD	STANDARD
STIF	STIFFENER
STIRR	STIRRUP
STL	STEEL
STRL	STRUCTUAL
STRUCT	STRUCTURE
SUBFL	SUBFLOOR
SUSP	SUSPENDED
SV	SOLENOID VALVE
SVIN	SHEET VINYL
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYMM	SYMMETRICAL
T	THERMOSTAT, TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TA	TRANSFER AIR
TAN	TANGENT
TB	TERMINAL BOARD
TBG	TUBING
TC	TIME TO CLOSE
TC	TURBIDITY CURTAIN
TCAD	TIME CLOSE AFTER DE-ENERGIZATION
TCAE	TIME CLOSE AFTER ENERGIZATION
TDH	TOTAL DYNAMIC HEAD
TDR	TIME DELAY RELAY
TECH	TECHNICAL
TEL	TELEPHONE
TEMP	TEMPORARY, TEMPERATURE
TF	TOP FACE
TFG	TEMPERED FLOAT GLASS
TG	TEMPERED
TH	TOP-HINGED
THD	THREAD
THK	THICKNESS
THRU	THROUGH

TJB	TERMINAL JUNCTION BOX
TL	TEFLON LINED PIPE
T.O.	TIME TO OPEN, TOP OF
TOAE	TIME OPEN AFTER ENERGIZATION
TOC	TOP OF CONCRETE
TOC	TOP OF CURB
TOD	TIME ON DELAY, TOP OF DUCT
	TOTAL OXYGEN DEMAND
TOF	TOP OF FOOTING
TOG	TOP OF GROUT, TOP OF GRATE
T.O.P.	TOP OF PARAPET
TOS	TOP OF SLAB
TOW	TOP OF WALL
TP	TURNING POINT
TR	TRANSOM, TRUSS
TRANS	TRANSFORMER, TRANSITION
TRANSV	TRANSVERSE
TRD	TREAD
TS	TEMPORARY SEEDING, TUBE STEEL
TSH	TEMPERATURE SWITCH HIGH
TSHT	THRESHOLD
TSS	TOTAL SUSPENSION SOLIDS
TST	TOP OF STEEL
TTC	TELEPHONE TERMINAL CABINET
TTD	TOILET TISSUE DISPENSER
TU-X	TREATMENT UNIT NO. X
TURB	TURBIDITY
TWP	TRANSLUCENT WALL PANEL
TX	TRANSFORMER
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIT SUBSTATION
UVR	UNDER VOLTAGE RELAY
V	VENT, VALVE
V	VOLTMETER, VOLTS
VB	VAPOR BARRIER (RETARDER)
VC	VERTICAL CURVE
VCP	VITRIFIED CLAY PIPE
VCT	VINYL COMPOSITION TILE
VEL	VELOCITY
VERT	VERTICAL
VHC	VOLATILE HYDROCARBONS
VIB	VIBRATION
VIF	VERIFY IN FIELD
VIN	VINYL
VINT, VT	VINYL TILE
VP	VERTICAL PIVOTED
VPS	VENEER PLASTER SYSTEM
VPC	POINT OF VERTICAL CURVATURE
VPI	POINT OF VERTICAL INTERSECTION
VPT	POINT OF VERTICAL TANGENT
VS	VERTICAL SLIDE
VTR	VENT THRU ROOF
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
WC	WATER COLUMN
WEASTRIP	WEATHERSTRIP
WG	WIRE, WIRE GLASS
WH	WATTHOUR METER
WHD	WATTHOUR DEMAND METER
WP	WATERPROOF, WEATHERPROOF, WORKPOINT
WR	WASTE RECEPTACLE
WRB	WATER RESISTANT GWB
WS	WATER SURFACE, WATERSTOP, WELDED STEEL
WWF	WELDED WIRE FABRIC
WWPH	WET WEATHER PEAK HOUR

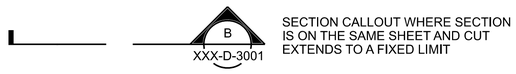
SECTION / DETAIL DESIGNATIONS



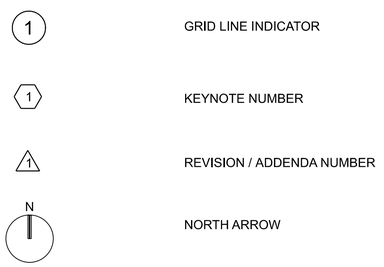




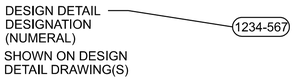








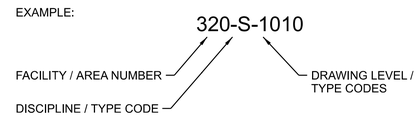
DESIGN DETAIL DESIGNATION



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. 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.

DRAWING NUMBERING LEGEND



FACILITY / AREA NUMBER

001 - GENERAL
005 - SITE DEVELOPMENT
008 - INSTRUMENTATION AND CONTROL
320 - AERATION BASINS
900 - STANDARD DETAILS

DISCIPLINE / TYPE CODES

C - CIVIL
D - PROCESS MECHANICAL
DX - PROCESS DEMOLITION
E - ELECTRICAL
EX - ELECTRICAL DEMOLITION
G - GENERAL
N - INSTRUMENTATION AND CONTROL
S - STRUCTURAL

DRAWING LEVEL / TYPE CODES

1000 - PLANS
2000 - ELEVATIONS
3000 - SECTIONS
4000 - ENLARGED PLANS
5000 - DETAILS
6000 - DIAGRAMS, SCHEDULES

REGISTERED PROFESSIONAL ENGINEER — OREGON — 72770PE — Digitally Signed — BARRY R REICHELDERFER — EXP. 12/31/26

NO.	DATE	DSGN	DR	CHK	REVISION	BY	APVD
	P DANKO	P DANKO	P DANKO	B REICHELDERFER		T DYE	

© JACOBS 2026. ALL RIGHTS RESERVED.
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.

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

GENERAL
ABBREVIATIONS AND SYMBOLS

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0004
SHEET	4

100% DESIGN SUBMITTAL

FILENAME: 001-G-0004_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:45

STRUCTURAL ABBREVIATIONS

@	AT
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
ADDL	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISH FLOOR
AHR	ANCHOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL	ALUMINUM
ALLOW	ALLOWABLE
ALTN	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APVD	APPROVED
ARCH.	ARCHITECTURAL
ASTM	ASTM INTERNATIONAL
AWS	AMERICAN WELDING SOCIETY
BETW	BETWEEN
BF	BOTTOM FACE
BLDG	BUILDING
BLL	BOTTOM LOWER LAYER
BM	BEAM
BO	BOTTOM OF
BOT	BOTTOM
BRG	BEARING
BUL	BOTTOM UPPER LAYER
C	CHANNEL OR C-SHAPE
C TO C	CENTER TO CENTER
CHKD PL	CHECKERED PLATE
CIPC	CAST-IN-PLACE CONCRETE
CJ	CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION (WELD)
CL	CENTERLINE
CLR	CLEARANCE, CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
CTLJ	CONTROL JOINT
CTR	CENTER
CTRD	CENTERED
CU	CUBIC
d	PENNY (NAIL SIZE)
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DEG	DEGREE
DET	DETAIL
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DIM.	DIMENSION
DIR	DIRECTION
DL	DEAD LOAD
DN	DOWN
DO	DITTO
DTI	DIRECT TENSION INDICATOR
DWG	DRAWING
DWL	DOWEL
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMBED	EMBEDMENT, EMBED
ENGR	ENGINEER
EQL	EQUAL
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
EQUIV	EQUIVALENT
EW	EACH WAY
EXP JT	EXPANSION JOINT
EXST	EXISTING
EXT	EXTERIOR
FAB	FABRICATE, FABRICATION
FB	FLAT BAR
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FINISH FLOOR
FG	FINISH GRADE
FL	FLOOR
FRCF	FIBER REINFORCED CONCRETE FILL
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET, FOOT
FTG	FOOTING
FV	FIELD VERIFY
GA	GAUGE, GAGE
GALV	GALVANIZED (HOT DIP)
GLB	GLUE LAMINATED BEAM
GRTG	GRATING
GVL	GRAVEL
H.A.S.	HEADED ANCHOR STUD
HDR	HEADER
HORIZ	HORIZONTAL
HPT	HIGH POINT
HSS	HOLLOW STRUCTURAL SECTION
HVAC	HEATING , VENTILATION, AND AIR CONDITIONING
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
I.F.	INSIDE FACE
IN.	INCH(ES)
INSUL	INSULATION
INTMD	INTERMEDIATE
INTR	INTERIOR
J	JOIST
JB	JOIST BEARING
JT	JOINT
KIP(S)	THOUSAND POUNDS
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
L	ANGLE OR L-SHAPE
LB(S)	POUND(S) FORCE
LF	LINEAR FEET
LIW	LOAD INDICATING WASHER
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG.	LONGITUDINAL
LPT	LOW POINT
LSL	LONG SLOTTED HOLE
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MET.	METAL
MFD	MANUFACTURED
MFR(S)	MANUFACTURER (MANUFACTURER'S)
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO.	NUMBER
NTS	NOT TO SCALE
O TO O	OUT TO OUT
OC	ON CENTER
OD	OUTSIDE DIAMETER
O.F.	OUTSIDE FACE
OPNG(S)	OPENING(S)
OPP	OPPOSITE
OWSJ	OPEN WEB STEEL JOIST
P	PILASTER
PERIM	PERIMETER
PJF	PREMOLDED JOINT FILLER
PJP	PARTIAL JOINT PENETRATION (WELD)
PKG	PACKAGE
PL	PLATE
PLCS	PLACES
PLF	POUNDS FORCE PER LINEAR FOOT
PLYWD	PLYWOOD
PNL	PANEL
PRCST	PRECAST
PREFAB	PREFABRICATE(D)
PRELIM	PRELIMINARY
PRI	PRIMARY
PSF	POUNDS FORCE PER SQUARE FOOT
PSI	POUNDS FORCE PER SQUARE INCH
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
R	RADIUS, RISER
RAD	RADIUS
RC	REINFORCED CONCRETE
RDAA	REINFORCING DOWEL ADHESIVE ANCHOR
RDW	REDWOOD
RECT	RECTANGULAR, RECTANGLE
REF	REFERENCE
REINF	REINFORCE, REINFORCEMENT
REQD	REQUIRED
RST	REINFORCING STEEL
S	I-BEAM
SC	SLIP CRITICAL (BOLTS)
SCHED	SCHEDULE
SECT.	SECTION
SH	SHEET
SIM	SIMILAR
SOG	SLAB ON GRADE
SP	SPACE
SPEC(S)	SPECIFICATION(S)
SPECD	SPECIFIED
SPG	SPACING
SQ	SQUARE
SSL	SHORT SLOTTED HOLE
SST	STAINLESS STEEL
STD	STANDARD
STIF	STIFFENER
STIR.	STIRRUP
STL	STEEL
STR	STRAIGHT
STRL	STRUCTURAL
STRUCT	STRUCTURE
SYMM	SYMMETRICAL
T	TREAD
T&B	TOP AND BOTTOM
TAS	THREADED ANCHOR STUD
TC	TOP OF CONCRETE, TOP OF CURB
TEMP	TEMPERATURE
TF	TOP OF FOOTING, TOP FACE
THK	THICK
THKNS	THICKNESS
THRU	THROUGH
TLL	TOP LOWER LAYER
TM	TOP OF MASONRY
T.O.	TOP OF
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
T.O.W.	TOP OF WALL
TRANSV	TRANSVERSE
TUL	TOP UPPER LAYER
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UNIF	UNIFORM, UNIFORMLY
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
W	WIDE FLANGE BEAM
W/	WITH
W/O	WITHOUT
WD	WOOD
WP	WORKING POINT
WS	WATERSTOP, WATER SURFACE
WT	WEIGHT
WWF	WELDED WIRE FABRIC

NOTES:
FOR ABBREVIATIONS NOT LISTED, SEE GENERAL ABBREVIATIONS AND ASME Y14.38 - "ABBREVIATIONS AND ACRONYMS FOR USE ON DRAWINGS AND RELATED DOCUMENTS" AS DISTRIBUTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).

REGISTERED PROFESSIONAL ENGINEER — OREGON — ALEX L. FIEN — Digital Signature — EXP 12/31/2027

NO.	DATE	DSGN	DR	REVISION	CHK	BY	APVD
		P DANKO	P DANKO		B REICHELDERFER		T DYE

© JACOBS 2026. ALL RIGHTS RESERVED.

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

GENERAL
STRUCTURAL ABBREVIATIONS

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0005
SHEET	5

FILENAME: 001-G-0005_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:45

GENERAL INFORMATION

1. FOR ABBREVIATIONS NOT LISTED, SEE ASME Y14.38 "ABBREVIATIONS AND ACRONYMS: PUBLICATION AS DISTRIBUTED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME).
2. DESIGN DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR SITUATIONS OCCURRING THROUGHOUT THE PROJECT, WHETHER OR NOT THEY ARE INDIVIDUALLY CALLED OUT.
3. VERIFY FINAL OPENING DIMENSIONS IN WALLS, SLABS, AND DECKS WITH OTHER DISCIPLINE DRAWINGS PRIOR TO CONSTRUCTION OF THESE ELEMENTS.
4. FOR NUMBER, TYPE, SIZE, ARRANGEMENT, AND/OR LOCATION OF EQUIPMENT PADS, SEE OTHER DISCIPLINE DRAWINGS. COORDINATE WITH EQUIPMENT SUPPLIER PRIOR TO PLACING SLABS, WALLS AND FOUNDATIONS. COORDINATE PIPING OPENINGS WITH OTHER DISCIPLINE DRAWINGS.
5. DO NOT CUT OR MODIFY STRUCTURAL MEMBERS FOR PIPES, DUCTS, ETC, UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY THE ENGINEER.
6. VISITS TO THE JOB SITE BY THE ENGINEER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT ENGINEER IS GUARANTOR OF CONSTRUCTOR'S WORK, NOR RESPONSIBLE FOR THE COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, OR SAFETY AT THE JOB SITE.
7. INFORMATION (DETAILING, DIMENSIONS, CONFIGURATIONS, AND ELEVATIONS, ETC.) OF EXISTING CONSTRUCTION SHOWN REFLECTS AVAILABLE EXISTING DESIGN DOCUMENTS, AND DOES NOT NECESSARILY REPRESENT THE AS-CONSTRUCTED CONDITIONS. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS, ELEVATIONS AND DETAILING OF THE EXISTING STRUCTURES PRIOR TO UNDERTAKING ANY WORK THAT IS AFFECTED BY THE EXISTING STRUCTURE. NOTIFY ENGINEER IF CONDITIONS VARY FROM THAT SHOWN PRIOR TO STARTING WORK.

INSPECTION AND TESTING

1. SPECIAL INSPECTION DOES NOT INCLUDE OR WAIVE THE RESPONSIBILITY FOR INSPECTIONS REQUIRED BY THE BUILDING OFFICIAL. THE CONTRACTOR SHALL SCHEDULE BOTH INSPECTIONS.
2. SPECIFIED CONCRETE AND OTHER MATERIAL TESTING RELATED TO SPECIAL INSPECTION DURING CONSTRUCTION WILL BE OWNER FURNISHED.
3. SPECIFIED LABORATORY TEST MIXES AND SIMILAR TEST RESULTS TO VERIFY MATERIAL QUALITY AND CONFORMANCE TO SPECIFICATIONS, AND SUBMITTED FOR REVIEW PRIOR TO ACCEPTANCE FOR USE ON THE PROJECT, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. SPECIAL INSPECTION, TESTING AND OBSERVATION (OWNER FURNISHED) IS REQUIRED IN ACCORDANCE WITH IBC AS INDICATED IN THE STATEMENT OF SPECIAL INSPECTIONS.

FORMWORK, SHORING, AND BRACING

1. STRUCTURES SHOWN ON THE DRAWINGS HAVE BEEN DESIGNED FOR STABILITY UNDER FINAL CONDITIONS ONLY. DESIGN SHOWN DOES NOT INCLUDE NECESSARY COMPONENTS OR EQUIPMENT FOR STABILITY OF THE STRUCTURES DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR WORK RELATING TO CONSTRUCTION ERECTION METHODS, BRACING, SHORING, RIGGING, GUYS, SCAFFOLDING, FORMWORK, AND OTHER WORK AIDS REQUIRED TO SAFELY PERFORM THE WORK SHOWN.

CAST IN PLACE CONCRETE

1. 28-DAY COMPRESSIVE STRENGTHS (TO MEET STRUCTURAL STRENGTH REQUIREMENTS):
   TYPICAL CONCRETE STRUCTURES: 4500 PSI
2. DESIGN STRENGTHS ARE SAME AS 28-DAY COMPRESSIVE STRENGTHS.
3. ROUGHEN AND CLEAN CONSTRUCTION JOINTS IN WALLS AND SLABS AS SPECIFIED PRIOR TO PLACING ADJACENT CONCRETE.
4. COORDINATE PLACEMENT OF OPENINGS, PIPE PENETRATIONS, CURBS, DOWELS, SLEEVES, CONDUITS, BOLTS AND INSERTS PRIOR TO PLACEMENT OF CONCRETE.
5. NO ALUMINUM CONDUIT OR PRODUCTS CONTAINING ALUMINUM OR ANY OTHER MATERIAL INJURIOUS TO THE CONCRETE SHALL BE EMBEDDED IN THE CONCRETE.

ADHESIVE CONCRETE ANCHORS

1. THREADED ROD:
   - A. DIAMETER AS SHOWN ON THE DRAWINGS.
   - B. LENGTH AS REQUIRED TO PROVIDE MINIMUM DEPTH OF EMBEDMENT INDICATED AND THREAD PROJECTION REQUIRED.
   - C. CLEAN AND FREE OF GREASE, OIL, OR OTHER DELETERIOUS MATERIAL.
2. ADHESIVE:
   - A. TWO-COMPONENT, INSENSITIVE TO MOISTURE, DESIGNED TO BE USED IN ADVERSE FREEZE/THAW ENVIRONMENTS.
   - B. CURE TEMPERATURE, POT LIFE, AND WORKABILITY: COMPATIBLE FOR INTENDED USE AND ANTICIPATED ENVIRONMENTAL CONDITIONS.
3. PACKAGING AND STORAGE:
   - A. DISPOSABLE, SELF-CONTAINED SYSTEM CAPABLE OF DISPENSING BOTH COMPONENTS IN PROPER MIXING RATIO AND FITTING INTO A MANUALLY OR PNEUMATICALLY OPERATED CAULKING GUN.
   - B. STORE ADHESIVE ON PALLETS OR SHELVING IN A COVERED STORAGE AREA.
   - C. PACKAGE MARKINGS: INCLUDE MANUFACTURER'S NAME, PRODUCT NAME, BATCH NUMBER, PRODUCT EXPIRATION DATE, ANSI HAZARD CLASSIFICATION, AND APPROPRIATE ANSI HANDLING PRECAUTIONS.
   - D. DISPOSE OF WHEN:
     1) SHELF LIFE HAS EXPIRED.
     2) STORED OTHER THAN IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. MANUFACTURERS AND PRODUCTS:
   - A. HILTI, INC., TULSA, OK; HIT DOWELING ANCHOR SYSTEM, HIT HY 200 V3 SAFE SET SYSTEM, HIT RE 500 V3 SAFE SET SYSTEM, OR HIT RE 500 V3 SAFE SET SYSTEM
   - B. SIMPSON STRONG-TIE CO., INC., PLEASANTON, CA; SET 3G EPOXY ADHESIVE ANCHORS. (ESR 4057).
   - C. DEWALT/POWERS FASTENERS, BREWSTER NY; PURE 220+ EPOXY ADHESIVE ANCHOR SYSTEM WITH DUST X+ SYSTEM (ESR 5144).

CONCRETE REINFORCING

1. REINFORCING STEEL:
   TYPICAL: ASTM A615, GRADE 60
   WELDED: ASTM A706, GRADE 60 (WELDING IS ONLY PERMITTED WITH WRITTEN PERMISSION FROM ENGINEER)
2. FABRICATION AND PLACEMENT OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH CRSI MSP-1 "MANUAL OF STANDARD PRACTICE" AND ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE".
3. CONCRETE COVER FOR REINFORCING, UNLESS SHOWN OTHERWISE, SHALL BE:
   WHEN CAST AGAINST EARTH: 3"
   ALL OTHER CONDITIONS: 2"
4. 90 DEGREE BENDS, UNLESS OTHERWISE SHOWN, SHALL BE ACI 318 STANDARD HOOKS.
5. REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENTS:

CONCRETE DESIGN STRENGTH = 4,500 PSI MIN AT 28 DAYS[3]		GRADE 60 REINFORCING STEEL								
BAR SIZE		#3	#4	#5	#6	#7	#8	#9	#10	#11
LAP SPLICE LENGTH										
SPACING = 3"	TOP BAR [2]	1'-4"	1'-8"	2'-1"	3'-0"	5'-2"	6'-8"	8'-6"	10'-10"	13'-4"
	OTHER BAR	1'-4"	1'-4"	1'-8"	2'-4"	4'-0"	5'-2"	6'-7"	8'-4"	10'-3"
SPACING = 4"	TOP BAR [2]	1'-4"	1'-8"	2'-0"	2'-5"	3'-10"	5'-0"	6'-5"	8'-1"	10'-0"
	OTHER BAR	1'-4"	1'-4"	1'-7"	1'-10"	3'-0"	3'-11"	4'-11"	6'-3"	7'-8"
SPACING ≥ 6"	TOP BAR [2]	1'-4"	1'-8"	2'-0"	2'-5"	3'-6"	4'-0"	5'-0"	6'-2"	7'-5"
	OTHER BAR	1'-4"	1'-4"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-9"	5'-8"
EMBEDMENT LENGTH										
SPACING = 3"	TOP BAR [2]	1'-0"	1'-3"	1'-8"	2'-4"	4'-0"	5'-2"	6'-7"	8'-4"	10'-3"
	OTHER BAR	1'-0"	1'-0"	1'-3"	1'-10"	3'-1"	4'-0"	5'-1"	6'-5"	7'-11"
SPACING = 4"	TOP BAR [2]	1'-0"	1'-3"	1'-7"	1'-10"	3'-0"	3'-11"	4'-11"	6'-3"	7'-8"
	OTHER BAR	1'-0"	1'-0"	1'-3"	1'-5"	2'-4"	3'-0"	3'-10"	4'-10"	5'-11"
SPACING ≥ 6"	TOP BAR [2]	1'-0"	1'-3"	1'-7"	1'-10"	2'-9"	3'-1"	3'-10"	4'-9"	5'-8"
	OTHER BAR	1'-0"	1'-0"	1'-3"	1'-5"	2'-1"	2'-5"	3'-0"	3'-8"	4'-5"

1. LAP LENGTHS ARE BASED ON MINIMUM CONCRETE COVER OF 2". LONGER LENGTHS ARE REQUIRED FOR CONCRETE COVER LESS THAN 2".
2. TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

HATCH LIQUID TIGHTNESS TESTS

1. PURPOSE: TO DETERMINE INTEGRITY AND LIQUID-TIGHTNESS OF FINISHED HATCH INSTALLATION IN LIQUID CONTAINMENT STRUCTURES.
2. CONTRACTOR SHALL CONDUCT LIQUID TIGHTNESS TESTING.
3. STRUCTURES SHALL BE FILLED WITH TEST WATER ONLY AFTER THE FOLLOWING CONDITIONS ARE SATISFIED:
   - A. STRENGTH OF CONCRETE IN NEW GATE COLLAR HAS ATTAINED SPECIFIED 28 DAY COMPRESSIVE STRENGTH.
   - B. WATER FOR INITIAL TIGHTNESS TEST WILL BE PROVIDED BY OWNER.
   - C. IF ADDITIONAL TIGHTNESS TESTS ARE REQUIRED BECAUSE OF FAILURE TO MEET CRITERIA, PROVIDE WATER FOR SUBSEQUENT TESTS.
4. AFTER TESTING HAS BEEN COMPLETED, DISPOSE OF TEST WATER IN A MANNER APPROVED BY OWNER.
5. LIQUID-TIGHTNESS TEST REQUIREMENT:
   - A. PERFORM TIGHTNESS TESTS FOR A MINIMUM OF 48 HOURS.
6. ACCEPTANCE CRITERIA:
   - A. QUALITATIVE: IF MOISTURE IS OBSERVED AT THE NEW HATCH OR SURROUNDING CONCRETE COLLAR, WHERE MOISTURE CAN BE PICKED UP ON A DRY HAND, CONTAINMENT STRUCTURE IS NONCOMPLIANT.
7. REPAIRS WHEN TEST FAILS:
   - A. DEWATER STRUCTURE. FILL LEAKING CRACKS WITH CRACK REPAIR EPOXY AS SPECIFIED IN SECTION 03 64 24, POLYURETHANE INJECTION GROUTING.
   - B. PATCH AREAS OF DAMP SPOTS PER SECTION 03 01 32 REPAIR OF VERTICAL AND OVERHEAD CONCRETE SURFACES.

DEFERRED SUBMITTALS

1. DEFERRED SUBMITTALS ARE THOSE PORTIONS OF THE DESIGN WHICH ARE NOT SUBMITTED AT THE TIME OF PERMIT APPLICATION AND WHICH ARE TO BE SUBMITTED TO THE PERMITTING AGENCY FOR ACCEPTANCE PRIOR TO INSTALLATION OF THAT PORTION OF THE WORK OR ARE REQUIRED TO BE SUBMITTED FOR REVIEW ONLY BY THE ENGINEER.
2. WHERE DEFERRED SUBMITTALS INCLUDE ADDITIONAL MATERIALS, INSTALLATION, ANCHORAGE, OR CERTIFICATION OF COMPONENTS THAT REQUIRE SPECIAL INSPECTION AND/OR STRUCTURAL OBSERVATION TO MEET CODE REQUIREMENTS, THE DEFERRED SUBMITTAL SHALL INCLUDE SPECIFIC LINE ITEMS REQUIRING STATEMENT OF SPECIAL INSPECTIONS.
3. THE FOLLOWING IS A LIST OF DEFERRED SUBMITTALS PER IBC THAT ARE EXPECTED TO CONTAIN STRUCTURAL CALCULATIONS OR SAFETY RELATED SYSTEM INFORMATION FOR REVIEW TO MEET BUILDING PERMITTING REQUIREMENTS FOR DESIGNED SYSTEMS. PRIOR TO INSTALLATION OF THE INDICATED STRUCTURAL ELEMENT, EQUIPMENT, DISTRIBUTION SYSTEM, OR COMPONENT OR ITS ANCHORAGE, THE CONTRACTOR SHALL SUBMIT THE REQUIRED CALCULATIONS AND SUPPORTING DATA AND DRAWINGS FOR REVIEW AND ACCEPTANCE BY THE ENGINEER. ADDITIONALLY, ACCEPTANCE INDICATED ON THE ENGINEER'S COMMENT FORM, ALONG WITH THE COMPLETED, FINAL SUBMITTAL SHALL THEN BE SUBMITTED BY THE CONTRACTOR TO THE PERMITTING AGENCY AND APPROVED PRIOR TO INSTALLATION OF THESE ITEMS.

SPECIFICATION SECTION	CODE REQUIRED DEFERRED SUBMITTALS FOR REVIEW BY PERMITTING AGENCY
	STEEL RAILINGS
40 05 15	PIPING SUPPORT SYSTEMS
OTHER	ANY EQUIPMENT OR COMPONENT IN WHICH A TECHNICAL SPECIFICATION REQUIRES SUBMITTAL OF EQUIPMENT OR ANCHORAGE SYSTEM CALCULATIONS

STATEMENT OF SPECIAL INSPECTIONS

GENERAL NOTES

1. SPECIAL INSPECTIONS TO COMPLY WITH THE PROVISIONS OF THE 2024 INTERNATIONAL BUILDING CODE (IBC) CHAPTER 17.

SPECIAL INSPECTION

1. SPECIAL INSPECTION WILL BE IN ACCORDANCE WITH IBC SECTION 1704 TOGETHER WITH CLACKAMAS COUNTY CODE AND STATE AMENDMENTS.
2. SPECIAL INSPECTIONS WILL BE PROVIDED BY A CERTIFIED OR QUALIFIED INSPECTOR AND ASSOCIATED TESTING WILL BE PERFORMED BY AN APPROVED ACCREDITED INDEPENDENT AGENCY. THE OWNER WILL SECURE AND PAY FOR THE SERVICES OF THE AGENCY TO PERFORM ALL SPECIAL INSPECTION AND ASSOCIATED TESTS. INSPECTORS FOR EACH SYSTEM AND MATERIAL WILL BE INTERNATIONAL CODE COUNCIL (ICC) CERTIFIED OR OTHERWISE APPROVED AS QUALIFIED BY THE BUILDING OFFICIAL.
3. THE SPECIAL INSPECTOR WILL OBSERVE THE INDICATED WORK FOR COMPLIANCE WITH THE APPROVED CONTRACT DOCUMENTS AND SUBMIT RECORDS OF INSPECTION. ALL DISCREPANCIES WILL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.
4. SPECIAL INSPECTION AND ASSOCIATED TESTING REPORTS WILL BE SUBMITTED TO THE LICENSED ENGINEER OF RECORD WHO IS ALSO SERVING AS THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE, CONTRACTOR, BUILDING OFFICAL, AND OWNER WITHIN ONE WEEK OF INSPECTION OR WITHIN ONE WEEK OF TEST COMPLETION. INSPECTIONS FOR WHICH REPORTING WILL BE REQUIRED ARE NOTED IN THE TABLES CONTAINED ON THIS STATEMENT OF SPECIAL INSPECTIONS.
5. AT THE CONCLUSION OF CONSTRUCTION, A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF PREVIOUSLY NOTED DISCREPANCIES WILL BE SUBMITTED.

ITEMS REQUIRING SPECIAL INSPECTION

1. ADHESIVE CONCRETE ANCHORS REQUIRE PERIODIC SPECIAL INSPECTION IN COMPLIANCE WITH THE IBC AND THE SUBMITTED ICC ES-ESR REPORT.

REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 31, 1992 — ALEX L. FIRTH — Digital Signature — EXP 12/31/2027

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		A FIRTH	H JOCHIMSEN	L SCOGGINS	T DYE		

© JACOBS 2026. ALL RIGHTS RESERVED.

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

GENERAL
STRUCTURAL NOTES

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0010
SHEET	6

FILENAME: 001-G-0010_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:45

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 & PROPRIETARY RESTRAINED JOINT
		BELL & SPIGOT JOINT (LEADED)
		HUB & SPIGOT JOINT (RUBBER GASKET)
		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

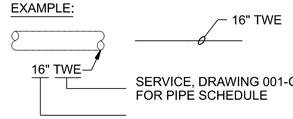
DOUBLE LINE	SINGLE LINE	
		REDUCING BUSHING
		UNION
		CAP
		ANCHOR
		ELBOW, 90 DEGREE
		CROSS
		TEE
		ELBOW, 45 DEGREE
		LATERAL

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.

PIPING DESIGNATION

EXAMPLE:



ACTUATOR SYMBOLS

NOTES:

1. SEE INSTRUMENTATION AND CONTROL LEGEND FOR ACTUATOR AND OTHER CONTROLS SYMBOLS.

VALVE SYMBOLS

SINGLE LINE	DOUBLE LINE
GATE	
KNIFE GATE	OR
BUTTERFLY	OR
GLOBE	OR
BALL	OR
SEATING PORT ECCENTRIC PLUG	OR
PLUG OR COCK	OR
NEEDLE	OR
DIAPHRAGM	OR
PINCH	OR
SWING CHECK	OR
BALL CHECK	OR

HOSE VALVE (HV- X) OR (V-X)
X = NO. IN SPECS

SAMPLE

MUD

PRESSURE RELIEF

AIR AND/OR VACUUM RELEASE

REGULATED SIDE
PRESSURE CONTROL (INTERNAL PILOT)

REGULATED SIDE
PRESSURE CONTROL (EXTERNAL PILOT)

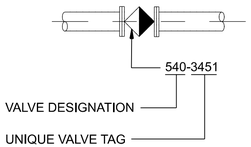
MULTI-PORT VALVE,
ARROWS INDICATE FLOW PATTERN.
SEATING PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.

MECHANICAL LEGEND AND NOTES

1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
2. SIZE OF FITTINGS SHOWN ON DRAWINGS 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 JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL.
5. ALL FLEXIBLE CONNECTORS AND COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST PROTECTION AS SPECIFIED, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
6. SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE DRAWINGS, WHEREVER APPLICABLE. NOT ALL OF THE VARIOUS PIPING COMPONENTS ARE NECESSARILY USED IN THE PROJECT.
7. ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED, EXCEPT FLANGED, WELDED, OR SCREWED PIPING, SHALL BE PROVIDED WITH THRUST PROTECTION AS SPECIFIED, UNLESS OTHERWISE NOTED.
8. NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS IS ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
9. 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.

VALVE DESIGNATIONS

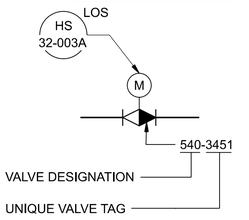
MANUAL VALVES AND CHECK VALVES



NOTE:

1. SEE PROCESS PIPING PLANS FOR MANUAL VALVE TAGS, AND SEE MANUAL SCHEDULE ON DRAWINGS FOR V###'S WHICH IDENTIFY THE SPECIFIC VALVE TYPE LISTED IN THE SPECIFICATION 40 27 02.

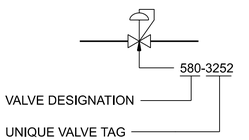
CONTROL VALVES



NOTES:

1. SEE I&C LEGENDS FOR FURTHER DEFINITIONS AND ACTUATOR TYPES.
2. SEE ACTUATED VALVE SCHEDULE ON DRAWINGS FOR V### TYPE AND OPERATIONAL DETAILS, ISOLATION OR MODULATING, FLOW RATE, PERCENT OPEN, FAIL LAST POSITION AND OTHER ACCESSORIES.

SELF-CONTAINED REGULATING VALVES



NOTE:

1. SEE SELF-REGULATING VALVE SCHEDULE ON DRAWINGS FOR V### TYPE AND OPERATIONAL DETAILS, FLOW RATE, PRESSURE DROP OPERATING SET POINT.

REGISTERED PROFESSIONAL ENGINEER — ERIK JON THOMPSON — 65709PE — OREGON — JUNE 11, 2004 — Digital Signature — EXP. 06/30/28 — DIGITALLY SIGNED 09/17/2026

© JACOBS 2026. ALL RIGHTS RESERVED.
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.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		E THOMPSON	J SETNIK	B YOUKER	APVD	T DYE	

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

GENERAL
PROCESS MECHANICAL LEGEND

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0040
SHEET	7

FILENAME: 001-G-0040_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:45

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	MAGNETIC STARTER WITH OVERLOAD, NEMA SIZE INDICATED, FVNR UNO
	CABLE OR BUS CONNECTION POINT
3	AC MOTOR, SQUIRREL CAGE INDUCTION - HORSEPOWER INDICATED
	GROUND
15 KVA 480-120/240V 1 PH	TRANSFORMER, SIZE, VOLTAGE RATINGS, AND PHASE INDICATED
	CONNECTION POINT TO EQUIPMENT SPECIFIED IN OTHER DIVISIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS DIVISION

LIGHTING SYSTEM PLAN

(1) or 1	LUMINAIRE, SEE SCHEDULE
1	STRIP LUMINAIRE, SEE SCHEDULE
4 or 4	LUMINAIRE AND POLE, SEE SCHEDULE
5 or 5	WALL MOUNTED LUMINAIRE, SEE SCHEDULE
1	FLOOD LIGHTS - AIM IN THE DIRECTION SHOWN
	STANDBY LIGHTING UNIT, SURFACE MOUNTED, SEE SCHEDULE
XX or	EXIT LIGHTS - FILLED SECTION INDICATES LIGHTED FACE, ARROW INDICATES EGRESS DIRECTIONAL INDICATORS, XX = FIXTURE NUMBER, SEE SCHEDULE
$a or 2a	SMALL LETTER SUBSCRIPT AT SWITCH AND LUMINAIRE INDICATES SWITCHING. SUBSCRIPT NUMBER AT LUMINAIRE INDICATES CIRCUIT
$3	WALL SWITCH: 2- DOUBLE POLE 3- THREE WAY 4- FOUR WAY WP- WEATHERPROOF EX- EXPLOSIONPROOF M- MOTOR RATED P- PILOT LIGHT K- KEY OPERATED D- DIMMER CRE- CORROSION RESISTANT L- MOMENTARY 3-WAY MS- MANUAL STARTER WITH OVERLOADS

POWER SYSTEM PLAN-1

SYMBOL	DESCRIPTION
	CONNECTION POINT TO EQUIPMENT SPECIFIED. RACEWAY, CONDUCTOR,TERMINATION AND CONNECTION IN THIS DIVISION.
MCC-A	MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN.
LPXXA	PANELBOARD - SURFACE MOUNTED PANELBOARD LETTER OR NUMBER FACILITY NUMBER LP - LOW VOLTAGE PANEL DP - DISTRIBUTION PANEL
	TERMINAL JUNCTION BOX
M	MOTOR, SQUIRREL CAGE INDUCTION
LPXXA	HOME RUN - DESTINATION SHOWN
[A1]	CONDUIT AND CONDUCTOR CALLOUT, SEE LEGEND.
	CONDUIT DOWN
	CONDUIT UP
	CONDUIT TERMINATION AT CABLE TRAY
EX	EXISTING CONDUIT/ DUCT BANK
CE	CONCRETE ENCASED CONDUIT
	CONCEALED CONDUIT
	CONCEALED CONDUIT ROUTING AREA
	CONDUIT ROUTING AREA
	CABLE TRAY
J or HH	GENERAL CONTROL OR WIRING DEVICE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE
CS	CONTROL STATION, SEE CONTROL DIAGRAMS FOR CONTROL DEVICE(S) REQUIRED.
30	NONFUSED DISCONNECT SWITCH, CURRENT RATING INDICATED, 3 POLE
60/40	FUSED DISCONNECT SWITCH, CURRENT RATING INDICATED (60/40, 60=SWITCH RATING / 40=FUSE RATING) 3 POLE
2	COMBINATION CIRCUIT BREAKER AND MAGNETIC STARTER, NEMA SIZE INDICATED
XX 2	CONVENIENCE RECEPTACLE - DUPLEX UNLESS NOTED OTHERWISE WP - WEATHERPROOF C - CLOCK HANGER TL - TWIST LOCK CRE - CORROSION RESISTANT GFCI - GROUND FAULT CIRCUIT INTERRUPTER SUBSCRIPT NUMBER AT RECEPTACLE INDICATES CIRCUIT
L20R 20	RECEPTACLE, SPECIAL PURPOSE-NEMA CONFIGURATION AND AMPERAGE INDICATED
EUH	ELECTRIC UNIT HEATER

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

	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 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
	TIME DELAY RELAY CONTACT, NORMALLY OPEN, CLOSES WHEN ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, NORMALLY CLOSED, OPENS WHEN ENERGIZED AND TIMED OUT
	TIME DELAY RELAY CONTACT, CLOSES WHEN ENERGIZED, OPENS WHEN DE-ENERGIZED AND TIMED OUT
	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

GENERAL SHEET 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.

REGISTERED PROFESSIONAL ENGINEER — 104025PE — OREGON — Digitally Signed — JACOB HELLEN — May 14, 2026

EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.
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.

NO.	DSGN	DATE	DR	CHK	REVISION	BY	APVD
		J HELLEN	A CZAPLA	B BEADERSTADT		T DYE	

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

GENERAL
ELECTRICAL LEGEND

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0070
SHEET	8

FILENAME: 001-G-0070_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:02

AREA CLASSIFICATION TABLE

FACILITY NUMBER	FACILITY	ROOM / AREA	MATERIAL SELECTION DESIGNATION[1]	NFPA 820 CLASSIFICATION	NFPA 820 REFERENCE	NFPA 820 REQUIRED VENTILATION	VENTILATION PROVIDED	NFPA 820 FIRE PROTECTION MEASURES	NOTES
320	AERATION BASIN	ALL OUTDOOR AREAS UNLESS DESIGNATED OTHERWISE	OUTDOOR	UNCLASSIFIED	5.2-8	NR	N/A	H	
		TANK INTERIOR	SUBMERGED	UNCLASSIFIED	5.2-8	NR	N/A	H	
		GALLERY	WASHDOWN	UNCLASSIFIED	5.2-8	NR	N/A	H	
340	RAS PUMP STATION	ELECTRICAL ROOM	DRY	UNCLASSIFIED	-	-	-	-	

NOTES:
1. HAZARDOUS DESIGNATIONS REFER TO NFPA 820 CLASSIFICATION.

Area Designation Definitions

DESIGNATION	DEFINITION FOR USE
OUTDOOR	ALL AREAS OUTSIDE OF BUILDINGS, SUBJECT TO WEATHER AND/OR WASHDOWND.
CORROSIVE	ATMOSPHERIC OR PROCESS CONDITIONS THAT ARE GENERALLY CORROSIVE TO COMMON MATERIALS OF CONSTRUCTION, E.G. HIGH H2S CONCENTRATION.
WASHDOWN	AREA IS SUBJECT TO FREQUENT, HIGH VOLUME WASHDOWN EVENTS AS PART OF REGULAR OPERATIONS.
DRY	INTERIOR AREA THAT IS INTENDED TO BE NORMALLY DRY, E.G. PROCESS AREAS WHERE CLEANING WILL BE BY BROOM SWEEPING INSTEAD OF WASHDOWN, ADMINISTRATIVE/OFFICE SPACES.
WET	INTERIOR AREA THAT HAS SOME PLUMBING SERVICES BUT IS NOT INTENDED FOR REGULAR HIGH VOLUME WASHDOWN, E.G. BATHROOM/LOCKER. bathroom/locker rooms, laboratory spaces
HAZARDOUS	NFPA CLASSIFIED AREA.
SUBMERGED	THE AREA INSIDE OF BASIN OR TANK THAT WILL BE SUBMERGED BY THE CONTAINED FLUID INCLUDING ANY FREEBOARD OF HEADSPACE ABOVE THE TYPIAL WATER SURFACE ELEVATION. GENERALLY ANYTHING BELOW THE TOP BASIN OR BELOW THE ROOF OF AN ENCLOSED TANK.

MATERIAL SELECTION TABLE

	ELECTRICAL				ALL TRADES				
MATERIAL SELECTION DESIGNATION	NEMA 250 ENCLOSURE TYPE	ELECTRICAL CONDUIT	ELECTRICAL BOXES & FITTINGS	SUPPORTS FOR ELECTRICAL CONDUITS & CABLE TRAYS	PIPE SUPPORTS	FRAMING CHANNEL (ALL TRADES)	HARDWARE (THREADED ROD, NUTS, BOLTS, FASTENERS, ETC.)	CONCRETE/MASONRY ANCHORAGE	REMARKS
OUTDOOR	4	AL OR PVC-COATED RGS	CAST ALUMINUM OR PVC-COATED CAST METAL	AL	304 SST	304 SST	304 SST	316 SST	
SUBMERGED	6P	316 SST	316 SST	316 SST	316 SST	316 SST	316 SST	316 SST	NOTE 2
WASHDOWN	4	AL OR PVC-COATED RGS	CAST ALUMINUM OR PVC-COATED CAST METAL	AL	304 SST	304 SST	304 SST	316 SST	
DRY	1	RGS	SHEET STEEL	HDG	HDG	HDG	HDG	HDG	NOTE 3

NOTES:
1. MATERIALS SHOWN ARE TYPICAL UNLESS OTHERWISE INDICATED ON SPECIFIC DRAWINGS OR SPECIFICATIONS.
2. SUBMERGED IS AREA BELOW LIQUID SURFACE, BELOW TOP OF BASIN, AND UNDERSIDE OF TANK COVER OR TANK SLAB (INCLUDES WET VAPOR SPACE ABOVE LIQUID SURFACE).
3. HDG SHALL BE GALVANIZED PER ASTM A123. HIGH STRENGTH FASTENERS THAT REQUIRE GALVANIZING SHALL BE ASTM A325 BOLTS AND SHALL COMPLY WITH ASTM A143.

REFERENCE SPECIFICATIONS:
05 50 00 METAL FABRICATIONS
23 31 13 METAL DUCTS AND ACCESSORIES
26 05 33 RACEWAY AND BOXES
40 05 15 PIPING SUPPORT SYSTEMS
09 90 00 PAINTING AND COATING

ABBREVIATIONS
AL - ALUMINUM
PVC - POLYVINYL CHLORIDE
RGS - RIGID GALVANIZED STEEL
HDG - HOT DIPPED GALVANIZED (STEEL)
SST - STAINLESS STEEL

REGISTERED PROFESSIONAL ENGINEER — JACOB HELLEN — 104259PE — OREGON — May 14, 2026 — Digitally Signed
EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.
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.

NO.	DATE	DR	REVISION	CHK	BY	APVD
DSGN	J HELLEN	A CZAPLA		B BEADERSTADT		T DYE

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

GENERAL
ELECTRICAL
AREA CLASSIFICATION AND MATERIALS OF CONTSTRUCTION

100% DESIGN SUBMITTAL

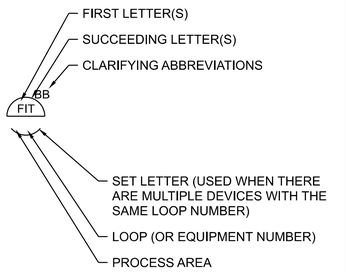
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0071
SHEET	9

FILENAME: 001-G-0071_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:02

INSTRUMENT IDENTIFICATION

EXAMPLE SYMBOLS

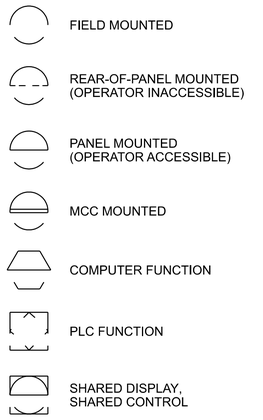


SIGNAL INTERFACES

- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT
- △x DISCRETE INPUT
- ▽x DISCRETE OUTPUT
- ◊x NETWORK CONNECTION

WHERE X=
A = ALARM
H = MAINTAINED
M = MOMENTARY
S = STATUS
1 = BASIN ANALYZER
2 = MOTOR

GENERAL INSTRUMENT OR FUNCTIONAL SYMBOLS



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)

INSTRUMENT IDENTIFICATION LETTERS TABLE

LETTER	FIRST-LETTER: PROCESS OR INITIATING VARIABLE	FIRST-LETTER: MODIFIER	SUCCEEDING-LETTERS: READOUT OR PASSIVE FUNCTION	SUCCEEDING-LETTERS: OUTPUT FUNCTION	SUCCEEDING-LETTERS: MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (*)	USER'S CHOICE (*)	USER'S CHOICE (*)
C	USER'S CHOICE (*)			CONTROL	CLOSE
D	DENSITY (S.G)	DIFFERENTIAL			DEVIATION
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		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD OR PRINT		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (+)	X AXIS	ACCESSORY DEVICES, 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

SPECIAL CASES



ON AND OFF EVENT LIGHTS

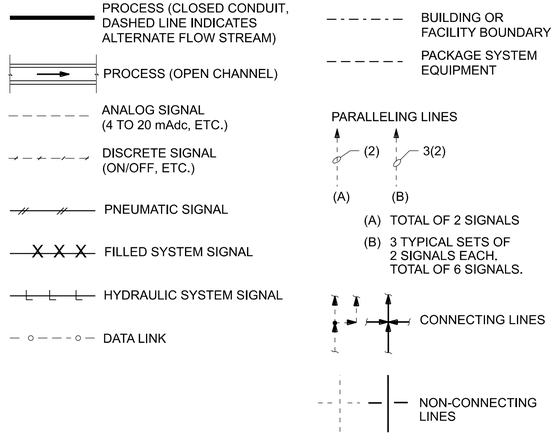


ON-OFF HAND SWITCH. MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE).

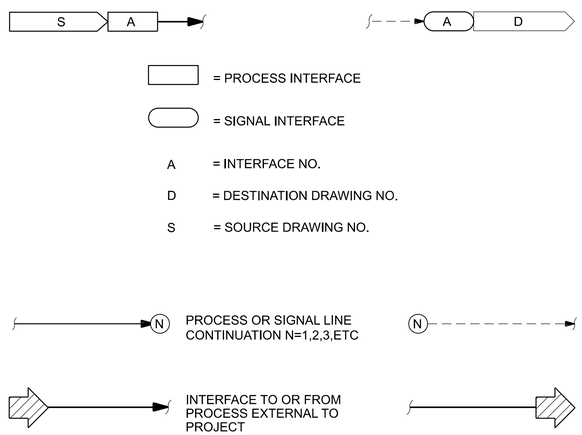


STOP-START HAND SWITCH MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).

LINE LEGEND



INTERFACE SYMBOLS



ABBREVIATIONS & LETTER SYMBOLS

AC	ALTERNATING CURRENT
AIT	ANALYTICAL INDICATING TRANSMITTER
AM	AUTO-MANUAL
BRG	BEARING
CGS	CHILLED GLYCOL SOLUTION
CL_2 etc.	CHLORINE (TYPICAL: USE STANDARD CHEMICAL ELEMENT ABBREVIATION)
CM	COMPUTER-MANUAL
CPP	COPPER PATCH PANEL
CP-X	CONTROL PANEL NO. X
DC	DIRECT CURRENT
DO	DISSOLVED OXYGEN
FCL_2	FREE CHLORINE RESIDUAL
FDU	FIBER DISTRIBUTION UNITS
FLP	FAIL TO LAST POSITION
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 (W = UNIT PROCESS NUMBER X = PANEL NUMBER)
FR	FORWARD-REVERSE

GENERAL 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 THIS PROJECT.
4. SHADED ITEMS ON THE DRAWINGS INDICATE EXISTING ITEMS, BOLD ITEMS ON THE DRAWINGS INDICATE NEW ITEMS INSTALLED UNDER THIS CONTRACT.
5. P&IDS NOTED WITH A DIAMOND (♦) ARE NOT INCLUDED WITH THIS CONTRACT SEE EXISTING FACILITIES RECORD DOCUMENTS.

ABBREVIATIONS & LETTER SYMBOLS CONT

HMI	HUMAN MACHINE INTERFACE
HMS	HAND (MOMENTARY) SWITCH
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
ISR	INTRINSICALLY SAFE RELAY
LEL	LOWER EXPLOSIVE LIMIT
LORR	LOCAL-OFF/RESET-REMOTE
LOR	LOCAL-OFF-REMOTE
MA	MANUAL-AUTO
MC	MODULATE-CLOSE
MCC-X	MOTOR CONTROL CENTER NO. X
MSC	MANUFACTURER SUPPLIED CABLE
OC	OPEN-CLOSE (D)
OCR	OPEN-CLOSE-REMOTE
OCA	OPEN-CLOSE-AUTO
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
pH	HYDROGEN ION CONCENTRATION
PLC	PROGRAMMABLE LOGIC CONTROLLER
RIO	REMOTE I/O UNIT
RM-X	REMOTE MULTIPLEXING MODULE NO. X
RTU-X	REMOTE TELEMETRY UNIT NO. X
SMFO	SINGLE MODE FIBER OPTIC CABLE
SOV	SOLENOID VALVE
SPD	SURGE PROTECTION DEVICE
SF	SLOWER-FASTER
SS	START-STOP
SSC	SUPERVISORY SET POINT CONTROL
SST	STAINLESS STEEL
SW	SWITCH (ETHERNET)
TCL_2	TOTAL CHLORINE RESIDUAL
TJB	TERMINAL JUNCTION BOX
TOC	TOTAL ORGANIC CARBON
TOD	TOTAL OXYGEN DEMAND
TURB	TURBIDITY
VFD	VARIABLE FREQUENCY DRIVE
VHC	VOLATILE HYDROCARBONS
VIB	VIBRATION
Δ	DIFFERENCE
Σ	SUM
X	MULTIPLY
÷	DIVIDE
f(x)	CHARACTERIZED
X^n	RAISE TO THE Nth POWER
$\sqrt{\ }$	SQUARE ROOT
AVG	AVERAGE
1:1	REPEAT OR BOOST
>	SELECT HIGHEST SIGNAL
<	SELECT LOWEST SIGNAL
}	BIAS
%	GAIN OR ATTENUATE

REGISTERED PROFESSIONAL ENGINEER — 65853PE — OREGON — JANUARY 14, 2005 — DONALD PAUL WATSON — Digitally Signed — EXPIRES: 06/30/2028

NO.	DATE	REVISION	BY	APVD
DSGN	S SUNDAHL	DR J BOSS	CHK D WATSON	APVD T DYE

© JACOBS 2026. ALL RIGHTS RESERVED.
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.

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

GENERAL

INSTRUMENTATION AND CONTROL LEGEND - 1

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0080
SHEET	10

FILENAME: 001-G-0080_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 17:41

VALVE SYMBOLS

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE- BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- BALL CHECK
- BACKFLOW PREVENTER
- ROTARY
- TELESCOPE
- MUD
- PRESSURE RELIEF
- VACUUM RELIEF
- PRESSURE/VACUUM RELEASE
- REGULATED SIDE PRESSURE CONTROL
- MULTI-PORT VALVES (GATE VALVE SHOWN. FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN). SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- ANGLE GATE
- SAMPLE
- PRESSURE REGULATING (CLAY-TYPE)
- BALANCING
- DOUBLE LEAF CHECK VALVE
- FLAME CHECK
- AIR RELEASE, VACUUM RELEASE, OR COMBINATION AIR VALVE

GATE SYMBOLS

- SLUICE
- BUTTERFLY
- FABRICATED SLIDE
- FLAP
- STOP LOG

ACTUATOR SYMBOLS

- XX PNEUMATIC DIAPHRAGM SPRING-OPPOSED, SINGLE OR DOUBLE ACTING
- XX PNEUMATIC CYLINDER SINGLE OR DOUBLE ACTING ACTUATED BY ONE INPUT
- XX ELECTRIC MOTOR
- XX SOLENOID
- VALVE POSITIONER
- MANUAL
- XX ELECTROHYDRAULIC
- DIAPHRAGM, DIFFERENTIAL PRESSURE
- XX HYDRAULIC
- P PNEUMATIC
- P Z PNEUMATIC WITH POSITIONER

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
- ORIFICE PLATE
- FLOW TUBE
- PITOT-STATIC
- VORTEX METER
- LE/T LEVEL (SUBMERSIBLE PRESSURE)
- ULTRASONIC FLOWMETER
- M ELECTROMAGNETIC FLOWMETER
- PROPELLER OR TURBINE METER
- THERMAL FLOWMETER
- FI ROTAMETER
- LS LEVEL (FLOAT)
- DE DENSITY METER
- XX GENERIC
- LE LEVEL (ULTRASONIC)
- LIT LEVEL (RADAR)
- LEVEL (BUBBLER TUBE)

MISCELLANEOUS SYMBOLS

- DIAPHRAGM SEAL
- BLIND FLANGE
- AIR GAP
- V VENT TO ATMOSPHERE
- PLUG
- RECEPTACLE
- X PURGE SET X : W = WATER, A = AIR; SEE
- AIR SET
- FILTER/ REGULATOR/ GAUGE SET
- A SELF CONTAINED AIR SUPPLY
- SKIMMING MECHANISM
- SCREW
- SCREW CONVEYOR
- FINE BUBBLE DIFFUSER
- FLOW CONDITIONER
- 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
- F FLUSHING CONNECTION
- HOSE ADAPTOR
- S SEAL WATER SET
- SIGHT GLASS
- SD SUCTION DIFFUSER
- LCPXXX PANEL OUTLINE, PANEL NAME; PANEL CONTINUED ON SAME OR OTHER DRAWING
- I OR I INTERLOCK
- FLEXIBLE CONNECTOR/ BELLOWS
- PULSATION DAMPENER
- FILTER
- T DRIP TRAP
- FLAME ARRESTOR
- STRAINER
- HORN/STROBE
- D DRAIN
- PLATE AND FRAME HEAT EXCHANGER
- (EXISTING) SPIRAL HEAT EXCHANGER
- SPIRAL HEAT EXCHANGER
- SHELL AND TUBE HEAT EXCHANGER
- MIXER
- INLINE SILENCER
- PIPE CAP
- CALIBRATION COLUMN
- ISR INTRINSICALLY SAFE RELAY
- BACKDRAFT DAMPER
- BUTTERFLY DAMPER
- AERATOR
- ISB INTRINSICALLY SAFE BARRIER
- BLIND FLANGE AND QUICK CONNECT
- NOZZLE
- REDUCER
- AIR SEPARATOR

PUMP AND COMPRESSOR SYMBOLS

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

- CENTRIFUGAL PUMP (DRY PIT) XX
- CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP XX
- RECIPROCATING OR METERING PUMP (POSITIVE DISPLACEMENT) XX
- DIAPHRAGM PUMP XX
- COMPRESSOR (PISTON) XX
- BLOWER OR FAN (CENTRIFUGAL) XX
- EJECTOR
- SUBMERSIBLE SUMP PUMP XX
- PISTON PUMP XX
- POSITIVE DISPLACEMENT PUMP XX
- COMPRESSOR (CENTRIFUGAL) XX
- GEAR PUMP, BLOWER, OR GRINDER XX
- VACUUM PUMP
- ROTARY PUMP
- SCREW PUMP
- PROGRESSIVE CAVITY PUMP

REFERENCE PIPING SCHEDULE
DRAWING 001-G-0090
FOR FLOW STREAM IDENTIFICATION.

REGISTERED PROFESSIONAL ENGINEER — 65853PE — OREGON — JULY 14, 2006 — DONALD PAUL WATSON
Digitally Signed
EXPIRES: 06/30/2028

© JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

NO.	DSGN	DATE	DR	CHK	REVISION	BY	APVD
			S SUNDAHL	J BOSS		D WATSON	T DYE

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

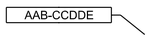
GENERAL
INSTRUMENTATION AND CONTROL
LEGEND - 2

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0081
SHEET	11

100% DESIGN SUBMITTAL

EQUIPMENT TAG NUMBERS



AA = EQUIPMENT TYPE
B = SPECIFIC COMPONENT
CC = BUILDING/PROCESS AREA
DD = EQUIPMENT/LOOP NUMBER
E = SUFFIX LETTER (IF REQUIRED)

EXAMPLE OF EQUIPMENT NUMBERING SYSTEM:

560 = EQUIPMENT TYPE
3471 = BUILDING/PROCESS AREA, EQUIPMENT/LOOP NUMBER

TAGNAME: 560-3471
COMMENT: BUTTERFLY VALVE – AB 1 RAS FLOW CONTROL VALVE

TRI-CITY WRRF EQUIPMENT NUMBERING CONVENTION

EQUIPMENT TYPE (AA)

10 PUMPS
- 11 CENTRIFUGAL
- 12 POSITIVE DISPLACEMENT
- 13 DIAPHRAGM
- 14 VERTICAL TURBINE
- 15 SUBMERSIBLE SUMP PUMP
- 16 RECESSED IMPELLER
- 17 WALL MOUNTED FAN PUMP
- 18 – 19 SPARE

20 BLOWERS OR COMPRESSORS
- 21 CENTRIFUGAL
- 22 POSITIVE DISPLACEMENT
- 23 – 29 SPARE

30 POWERED EQUIPMENT (OTHER THAN PUMPS AND BLOWERS)
- 31 MECHANICAL SCREENS, STRAINERS
- 32 CENTRIFUGE
- 33 CLASSIFIERS, CONVEYORS
- 34 CLARIFIER MECHANISMS, SCUM SCRAPPERS, THICKENER MECHANISM, GBT
- 35 SAMPLERS
- 36 MIXERS
- 37 DRYERS
- 38 HOISTS, TROLLEYS, CRANES
- 39 SPARE

40 ELECTRICAL DEVICES
- 41 MISC. APPLIANCES
- 42 ROLLUP DOORS
- 43 MOTOR CONTROL CENTERS
- 44 SWITCHBOARDS
- 45 HIGH VOLTAGE TRANSFORMERS
- 46 AUTOMATIC TRANSFER SWITCHES
- 47 – 49 SPARE

50 GATES AND VALVES
- 51 GATES
- 52 SPARE
- 53 GATE AND KNIFE GATE VALVES
- 54 PLUG VALVES
- 55 BALL AND GLOBE VALVES
- 56 BUTTERFLY VALVES
- 57 CHECK VALVES
- 58 PRESSURE REDUCING, PRESSURE RELIEF, AND DIAPHRAGM VALVES
- 59 MISC. MANUAL VALVES (FLAP VALVES, FLAP GATES, MUD VALVES, SAMPLING VALVES, ETC.)

60 HVAC EQUIPMENT
- 61 EXHAUST FANS
- 62 SUPPLY FANS
- 63 MAKE-UP AIR HANDLING UNITS
- 64 AC UNITS
- 65 - 68 SPARE
- 69 LOUVERS

70 TANKS AND VEHICLES
- 71 SLUDGE TRUCKS
- 72 MISCELLANEOUS VEHICLES
- 73 INDUSTRIAL SCOOTERS & FORKLIFTS
- 74 – 76 SPARE
- 77 TANKS
- 78 CARBON VESSELS
- 79 SPARE

80 MISC. EQUIPMENT
- 81 BOILER
- 82 ENGINE GENERATOR
- 83 INCINERATOR
- 84 HEAT EXCHANGER
- 85 SEPARATOR
- 86 CHLORINATORS
- 87 INJECTORS OR EDUCTORS
- 88 FLUMES, WEIRS, GRINDERS
- 89 LABORATORY EQUIPMENT

90 OTHER
- 91 MISC. SHOP EQUIPMENT
- 92 FUEL DISPENSING SYSTEM
- 93 GROUNDS EQUIPMENT
- 94 – 99 SPARE

SPECIFIC EQUIPMENT COMPONENT (B)

NOTE: THIS DIGIT APPEARS AS ZERO (0) IN THE CONTRACT DOCUMENTS.

- 1 UNIT
- 2 DRIVE
- 3 GEAR BOX
- 4 – 9 SPARE

BUILDING/PROCESS AREA (CC)

10 PRETREATMENT
- 11 INFLUENT PUMP STATION
- 12 SCREENINGS
- 13 SPARE
- 14 GRIT REMOVAL
- 15 – 29 SPARE

20 PRIMARY TREATMENT
- 21 PRIMARY CLARIFIERS
- 22 SLUDGE REMOVAL
- 23 PRIMARY SCUM REMOVAL
- 24 COMPRESSED AIR
- 25 – 29 SPARE

30 SECONDARY TREATMENT
- 31 AERATION BLOWERS
- 32 AERATION BASINS
- 33 SECONDARY CLARIFIERS
- 34 RETURN SLUDGE PUMP STATION (RAS)
- 35 WAS
- 36 SECONDARY SCUM REMOVAL
- 37 – 39 SPARE

40 POST TREATMENT
- 41 CHLORINE CONTACT CHAMBER
- 42 CHLORINE SYSTEM
- 43 FLOW MEASUREMENT
- 44 – 49 SPARE

50 SLUDGE HANDLING
- 51 PRIMARY SLUDGE THICKENING
- 52 SECONDARY SLUDGE THICKENING
- 521 DIGESTER FEED TANK
- 53 POLYMER/REAERATION
- 54 ANAEROBIC - DIGESTION
- 541 DIGESTER 1
- 542 DIGESTER 2
- 543 DIGESTER 3
- 544 DIGESTER 4 (FUTURE)
- 545 DEWATERING FEED TANKS
- 55 ANAEROBIC - GAS
- 56 GAS UTILIZATION (TREATMENT AND HOLDER)
- 58 DEWATERING AND DIGESTER CONTROL BUILDING

60 MISCELLANEOUS PROCESS
- 61 SEPTAGE HANDLING
- 62 ODOR CONTROL
- 63 NON-POTABLE WATER
- 64 – 69 SPARE

70 BUILDINGS AND GROUNDS
- 71 BUILDINGS AND GROUNDS
- 72 – 79 SPARE

80 ADMINISTRATION BUILDING
- 81 LABORATORY
- 82 – 89 SPARE

90 MISCELLANEOUS

EQUIPMENT/LOOP NUMBER (DD)

00 – 99 USE INCREMENTED NUMBER AS REQUIRED

SUFFIX LETTER (IF REQUIRED) (E)

A, B, C, ETC.

REGISTERED PROFESSIONAL ENGINEER — DONALD PAUL WATSON — OREGON — 65833PE — Digitally Signed — November 14, 2025
EXPIRES: 06/30/2028

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	REVISION	CHK	BY	APVD
		J BOSS		D WATSON	T DYE	APVD
		DR				
		S SUNDAHL				

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

GENERAL
INSTRUMENTATION AND CONTROL EQUIPMENT TAGGING

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0082
SHEET	12

FILENAME: 001-G-0082_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 17:41

PIPING SCHEDULE

SERVICE	FLOW STREAM IDENTIFICATION NOTE 1	SIZE, INCHES NOTE 2	EXPOSURE NOTE 3	PIPING MATERIAL NOTE 4	PIPE SPEC SECTION	JOINT TYPE NOTE 5	INSULATION NOTE 9	DESIGN PRESSURE (PSIG)	TEST TYPE NOTE 6, 10	TEST PRESSURE (PSIG)	PIPE COATING SYSTEM NOTE 7	PIPE LINING NOTE 7	PIPE LABELING FIELD COLOR (10 14 00) NOTE 8	PIPE LABELING TEXT COLOR (10 14 00) NOTE 8	REMARKS
AIR, HIGH PRESSURE	AHP	ALL	INT	CU	40 27 00.13	W/FL/TH	—	120	P	180	NONE	NONE	BLUE	WHITE	
		ALL	EXT	SST	40 27 00.08	W/FL/TH	—	120	P	180	NONE	NONE			
		ALL	SUB	SST	40 27 00.08	W/FL/TH	—	120	P	180	NONE	NONE	—	—	
AIR, LOW PRESSURE	ALP	ALL	INT	SST	40 27 00.20	W/FL	YES (REMARKS)	13	P	20	9	NONE	GREEN	WHITE	REPAIR ANY EXISTING ALP PIPE INSULATION WHICH IS DAMAGED OR DISTURBED AS PART OF THE VALVE REMOVAL OR REPLACEMENT IN GALLERY.
		ALL	EXT	SST	40 27 00.20	W/FL	—	13	P	20	NONE	NONE			
		ALL	SUB	SST	40 27 00.20	W/FL	—	13	P	20	NONE	NONE			
MIXED LIQUOR	ML	ALL	INT	CLDI	40 27 00.01	FL/PRJ	—	30	H	—	4	CEMENT	YELLOW	BLACK	
MIXED LIQUOR RECYCLE	MLR	ALL	INT	CLDI	40 27 00.01	FL/PRJ	—	30	H	45	4	CEMENT	YELLOW	BLACK	
RETURN ACTIVATED SLUDGE	RAS	ALL	INT	CLDI	40 27 00.01	FL/PRJ	—	30	H	45	4	CEMENT	YELLOW	BLACK	
		ALL	SUB	CLDI	40 27 00.01	FL/PRJ	—	30	H	45	2	CEMENT	—	—	
NON-POTABLE FLUSH WATER	W5	<10	SUB	CS	40 27 00.03	W/FL/TH	—	100	H	150	2	CERAMIC EPOXY	—	—	
		≥10		CLDI	40 27 00.01	FL/GR/PRJ	—	100	H	150	2	CEMENT	—	—	

NOTES:

1. WHERE PIPING CARRIES TWO OR MORE DESIGNATIONS NOT LISTED AS A SINGLE FLOWSTREAM, THE PIPING MATERIAL SHALL CONFORM TO THE MATERIAL OF THE FIRST SERVICE LISTED. THE SUFFIX IDENTIFIES THE FUNCTION OF THE PIPE. PRESSURE TEST PROCESS PIPE DRAIN LINES UPSTREAM OF ISOLATION VALVE TO SAME TEST PRESSURE AS ASSOCIATED SERVICE. GRAVITY TEST PIPE DRAIN LINES DOWNSTREAM OF ISOLATION VALVES.

2. "ALL" REFERS TO ALL SIZES
   > GREATER THAN
   < LESS THAN
   >= GREATER THAN OR EQUAL TO
   <= LESS THAN OR EQUAL TO

3. ALL = ALL INSTALLATIONS
   BUR = BURIED INSTALLATIONS BELOW GRADE
   ENC = EMBEDDED INSTALLATIONS OR CONCRETE ENCASED
   EXT = EXPOSED EXTERIOR/OUTDOOR INSTALLATIONS
   INT = EXPOSED INTERIOR INSTALLATIONS
   SUB = SUBMERGED INSTALLATIONS AS DEFINED IN SECTION 40 27 00

4. PIPING AS SPECIFIED IN APPLICABLE PIPING SPECIFICATIONS
   CLDI: CEMENT-LINED DUCTILE IRON
   CELDI: CERAMIC-EPOXY LINED DUCTILE IRON
   CPVC: CHLORINATED POLYVINYL CHLORIDE
   CS: CARBON STEEL
   CU: COPPER
   CISP: CAST IRON SEWER PIPE (GRAVITY)
   FRP: FIBERGLASS REINFORCED PLASTIC
   GLDI: GLASS-LINED DUCTILE IRON
   PE: POLYETHYLENE
   PVC: POLYVINYL CHLORIDE
   PVC-DWV: POLYVINYL CHLORIDE - DRAIN, WASTE, VENT
   PWPE: PROFILE WALL POLYETHYLENE (CORRUGATED WALL OUTSIDE, SMOOTH WALL INSIDE)
   RCP: REINFORCED CONCRETE PIPE
   SST: STAINLESS STEEL (TYPE 316/316L UNLESS OTHERWISE NOTED)
   ULDI: UNLINED DUCTILE IRON

5. JOINTS AS SPECIFIED IN APPLICABLE PIPING SPECIFICATIONS. JOINT BONDING AND INSULATED FITTINGS SHALL BE AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH SECTIONS 26 42 01 AND OTHER PIPING SPECIFICATION SECTIONS AS APPLICABLE.
   BF = BUTT FUSION
   BS = BELL & SPIGOT
   COMP = COMPRESSION TUBE
   FCF = FLARED COMPRESSION FITTING
   FL = FLANGED
   GR = GROOVED END
   HU = HUB AND SPIGOT (PUSH-ON)
   TH = THREADED
   PRJ = PROPRIETARY RESTRAINED JOINT
   RMJ = RESTRAINED MECHANICAL JOINT
   W = WELDED, FUSED, SOLDERED, SOCKET WELDED, GLUED OR SOLVENT WELDED

6. TEST TYPE:
   FC: TEST PER FIRE CODE AND NFPA 13
   G: GRAVITY TEST TO HIGHEST LIQUID LEVEL ABOVE PIPE AND IN ACCORDANCE WITH SPECIFICATIONS
   H: HYDROSTATIC TEST TO INDICATED PRESSURE
   P: PNEUMATIC TEST TO INDICATED PRESSURE
   PC: TEST PER PLUMBING CODE

7. LININGS AND COATINGS:
   SYSTEM NO.: IN ACCORDANCE WITH SPECIFICATION SECTION 09 90 00
   CEMENT (CLDI): AWWA C104 MORTAR LINING IN ACCORDANCE WITH SPECIFICATIONS
   CEMENT (STL): AWWA C205 MORTAR LINING IN ACCORDANCE WITH SPECIFICATIONS
   CERAMIC EPOXY: AWWA C210 CERAMIC EPOXY LINING IN ACCORDANCE WITH SPECIFICATIONS.
   ETFE: ETHYLENE TETRAFLUOROETHYLENE IN ACCORDANCE WITH SPECIFICATIONS
   GLASS (GLDI): GLASS LINING IN ACCORDANCE W/SPECIFICATIONS
   POLY: POLYETHYLENE BAGGING AS A MINIMUM AND IN ACCORDANCE WITH SPECIFICATIONS
   TAPE: TAPE WRAP IN ACCORDANCE WITH SPECIFICATION SECTION 09 90 00

8. REFER TO SECTION 10 14 00, SIGNAGE FOR PIPE LABEL REQUIREMENTS

9. REFER TO SECTION 40 42 13, PROCESS PIPING INSULATION.

10. REFER TO SECTION 40 80 01, PROCESS PIPING LEAKAGE TESTING.

REGISTERED PROFESSIONAL ENGINEER — 65709PE — OREGON — JUNE 11, 2008 — ERIK JON THOMPSON
Digital Signature
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

© JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	REVISION	BY	APVD
DSGN	E THOMPSON	DR J SETNIK	CHK B YOUKER	APVD T DYE

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

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.

REUSE OF DOCUMENTS:

Jacobs

GENERAL

PROCESS MECHANICAL PIPING SCHEDULE

100% DESIGN SUBMITTAL

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0090
SHEET	13

FILENAME: 001-G-0090_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:45

PNEUMATICALLY-ACTUATED VALVE SCHEDULE

TAG NUMBER	P&ID	LOOP DESCRIPTION	FLOW STREAM (NOTE 1)	VALVE TYPE (NOTE 2)	VALVE SIZE (IN)	MAXIMUM OPERATING FLOW (SCFM)	MAXIMUM PRESSURE DROP ACROSS VALVE (PSI)	VALVE Cv RANGE (MIN. to MAX.)	VALVE PERCENT OPERATING RANGE (MIN. to MAX. OPEN)	ACTUATOR SUPPLY AIR (PSIG)	ACTUATOR TYPE & CONTROLS FEATURES	TRAVEL TIME (SEC)	REMARKS
560-3251B	008-N-3201	AERATION BASIN 1 - ZONE 2	ALP	V514	6	975	0.9	62 to 256	16% to 42%	80	A, E, FLP, H, I, J	<10	
560-3251C	008-N-3201	AERATION BASIN 1 - ZONE 3	ALP	V514	6	864	0.9	56 to 224	13% to 40%	80	A, E, FLP, H, I, J	<10	
560-3251D	008-N-3201	AERATION BASIN 1 - ZONE 4	ALP	V514	6	876	0.9	56 to 226	13% to 40%	80	A, E, FLP, H, I, J	<10	
560-3251E	008-N-3201	AERATION BASIN 1 - ZONE 5	ALP	V514	6	600	0.9	38 to 151	7% to 32%	80	A, E, FLP, H, I, J	<10	
560-3252B	008-N-3202	AERATION BASIN 2 - ZONE 2	ALP	V514	6	975	0.9	62 to 261	16% to 42%	80	A, E, FLP, H, I, J	<10	
560-3252C	008-N-3202	AERATION BASIN 2 - ZONE 3	ALP	V514	6	864	0.9	55 to 228	12% to 40%	80	A, E, FLP, H, I, J	<10	
560-3252D	008-N-3202	AERATION BASIN 2 - ZONE 4	ALP	V514	6	876	0.9	56 to 231	13% to 40%	80	A, E, FLP, H, I, J	<10	
560-3252E	008-N-3202	AERATION BASIN 2 - ZONE 5	ALP	V514	6	600	0.9	38 to 153	8% to 32%	80	A, E, FLP, H, I, J	<10	
560-3253B	008-N-3203	AERATION BASIN 3 - ZONE 2	ALP	V514	6	975	0.9	63 to 290	16% to 44%	80	A, E, FLP, H, I, J	<10	
560-3253C	008-N-3203	AERATION BASIN 3 - ZONE 3	ALP	V514	6	864	0.9	56 to 252	13% to 42%	80	A, E, FLP, H, I, J	<10	
560-3253D	008-N-3203	AERATION BASIN 3 - ZONE 4	ALP	V514	6	876	0.9	56 to 254	13% to 42%	80	A, E, FLP, H, I, J	<10	
560-3253E	008-N-3203	AERATION BASIN 3 - ZONE 5	ALP	V514	6	600	0.9	38 to169	8% to 34%	80	A, E, FLP, H, I, J	<10	
560-3254B	008-N-3204	AERATION BASIN 4 - ZONE 2	ALP	V514	6	975	0.9	63 to 288	16% to 44%	80	A, E, FLP, H, I, J	<10	
560-3254C	008-N-3204	AERATION BASIN 4 - ZONE 3	ALP	V514	6	864	0.9	56 to 250	13% to 42%	80	A, E, FLP, H, I, J	<10	
560-3254D	008-N-3204	AERATION BASIN 4 - ZONE 4	ALP	V514	6	876	0.9	56 to 253	13% to 42%	80	A, E, FLP, H, I, J	<10	
560-3254E	008-N-3204	AERATION BASIN 4 - ZONE 5	ALP	V514	6	600	0.9	38 to 168	8% to 34%	80	A, E, FLP, H, I, J	<10	
560-3421	008-N-3400	RAS PUMP INLET HEADER	RAS	EXISTING (V500)	20	REMARKS	REMARKS	REMARKS	REMARKS	80	C, E, H, I, J	<10	REPLACING ACTUATOR ONLY ON EXISTING VALVE
560-3422	008-N-3400	RAS PUMP INLET HEADER	RAS	EXISTING (V500)	20	REMARKS	REMARKS	REMARKS	REMARKS	80	C, E, H, I, J	<10	REPLACING ACTUATOR ONLY ON EXISTING VALVE
560-3471	008-N-3205	AERATION BASIN 1 - RAS CONTROL	RAS	EXISTING (V500)	16	REMARKS	REMARKS	REMARKS	REMARKS	80	C, E, H, I, J	<10	REPLACING ACTUATOR ONLY ON EXISTING VALVE
560-3472	008-N-3205	AERATION BASIN 2 - RAS CONTROL	RAS	EXISTING (V500)	16	REMARKS	REMARKS	REMARKS	REMARKS	80	C, E, H, I, J	<10	REPLACING ACTUATOR ONLY ON EXISTING VALVE
560-3473	008-N-3206	AERATION BASIN 3 - RAS CONTROL	RAS	EXISTING (V500)	16	REMARKS	REMARKS	REMARKS	REMARKS	80	C, E, H, I, J	<10	REPLACING ACTUATOR ONLY ON EXISTING VALVE
560-3474	008-N-3206	AERATION BASIN 4 - RAS CONTROL	RAS	EXISTING (V500)	16	REMARKS	REMARKS	REMARKS	REMARKS	80	C, E, H, I, J	<10	REPLACING ACTUATOR ONLY ON EXISTING VALVE

NOTES:
1. SEE PIPING SCHEDULE ON DRAWINGS FOR FLOW STREAM.
2. SEE SECTION 40 27 02 FOR VALVE TYPES.

ACTUATOR TYPE & CONTROLS FEATURES:
A = VANE TYPE ACTUATOR.
B = CYLINDER TYPE ACTUATOR.
C = DIAPHRAGM TYPE ACTUATOR.
D = VALVE SHALL OPEN UPON LOSS OF SIGNAL.
E = VALVE SHALL REMAIN IN LAST POSITION UPON LOSS OF SIGNAL.
FC = FAIL CLOSE ON LOSS OF AIR SUPPLY (AIR TO OPEN, SPRING TO CLOSE).
FO = FAIL OPEN ON LOSS OF AIR SUPPLY (AIR TO CLOSE, SPRING TO OPEN).
FLP = FAIL LAST POSITION ON LOSS OF AIR SUPPLY.
H = VALVE POSITION OUTPUT CONVERTER THAT GENERATES ISOLATED 4 mA to 20 mA DC SIGNAL IN PROPORTION TO VALVE POSITION.
I = VISUAL INDICATOR.
J = MANUAL HANDWHEEL OVERRIDE.
L = LIMIT SWITCH.

SELF-REGULATED VALVE SCHEDULE

TAG NUMBER	P&ID	LOOP DESCRIPTION	LOCATION	FLOW STREAM (NOTE 1)	VALVE TYPE (NOTE 2)	VALVE SIZE (IN)	MAX OPERATING FLOW (NOTE 3)	DESIGN INLET PRESSURE (PSIG)	DESIGN OUTLET PRESSURE (PSIG)	REMARKS
580-3261	008-N-3201	AERATION BASIN 1 - PANEL ACP-3261	OUTDOORS	AHP	V706	1/2	20	80	30	PRV WITH FILTER AND PRESSURE GAUGE
580-3262	008-N-3201	AERATION BASIN 2 - PANEL ACP-3262	OUTDOORS	AHP	V706	1/2	20	80	30	PRV WITH FILTER AND PRESSURE GAUGE
580-3263	008-N-3201	AERATION BASIN 3 - PANEL ACP-3263	OUTDOORS	AHP	V706	1/2	20	80	30	PRV WITH FILTER AND PRESSURE GAUGE
580-3264	008-N-3201	AERATION BASIN 4 - PANEL ACP-3264	OUTDOORS	AHP	V706	1/2	20	80	30	PRV WITH FILTER AND PRESSURE GAUGE

NOTES:
1. SEE PIPING SCHEDULE ON DRAWINGS FOR FLOW STREAM.
2. SEE SECTION 40 27 02, PROCESS VALVES AND OPERATORS.
3. FLOW = MAXIMUM PROCESS FLOW THROUGH VALVE OR SERVICED BY THE VALVE, SUCH AS AIR RELEASE.

REGISTERED PROFESSIONAL ENGINEER — OREGON — ERIK JON THOMPSON — 65709PE — Digital Signature — JUNE 11, 2008
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

© JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	REVISION	BY	APVD
		E THOMPSON	J SETNIK	B YOUKER	APVD	T DYE	

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

GENERAL

PROCESS MECHANICAL
VALVE SCHEDULES

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0091
SHEET	14

FILENAME: 001-G-0091_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:45

PHASE 1 MANUAL VALVE SCHEDULE

VALVE TAG NO	DRAWING	FLOW STREAM (NOTE 1)	VALVE SIZE	PIPING MATERIAL	VALVE TYPE (NOTE 2)	VALVE DESCRIPTION
560-3176	320-D-1011	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3177	320-D-1011	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3181	320-D-1011	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3182	320-D-1011	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3186	320-D-1011	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3187	320-D-1011	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3191	320-D-1011	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3192	320-D-1011	ALP	6"	316SST	V510	BUTTERFLY_VALVE
550-3261A	320-D-1021	AHP	3/4"	316SST	V306	BALL_VALVE
550-3261F	320-D-1011	AHP	3/4"	316SST	V306	BALL_VALVE
550-3261G	320-D-1021	AHP	3/4"	316SST	V306	BALL_VALVE
550-3262A	320-D-1021	AHP	3/4"	316SST	V306	BALL_VALVE
550-3262F	320-D-1011	AHP	3/4"	316SST	V306	BALL_VALVE
550-3262G	320-D-1021	AHP	3/4"	316SST	V306	BALL_VALVE
560-32-001	320-D-1021	ML	36"	CLDI	V501	BUTTERFLY_VALVE
560-3221	320-D-1021	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3222	320-D-1021	ALP	8"	316SST	V510	BUTTERFLY_VALVE
560-3223	320-D-1021	ALP	6"	316SST	V510	BUTTERFLY_VALVE
540-321F-01	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-02	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-03	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-04	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-05	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-06	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-07	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-08	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-09	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-321F-10	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-01	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-02	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-03	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-04	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-05	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-06	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-07	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-08	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-09	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
540-322F-10	320-D-1021	W5	8"	CS	V405	PLUG_VALVE
530-3411	320-D-1031	RAS	16"	CLDI	V151	FULL_BONNET_KNIFE_GATE_VALVE
530-3412	320-D-1031	RAS	16"	CLDI	V151	FULL_BONNET_KNIFE_GATE_VALVE
540-3211	320-D-1031	ML	10"	CLDI	V405	ECCENTRIC_PLUG
540-3212	320-D-1031	ML	10"	CLDI	V405	ECCENTRIC_PLUG

NOTES:
1. SEE PIPING SCHEDULE ON DRAWINGS FOR FLOW STREAM.
2. SEE SECTION 40 27 02, PROCESS VALVES AND OPERATORS.
3. SEE SECTION 01 31 13, PROJECT COORDINATION FOR PHASE DEFINITIONS.

PHASE 2 MANUAL VALVE SCHEDULE

VALVE TAG NO	DRAWING	FLOW STREAM (NOTE 1)	VALVE SIZE	PIPING MATERIAL	VALVE TYPE (NOTE 2)	VALVE DESCRIPTION
560-3178	320-D-1012	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3179	320-D-1012	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3183	320-D-1012	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3184	320-D-1012	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3188	320-D-1012	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3189	320-D-1012	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3193	320-D-1012	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3194	320-D-1012	ALP	6"	316SST	V510	BUTTERFLY_VALVE
550-3263A	320-D-1022	AHP	3/4"	316SST	V306	BALL_VALVE
550-3263F	320-D-1012	AHP	3/4"	316SST	V306	BALL_VALVE
550-3263G	320-D-1022	AHP	3/4"	316SST	V306	BALL_VALVE
550-3264A	320-D-1022	AHP	3/4"	316SST	V306	BALL_VALVE
550-3264F	320-D-1012	AHP	3/4"	316SST	V306	BALL_VALVE
550-3264G	320-D-1022	AHP	3/4"	316SST	V306	BALL_VALVE
590-3215	320-D-1022	ML	4"	316SST	V916	MUD_VALVE
560-3224	320-D-1022	ALP	6"	316SST	V510	BUTTERFLY_VALVE
560-3225	320-D-1022	ALP	6"	316SST	V510	BUTTERFLY_VALVE
540-323F-01	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-02	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-03	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-04	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-05	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-06	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-07	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-08	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-09	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-323F-10	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-01	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-02	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-03	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-04	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-05	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-06	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-07	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-08	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-09	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
540-324F-10	320-D-1022	W5	8"	CS	V405	PLUG_VALVE
530-3413	320-D-1032	RAS	16"	CLDI	V151	FULL_BONNET_KNIFE_GATE_VALVE
530-3414	320-D-1032	RAS	16"	CLDI	V151	FULL_BONNET_KNIFE_GATE_VALVE
540-3213	320-D-1032	ML	10"	CLDI	V405	ECCENTRIC_PLUG
540-3214	320-D-1032	ML	10"	CLDI	V405	ECCENTRIC_PLUG

NOTES:
1. SEE PIPING SCHEDULE ON DRAWINGS FOR FLOW STREAM.
2. SEE SECTION 40 27 02, PROCESS VALVES AND OPERATORS.
3. SEE SECTION 01 31 13, PROJECT COORDINATION FOR PHASE DEFINITIONS.

REGISTERED PROFESSIONAL ENGINEER — OREGON — 65709PE — Digital Signature — JUNE 11, 2008 — ERIK JON THOMPSON
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	REVISION	BY	APVD
				T DYE

DSGN E THOMPSON | DR J SETNIK | CHK B YOUKER | APVD

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

GENERAL
PROCESS MECHANICAL VALVE SCHEDULES

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	001-G-0092
SHEET	15

FILENAME: 001-G-0092_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:45

FACILITIES

- 310 AERATION BLOWER BUILDING
- 320 AERATION BASINS
- 340 RETURN SLUDGE PUMP STATION

SHEET KEYNOTES

1. AREA DESIGNATED FOR CONTRACTOR OFFICES. CONFIRM LIMITS AND ACCESS WITH OWNER.
2. MAINTAIN ACCESS AND OPERATIONS OF EXISTING TRAFFIC FOR BACKUP CENTRIFUGE AT ALL TIMES.
3. COORDINATE USAGE AND LIMITS OF CONTRACTOR STAGING, STORAGE, OFFICES, AND PARKING WITH OWNER.
4. CONTRACTOR MAY PREPARE STAGING AREA IN THIS LOCATION AS REQUIRED FOR CONTRACTOR'S USE INCLUDING EMPLOYEE PARKING, WHICH MAY INCLUDE PLACEMENT OF GEOTEXTILE AND GRAVEL PADS. EXISTING BURIED LANDFILL UNDERLIES THE STOCKPILING AND STORAGE AREA, AND EXISTING GROUND IS EXPECTED TO SETTLE UNEVENLY. OWNER MAKES NO WARRANTY AS TO THE SUITABILITY OF THE EXISTING GROUND IN THIS STAGING AREA FOR ANY PARTICULAR PURPOSE.
5. CONTRACTOR SHALL RESTORE ENTIRE AREA TO ORIGINAL CONDITIONS AND RESEED WHEN WORK IS COMPLETE. CONTRACTORS SHALL NOT DIG OR EXCAVATE BELOW EXISTING FINISHED GRADE. THE COST OF ANY REMEDIATION WORK REQUIRED SHALL BE BORNE BY THE CONTRACTOR.

S AGNES AVE
NO CONTRACTOR ACCESS ALONG MAIN ENTRANCE
TO AGNES AVE
WQRA 200-FOOT BUFFER
ADMINISTRATION BUILDING
STORAGE BUILDING
SCREENINGS BUILDING
FINE SCREEN BUILDING
UV DISINFECTION BUILDING
CONTRACTOR ENTRANCE
OFFICE BUILDING
CONTRACTOR ACCESS ROUTE
CONTRACTOR STAGING AND STORAGE AREA
EXISTING VEHICLE GATE
CONTRACTOR PARKING AND STORAGE AREA
DIGESTER 1
DIGESTER 2
DIGESTER 3
AREA OF WORK
MBR ELECTRICAL BUILDING
MEMBRANE BUILDING
BLOWER BUILDING
AERATION BASIN 1
AERATION BASIN 2
AERATION BASIN 3
AERATION BASIN 4
RAS BUILDING
BACKUP CENTRIFUGE
SECONDARY CLARIFIER 1
SECONDARY CLARIFIER 2
STORMWATER RETENTION POND

N

0 50 100 150
Scale In Feet

REGISTERED PROFESSIONAL ENGINEER — OREGON — JUNE 11, 2004 — ERIK JON THOMPSON
Digital Signature
65709PE
EXP: 06/30/28
DIGITALLY SIGNED: 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		E THOMPSON	J OYE	B REICHELDERFER	APVD	T DYE	

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

SITE DEVELOPMENT
OVERALL SITE PLAN, ACCESS, AND STAGING

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.

100% DESIGN SUBMITTAL

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

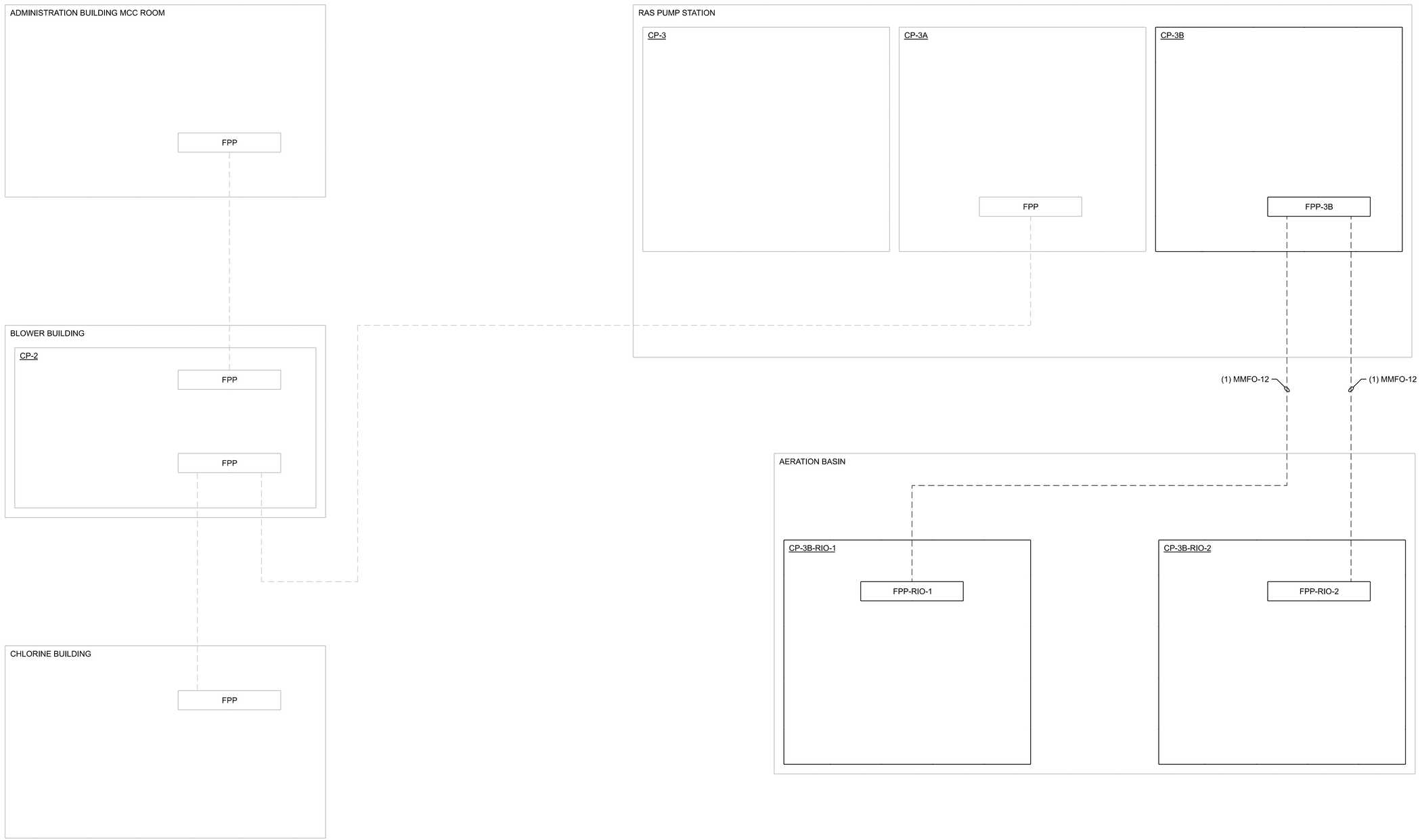
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	005-C-1000
SHEET	16

FILENAME: 005-C-1000_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:46

LEGEND:
ETHERNET CABLE
PROFIBUS DP CABLE
FIBER OPTIC CABLE

GENERAL SHEET NOTES

1. THE EXISTING NETWORK LAYOUT IS BASED ON RECORD DRAWINGS AND HAS NOT BEEN FIELD VERIFIED.



REGISTERED PROFESSIONAL ENGINEER — 65533PE — Digitally Signed — OREGON — November 14, 2025 — DONALD PAUL WATSON

EXPIRES: 06/30/2028

© JACOBS 2025. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		S SUNDAHL	J BOSS	D WATSON			T DYE

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

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.

Jacobs

INSTRUMENTATION AND CONTROL

AERATION FIBER BACKBONE BLOCK DIAGRAM

100% DESIGN SUBMITTAL

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

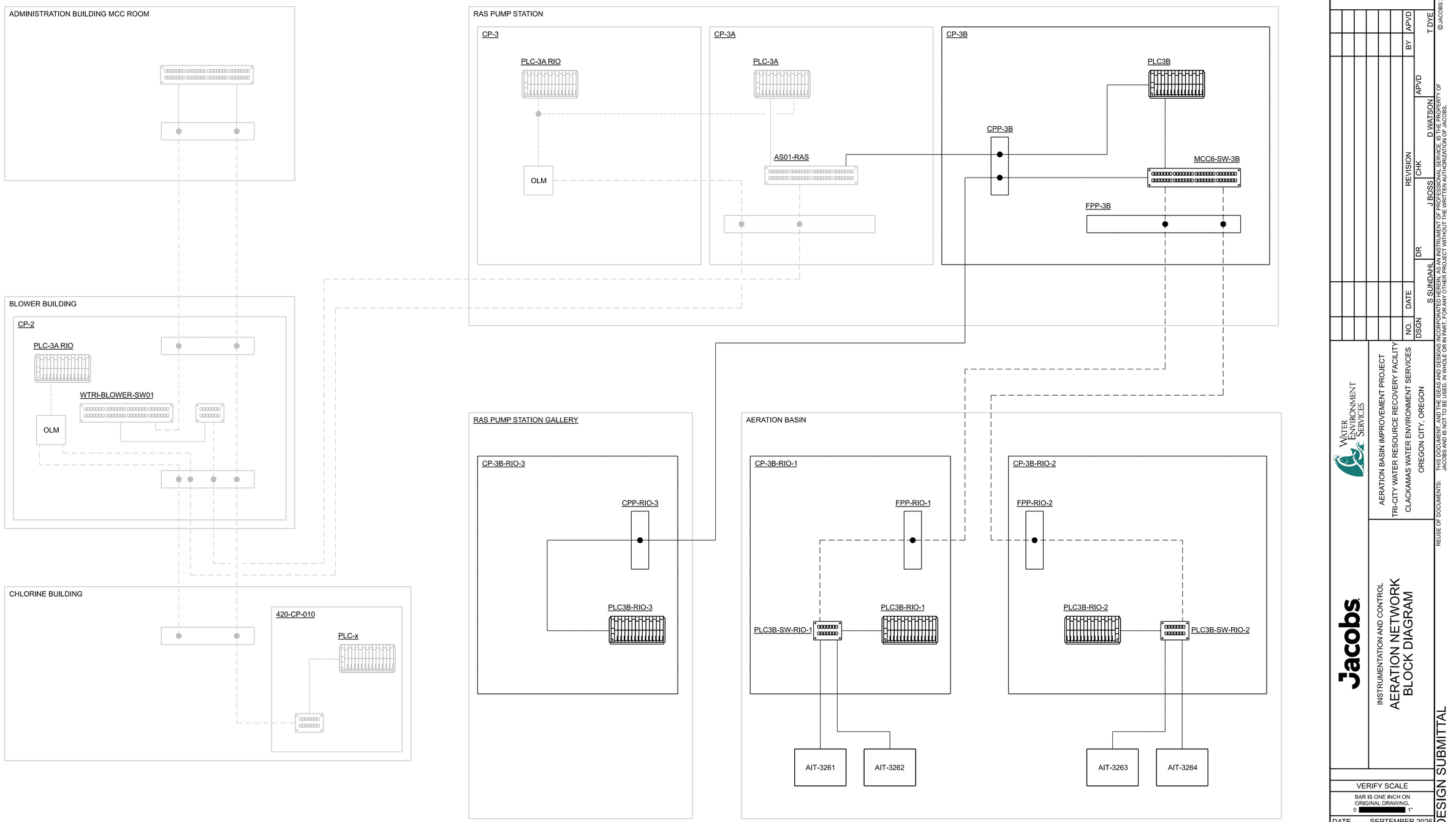
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0001
SHEET	17

FILENAME: 008-N-0001_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 17:42

GENERAL SHEET NOTES

1. THE EXISTING NETWORK LAYOUT IS BASED ON RECORD DRAWINGS AND HAS NOT BEEN FIELD VERIFIED.

LEGEND:
ETHERNET CABLE
PROFIBUS DP CABLE
FIBER OPTIC CABLE



REGISTERED PROFESSIONAL ENGINEER — DONALD PAUL WATSON — 65833PE — OREGON — Digitally Signed — EXPIRES: 06/30/2028

©JACOBS 2026. ALL RIGHTS RESERVED.
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.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		S SUNDAHL	J BOSS	D WATSON			T DYE

Water Environment Services

Jacobs

PROJECT
AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

INSTRUMENTATION AND CONTROL
AERATION NETWORK BLOCK DIAGRAM

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0002
SHEET	18

FILENAME: 008-N-0002_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 17:41

GENERAL SHEET NOTES

1. THE EXISTING NETWORK LAYOUT IS BASED ON RECORD DRAWINGS AND HAS NOT BEEN FIELD VERIFIED.

LEGEND:
ETHERNET CABLE
PROFIBUS DP CABLE
FIBER OPTIC CABLE

CP-3A

PLC-3A

AS01-RAS

PLC-3A.01C	01C
PLC-3B.01C	02C
	03C
	04C
	05C
	06C
PLC (Temporary)	07C
	08C
	09C
	10C
	11C
	12C
	13C
	14C
	15C
	16C
	17C
	18C
	19C
	20C
	21C
	22C
	23C
	24C
	25C
	26C
	27C
	28C
	29C
	30C
	31C
	32C
	33C
	34C
	35C
	36C
	37C
	38C
	39C
	40C
	41C
	42C
	43C
	44C
	45C
	46C
	47C
	48C
	45F
	46F
	47F
	48F
SCADA Network	Uplink (F)

TO BLOWER BUILDING

CP-3B

PLC3B

MCC6-SW-3B

01C	PLC-3B.02C
02C	
03C	
04C	
05C	
06C	
07C	
08C	
09C	
10C	
11C	
12C	
13C	
14C	
15C	
16C	PLC3B-RIO-3.01C
G1-C/F	PLC3B-SW-RIO-1.G1F
G2-C/F	PLC3B-SW-RIO-2.G1F

FPP-3B

MCC6-SW-3B.G1F	1	PLC3B-SW-RIO-1.G1F	Blue
	2		Orange
	3		Green
	4		Brown
	5		Slate
	6		White
	7		Red
	8		Black
	9		Yellow
	10		Violet
	11		Rose
	12		Aqua
MCC6-SW-3B.G2F	1	PLC3B-SW-RIO-2.G1F	Blue
	2		Orange
	3		Green
	4		Brown
	5		Slate
	6		White
	7		Red
	8		Black
	9		Yellow
	10		Violet
	11		Rose
	12		Aqua

CP-3B-RIO-3

CPP-RIO-3

01
02
03
04
05
06
07
08

PLC3B-RIO-3

CP-3B-RIO-1

PLC3B-RIO-1

PLC3B-SW-RIO-1

PLC-3 RIO-01 .01C	01C
AIT-3261 .01C	02C
AIT-3262 .01C	03C
LCP-3291A .01C	04C
LCP-3291B .01C	05C
LCP-3292A .01C	06C
LCP-3292B .01C	07C
	08C
	09C
	10C
	11C
	12C
	13C
	14C
	15C
	16C
MCC6-SW-3B.G1F	G1-C/F
	G2-C/F

CPP-RIO-1

01
02
03
04
05
06
07
08

AIT — AIT-3261 AB-1 DO ANALYZER
AIT — AIT-3262 AB-2 DO ANALYZER
LCP-3291A — AB-1 ZONE 1A MIXER
LCP-3291B — AB-1 ZONE 1B MIXER
LCP-3292A — AB-2 ZONE 1A MIXER
LCP-3292B — AB-2 ZONE 1B MIXER

FPP-RIO-1

Blue	MCC6-SW-3B.G1F	1	PLC3B-SW-RIO-1.G1F
Orange		2	
Green		3	
Brown		4	
Slate		5	
White		6	
Red		7	
Black		8	
Yellow		9	
Violet		10	
Rose		11	
Aqua		12	

CP-3B-RIO-2

PLC3B-RIO-2

PLC3B-SW-RIO-2

PLC-3 RIO-02 .01C	01C
AIT-3263 .01C	02C
AIT-3264 .01C	03C
LCP-3293A .01C	04C
LCP-3293B .01C	05C
LCP-3294A .01C	06C
LCP-3294B .01C	07C
	08C
	09C
	10C
	11C
	12C
	13C
	14C
	15C
	16C
MCC6-SW-3B.G2F	G1-C/F
	G2-C/F

CPP-RIO-2

01
02
03
04
05
06
07
08

AIT — AIT-3263 AB-3 DO ANALYZER
AIT — AIT-3264 AB-4 DO ANALYZER
LCP-3293A — AB-3 ZONE 1A MIXER
LCP-3293B — AB-3 ZONE 1B MIXER
LCP-3294A — AB-4 ZONE 1A MIXER
LCP-3294B — AB-4 ZONE 1B MIXER

FPP-RIO-2

Blue	MCC6-SW-3B.G2F	1	PLC3B-SW-RIO-2.G1F
Orange		2	
Green		3	
Brown		4	
Slate		5	
White		6	
Red		7	
Black		8	
Yellow		9	
Violet		10	
Rose		11	
Aqua		12	

REGISTERED PROFESSIONAL ENGINEER — Digitally Signed — OREGON — JANUARY 14, 2005 — DONALD PAUL WATSON — 65533PE
EXPIRES: 06/30/2028

© JACOBS 2025. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

NO.	DSGN	DATE	REVISION	CHK	APVD	BY
	S SUNDAHL	DR	J BOSS	D WATSON	APVD	T DYE

WATER ENVIRONMENT SERVICES

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

INSTRUMENTATION AND CONTROL

AERATION / RAS NETWORK PATCHING DIAGRAM

100% DESIGN SUBMITTAL

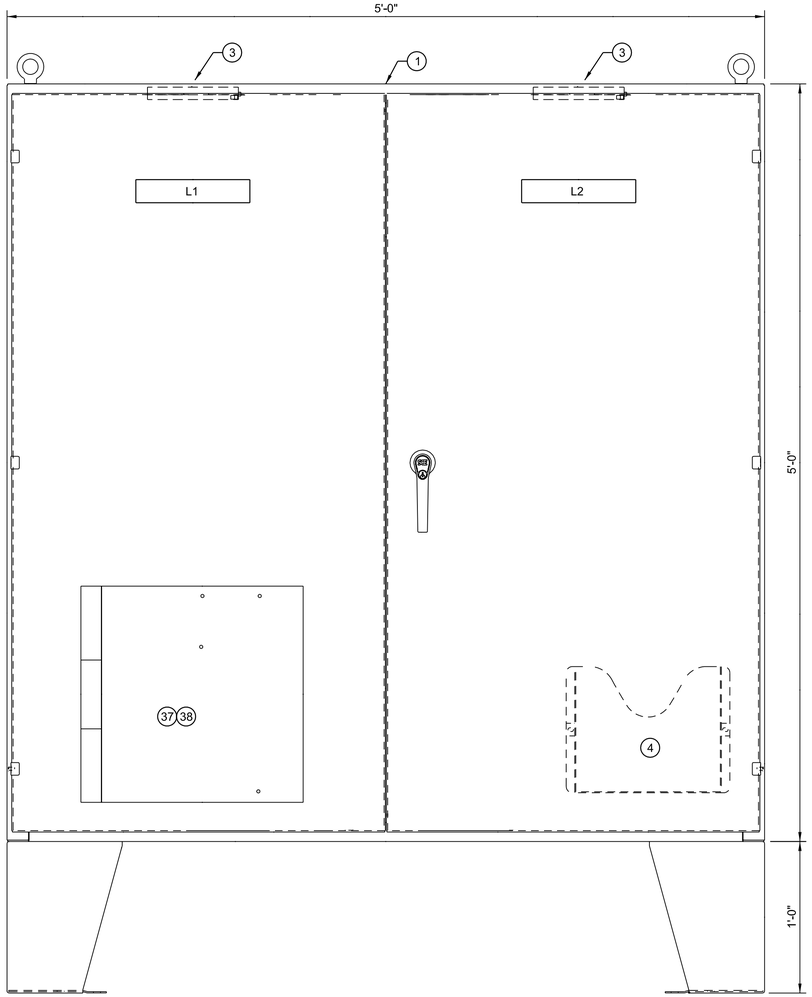
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0003
SHEET	19

FILENAME: 008-N-0003_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 17:42

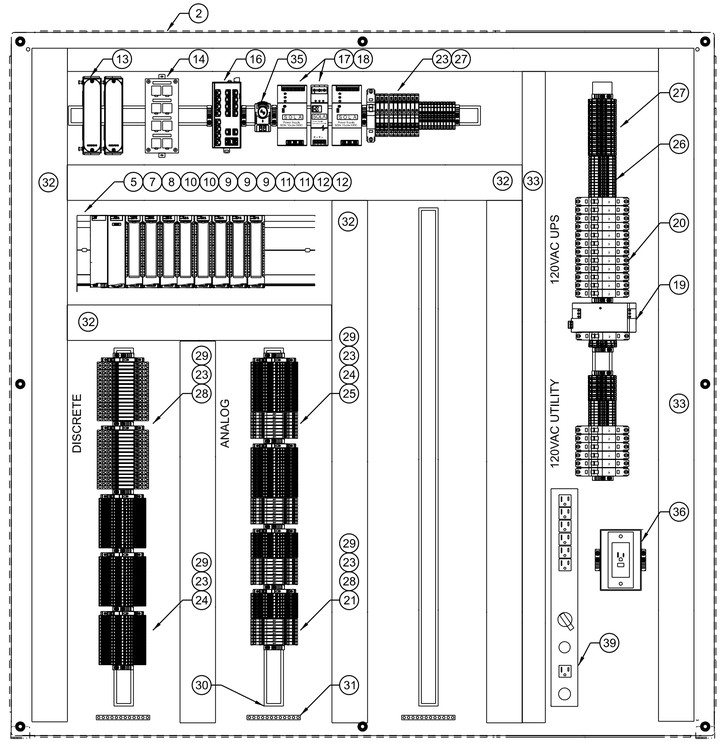
GENERAL SHEET NOTES

1. ENCLOSURE DRAWING REPRESENTS CONCEPTUAL DESIGN INTENT, CONTRACTOR TO SUPPLY AS-BUILT DRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
2. SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
5. CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
6. ALL TIE WRAPS SHALL BE LOCATED OUTSIDE OF THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
7. NO 480VAC CIRCUITS SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
8. ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE TOP OR BOTTOM OF THE ENCLOSURE. NO SIDE, FRONT, OR REAR PENETRATIONS ALLOWED.
9. QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
10. REFER TO THE SPECIFICATIONS FOR PANEL CONSTRUCTION AND WIRING REQUIREMENTS.
11. PROVIDE PANEL SURGE PROTECTION FOR ALL ANALOG/DIGITAL INSTRUMENTS LOCATED OUTDOORS OR OTHERWISE INDICATED IN THE DRAWING OR SPECIFICATIONS.



EXTERNAL ELEVATION

3"=1'-0"



INTERNAL ELEVATION

3"=1'-0"

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	ENCLOSURE
2	BACK PANEL
3	LIGHT
4	DATA POCKET
5	PLC BACKPLANE
6	PLC PROCESSOR
7	PLC POWER SUPPLY
8	PLC ETHERNET COMMUNICATION MODULES
9	PLC DI MODULES
10	PLC DO MODULES
11	PLC AI MODULES
12	PLC AO MODULES
13	FIBER PATCH PANEL
14	COPPER PATCH PANEL
15	ETHERNET SURGE PROTECTOR
16	ETHERNET SWITCH
17	24VDC POWER SUPPLY
18	REDUNDANCY MODULE
19	120VAC PANEL SURGE PROTECTOR
20	CIRCUIT BREAKERS
21	ANALOG SURGE PROTECTOR
22	FUSED TERMINAL BLOCKS, 120VAC
23	FUSED TERMINAL BLOCKS, 24VDC
24	TWO LEVEL TERMINAL BLOCKS, FUSED, 24VDC
25	TWO LEVEL TERMINAL BLOCKS, WITH GROUND
26	TERMINAL BLOCKS, PASS THROUGH
27	GROUNDING TERMINAL BLOCKS,
28	TERMINAL BLOCK RELAYS 24VDC
29	TERMINAL END STOPS
30	DIN RAIL
31	GROUND BAR
32	GRAY WIRE DUCT
33	WHITE WIRE DUCT
34	ENCLOSURE HEATER
35	ENCLOSURE TEMPERATURE ALARM
36	RECEPTACLE
37	UPS
38	UPS BATTERY
39	MAINTENANCE BYPASS SWITCH

NAMEPLATE SCHEDULE (CP-3B)				
LABEL	LINE 1	LINE 2	LINE 3	LETTERING
L1	CP-3B			3/4"
L2	WARNING: MULTIPLE POWER SOURCES	ULTILITY AND UPS BACKED 120VAC CIRCUITS	ARE POWERED FROM PANEL-L6C AND CP-3B	1/2"

REGISTERED PROFESSIONAL ENGINEER — DONALD PAUL WATSON — 65833PE — Digitally Signed — OREGON — November 14, 2025 — EXPIRES: 06/30/2028

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		S SUNDAHL	J BOSS	D WATSON	APVD	T DYE	

©JACOBS 2025. ALL RIGHTS RESERVED.

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

INSTRUMENTATION AND CONTROL
CONTROL PANEL
CP-3B ELEVATIONS

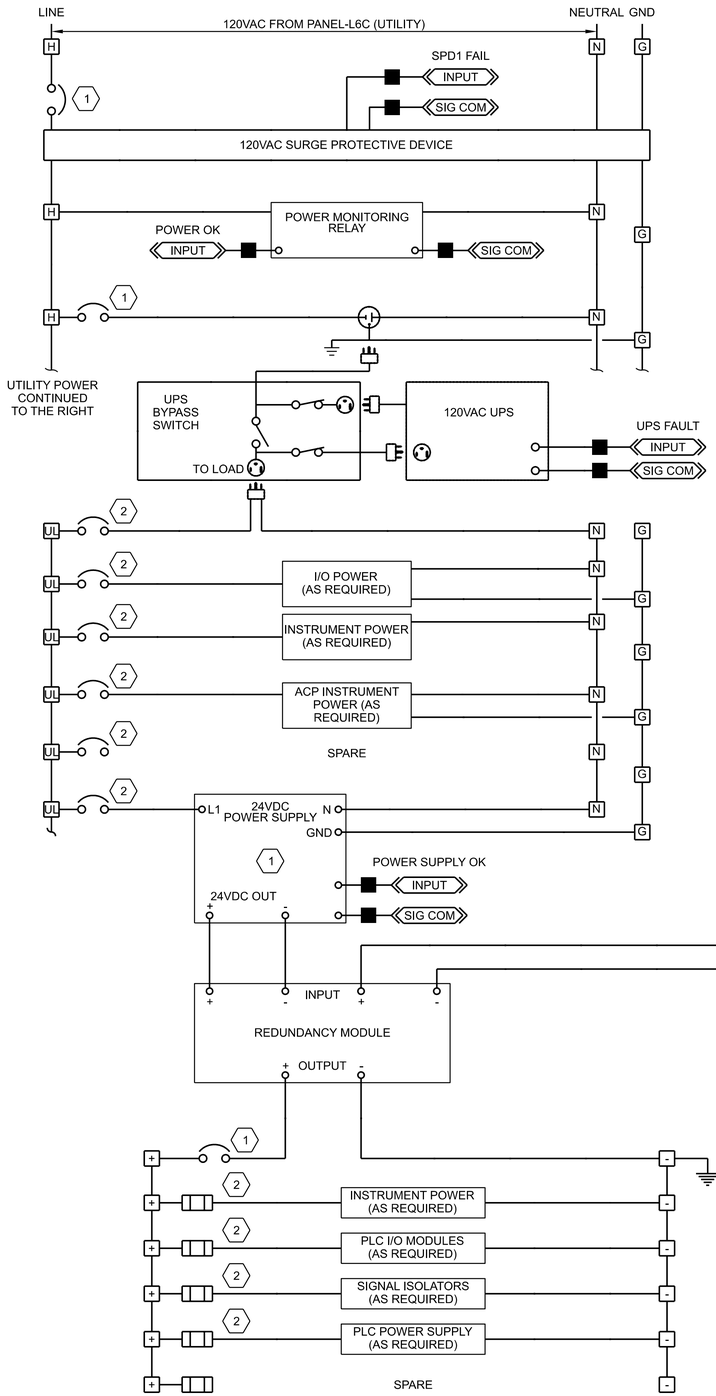
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

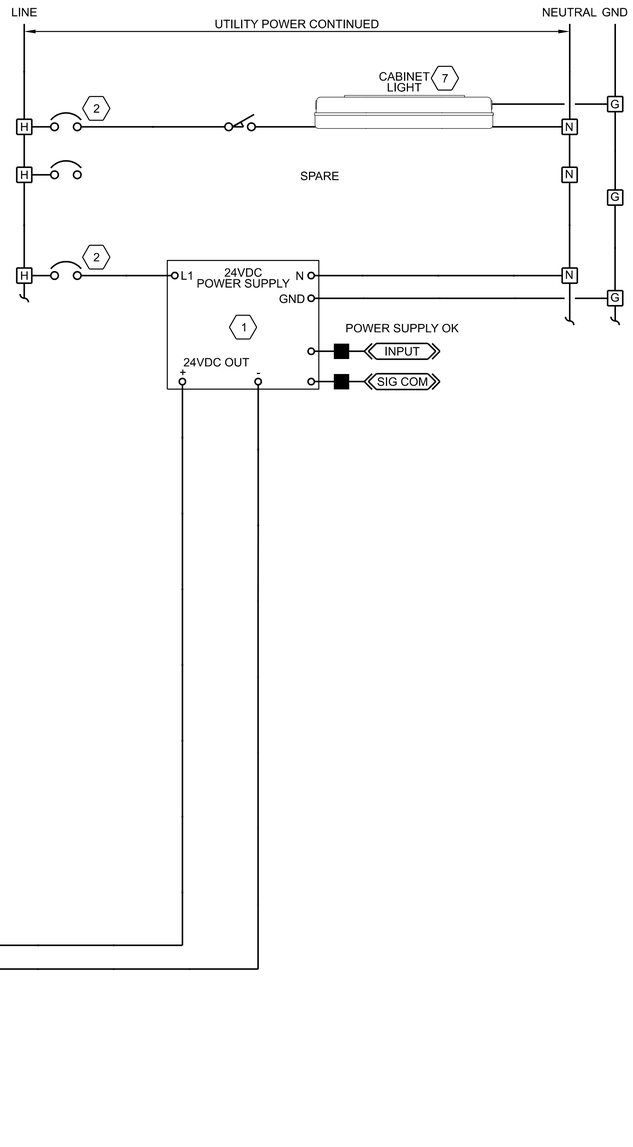
100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0100
SHEET	20

FILENAME: 008-N-0100_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 17:41





GENERAL SHEET NOTES

1. THE SCHEMATIC ILLUSTRATES DESIGN INTENT ONLY. FURNISH ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.

SHEET KEYNOTES

1. SIZE BASED ON LOAD REQUIREMENT.
2. SIZE BASED ON PROTECTION NEEDS.
3. VERIFY LOADS BASED ON TEMPERATURE CALCULATIONS,
4. SIZE BASED ON PROTECTION NEEDS. PROVIDE SEPARATE CIRCUIT BREAKERS FOR EACH INSTRUMENT POWERED FROM THE PANEL
5. PROVIDE QUANTITY REQUIRED PER SPECIFICATIONS.

TERMINAL BLOCK LEGEND

- I/O SIGNALS
- H — 120VAC
- N — NEUTRAL
- G — GROUND
- UL — UPS 120VAC
- \+ — 24VDC (+)
- \- — 24VDC (-)

ELECTRICAL SYMBOLS LEGEND

- FUSED TERMINAL
- CIRCUIT BREAKER
- LIMIT SWITCH, NORMALLY CLOSED, OPENS AT END OF TRAVEL
- LIMIT SWITCH, NORMALLY OPEN, CLOSES AT END OF TRAVEL
- TEMPERATURE SWITCH, OPENS ON TEMPERATURE RISE
- TEMPERATURE SWITCH, CLOSES ON TEMPERATURE RISE
- INPUT — SIGNAL WIRING TO PROCESS CONTROL PANEL'S PLC

REGISTERED PROFESSIONAL ENGINEER — 65533PE — OREGON — JANUARY 14, 2005 — DONALD PAUL WATSON — Digitally Signed

EXPIRES: 06/30/2028

NO.	DATE	DSGN	DR	CHK	BY	REVISION
	S SUNDAHL	J BOSS	D WATSON	APVD	APVD	T DYE

©JACOBS 2026. ALL RIGHTS RESERVED.
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.

WATER ENVIRONMENT SERVICES

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

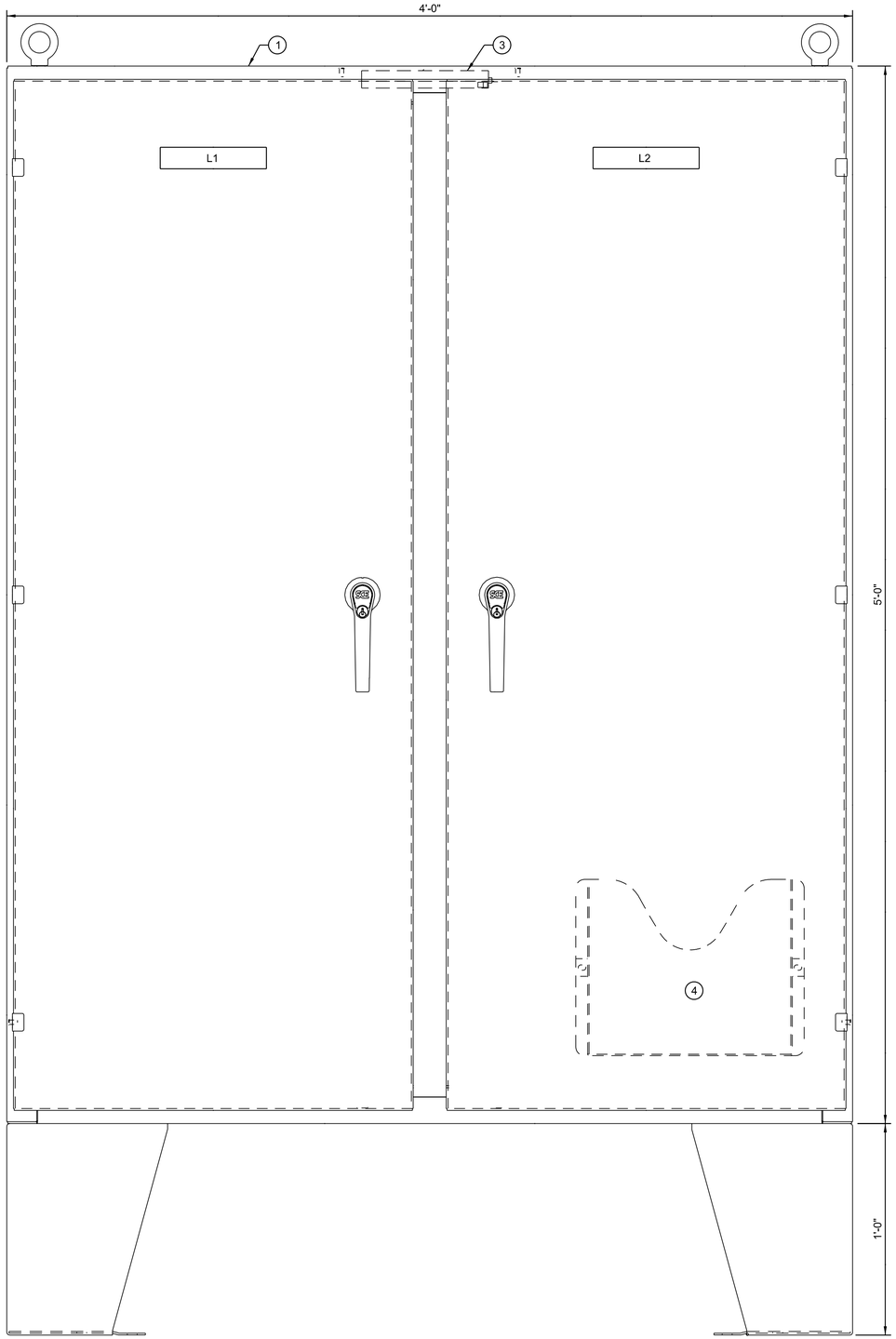
INSTRUMENTATION AND CONTROL
CONTROL PANEL WIRING TYPICAL

100% DESIGN SUBMITTAL

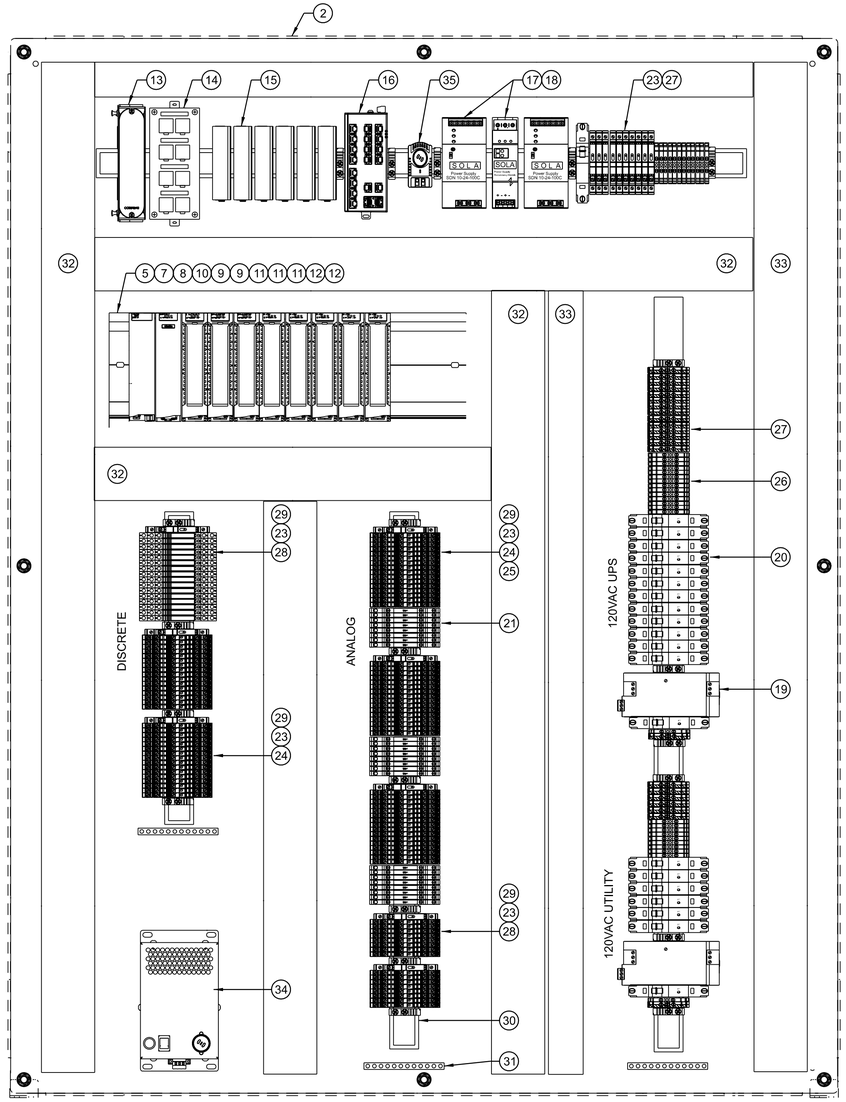
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0101
SHEET	21

FILENAME: 008-N-0101_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 17:42



EXTERNAL ELEVATION
3"=1'-0"



INTERNAL ELEVATION
3"=1'-0"

GENERAL SHEET NOTES

1. ENCLOSURE DRAWING REPRESENTS CONCEPTUAL DESIGN INTENT, CONTRACTOR TO SUPPLY AS-BUILT DRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
2. SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
5. CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
6. ALL TIE WRAPS SHALL BE LOCATED OUTSIDE OF THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
7. NO 480VAC CIRCUITS SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
8. IF OUTDOORS, NO TOP PENETRATIONS DUE TO RISK OF MOISTURE ENTERING CABINET. ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE BOTTOM, OR BOTTOM 10" OF SIDES.
9. QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
10. REFER TO THE SPECIFICATIONS FOR PANEL CONSTRUCTION AND WIRINGREQUIREMENTS.
11. PROVIDE PANEL SURGE PROTECTION FOR ALL ANALOG/DIGITAL INSTRUMENTS LOCATED OUTDOORS OR OTHERWISE INDICATED IN THE DRAWING OR SPECIFICATIONS.

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	ENCLOSURE
2	BACK PANEL
3	LIGHT
4	DATA POCKET
5	PLC BACKPLANE
6	PLC PROCESSOR
7	PLC POWER SUPPLY
8	PLC ETHERNET COMMUNICATION MODULES
9	PLC DI MODULES
10	PLC DO MODULES
11	PLC AI MODULES
12	PLC AO MODULES
13	FIBER PATCH PANEL
14	COPPER PATCH PANEL
15	ETHERNET SURGE PROTECTOR
16	ETHERNET SWITCH
17	24VDC POWER SUPPLY
18	REDUNDANCY MODULE
19	120VAC PANEL SURGE PROTECTOR
20	CIRCUIT BREAKERS
21	ANALOG SURGE PROTECTOR
22	FUSED TERMINAL BLOCKS, 120VAC
23	FUSED TERMINAL BLOCKS, 24VDC
24	MULTI LEVEL TERMINAL BLOCKS, FUSED, 24VDC
25	MULTI LEVEL TERMINAL BLOCKS, WITH GROUND
26	TERMINAL BLOCKS, PASS THROUGH
27	GROUNDING TERMINAL BLOCKS,
28	TERMINAL BLOCK RELAYS 24VDC
29	TERMINAL END STOPS
30	DIN RAIL
31	GROUND BAR
32	GRAY WIRE DUCT
33	WHITE WIRE DUCT
34	ENCLOSURE HEATER
35	ENCLOSURE TEMPERATURE ALARM

NAMEPLATE SCHEDULE (CP-3B-RIO-1)				
LABEL	LINE 1	LINE 2	LINE 3	LETTERING
L1	CP-3B-RIO-1			3/4"
L2	WARNING: MULTIPLE POWER SOURCES	ULTILITY AND UPS BACKED 120VAC CIRCUITS	ARE POWERED FROM PANEL-L6C AND CP-3B	1/2"

REGISTERED PROFESSIONAL ENGINEER — 65833PE — Digitally Signed — OREGON — NOVEMBER 14, 2025 — DONALD PAUL WATSON
EXPIRES: 06/30/2028

NO.	DATE	DR	REVISION	CHK	APVD	BY
DSGN	S SUNDAHL	J BOSS		D WATSON	APVD	T DYE

© JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

100% DESIGN SUBMITTAL

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

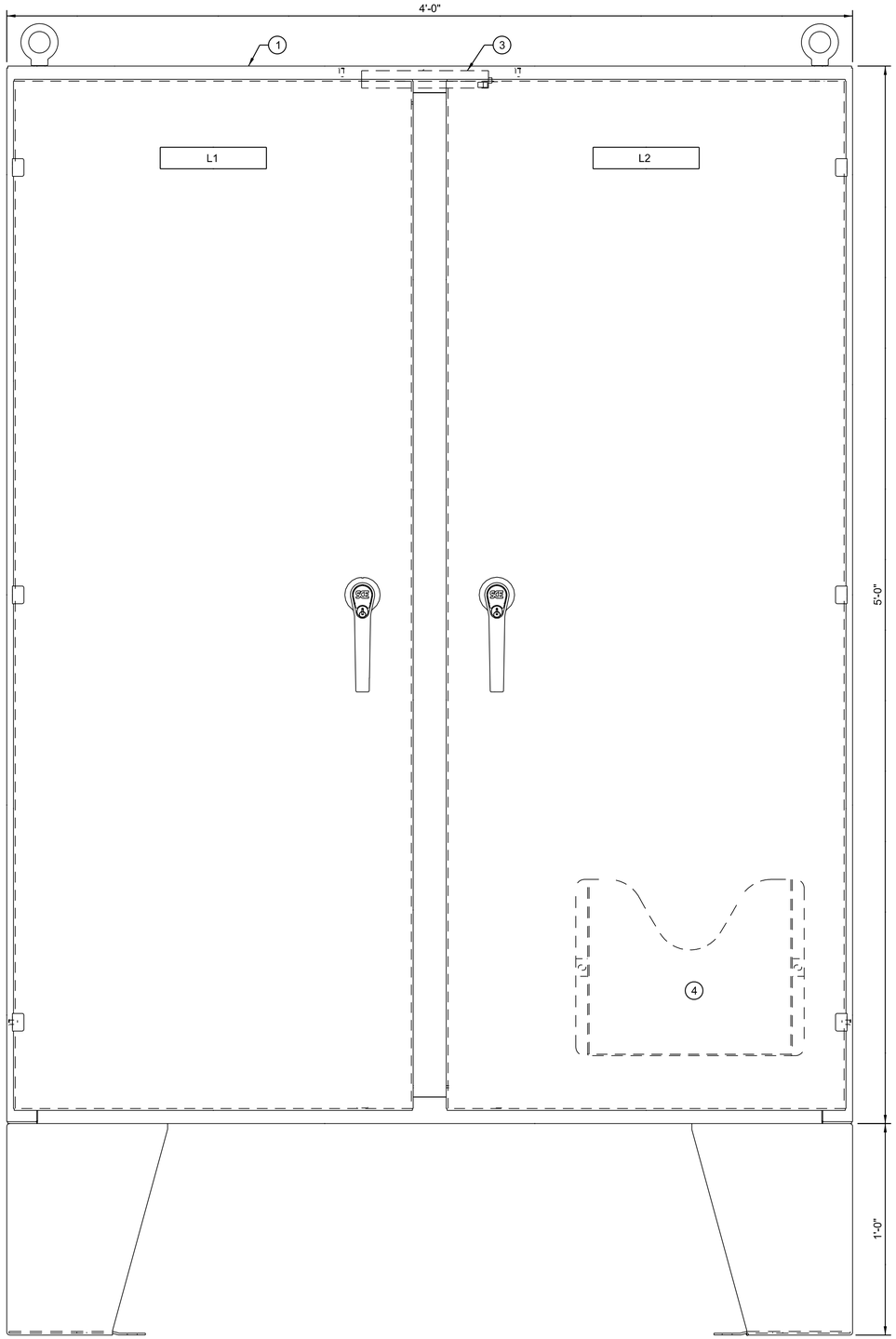
INSTRUMENTATION AND CONTROL

REMOTE I/O PANEL CP-3B-RIO-1 ELEVATIONS

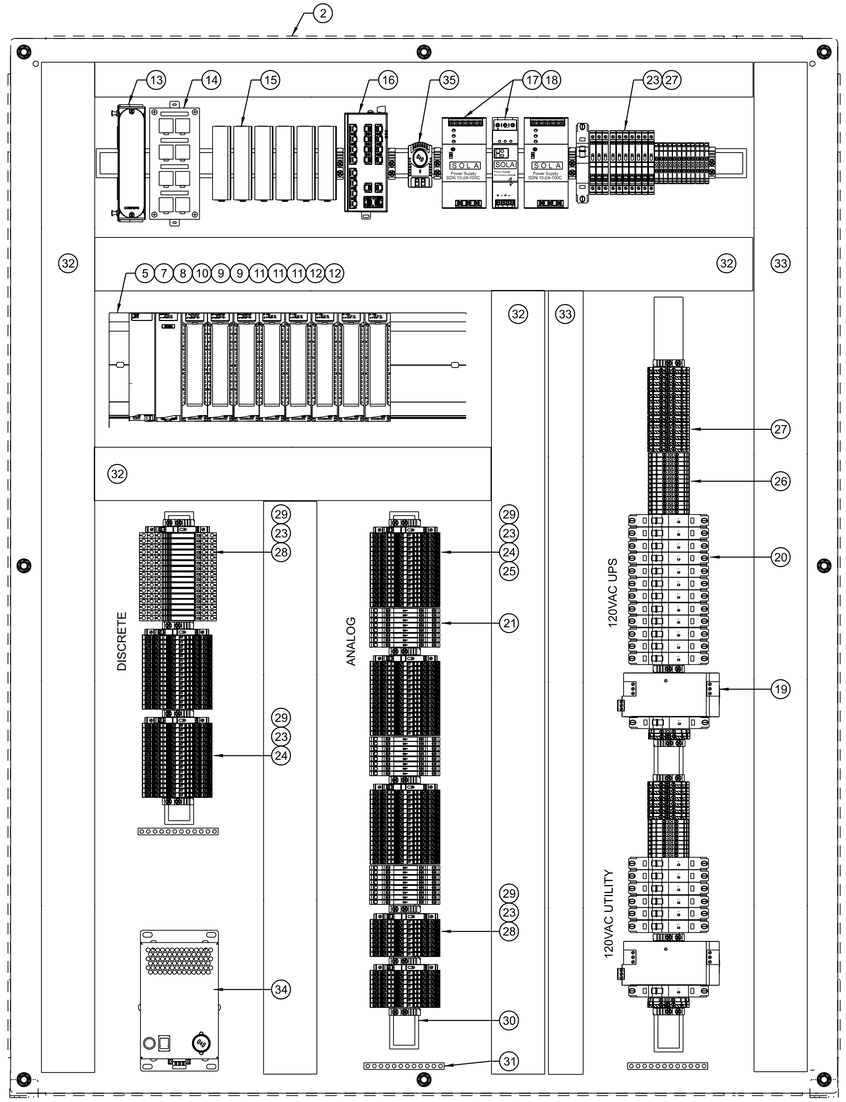
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0102
SHEET	22

FILENAME: 008-N-0102_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:40



EXTERNAL ELEVATION
3"=1'-0"



INTERNAL ELEVATION
3"=1'-0"

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	ENCLOSURE
2	BACK PANEL
3	LIGHT
4	DATA POCKET
5	PLC BACKPLANE
6	PLC PROCESSOR
7	PLC POWER SUPPLY
8	PLC ETHERNET COMMUNICATION MODULES
9	PLC DI MODULES
10	PLC DO MODULES
11	PLC AI MODULES
12	PLC AO MODULES
13	FIBER PATCH PANEL
14	COPPER PATCH PANEL
15	ETHERNET SURGE PROTECTOR
16	ETHERNET SWITCH
17	24VDC POWER SUPPLY
18	REDUNDANCY MODULE
19	120VAC PANEL SURGE PROTECTOR
20	CIRCUIT BREAKERS
21	ANALOG SURGE PROTECTOR
22	FUSED TERMINAL BLOCKS, 120VAC
23	FUSED TERMINAL BLOCKS, 24VDC
24	MULTI LEVEL TERMINAL BLOCKS, FUSED, 24VDC
25	MULTI LEVEL TERMINAL BLOCKS, WITH GROUND
26	TERMINAL BLOCKS, PASS THROUGH
27	GROUNDING TERMINAL BLOCKS,
28	TERMINAL BLOCK RELAYS 24VDC
29	TERMINAL END STOPS
30	DIN RAIL
31	GROUND BAR
32	GRAY WIRE DUCT
33	WHITE WIRE DUCT
34	ENCLOSURE HEATER
35	ENCLOSURE TEMPERATURE ALARM

NAMEPLATE SCHEDULE (CP-3B-RIO-2)				
LABEL	LINE 1	LINE 2	LINE 3	LETTERING
L1	CP-3B-RIO-2			3/4"
L2	WARNING: MULTIPLE POWER SOURCES	ULTILITY AND UPS BACKED 120VAC CIRCUITS	ARE POWERED FROM PANEL-L6C AND CP-3B	1/2"

GENERAL SHEET NOTES

1. ENCLOSURE DRAWING REPRESENTS CONCEPTUAL DESIGN INTENT, CONTRACTOR TO SUPPLY AS-BUILT DRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
2. SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
5. CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
6. ALL TIE WRAPS SHALL BE LOCATED OUTSIDE OF THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
7. NO 480VAC CIRCUITS SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
8. IF OUTDOORS, NO TOP PENETRATIONS DUE TO RISK OF MOISTURE ENTERING CABINET. ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE BOTTOM, OR BOTTOM 10" OF SIDES.
9. QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
10. REFER TO THE SPECIFICATIONS FOR PANEL CONSTRUCTION AND WIRING REQUIREMENTS.
11. PROVIDE PANEL SURGE PROTECTION FOR ALL ANALOG/DIGITAL INSTRUMENTS LOCATED OUTDOORS OR OTHERWISE INDICATED IN THE DRAWING OR SPECIFICATIONS.

REGISTERED PROFESSIONAL ENGINEER — 65853PE — Digitally Signed — OREGON — NOVEMBER 14, 2025 — DONALD PAUL WATSON
EXPIRES: 06/30/2028

NO.	DATE	DR	REVISION	CHK	BY	APVD
		S SUNDAHL	J BOSS	D WATSON		T DYE

© JACOBS 2026. ALL RIGHTS RESERVED.

DSGN

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

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.

Jacobs

INSTRUMENTATION AND CONTROL

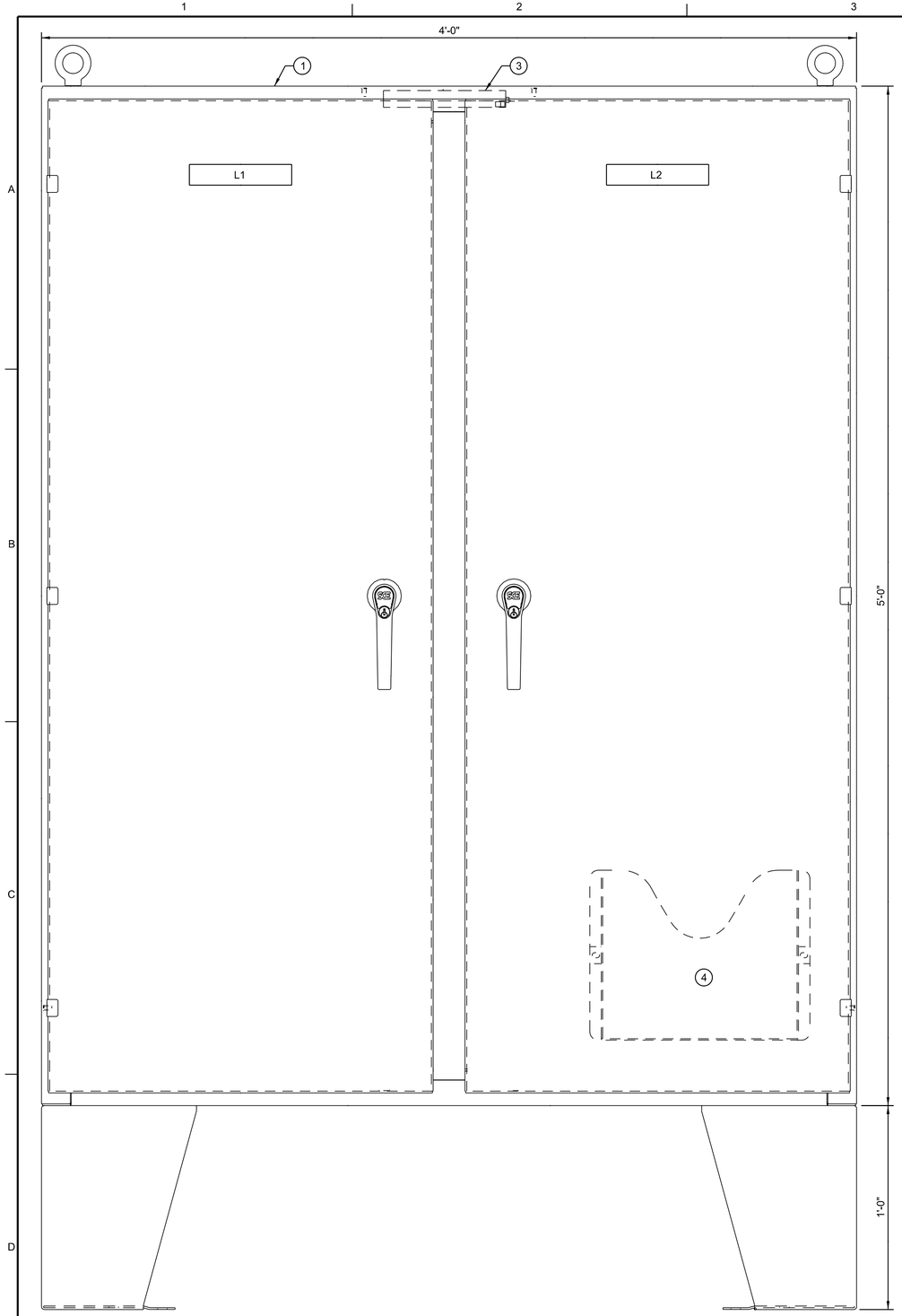
REMOTE I/O PANEL
CP-3B-RIO-2 ELEVATIONS

100% DESIGN SUBMITTAL

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

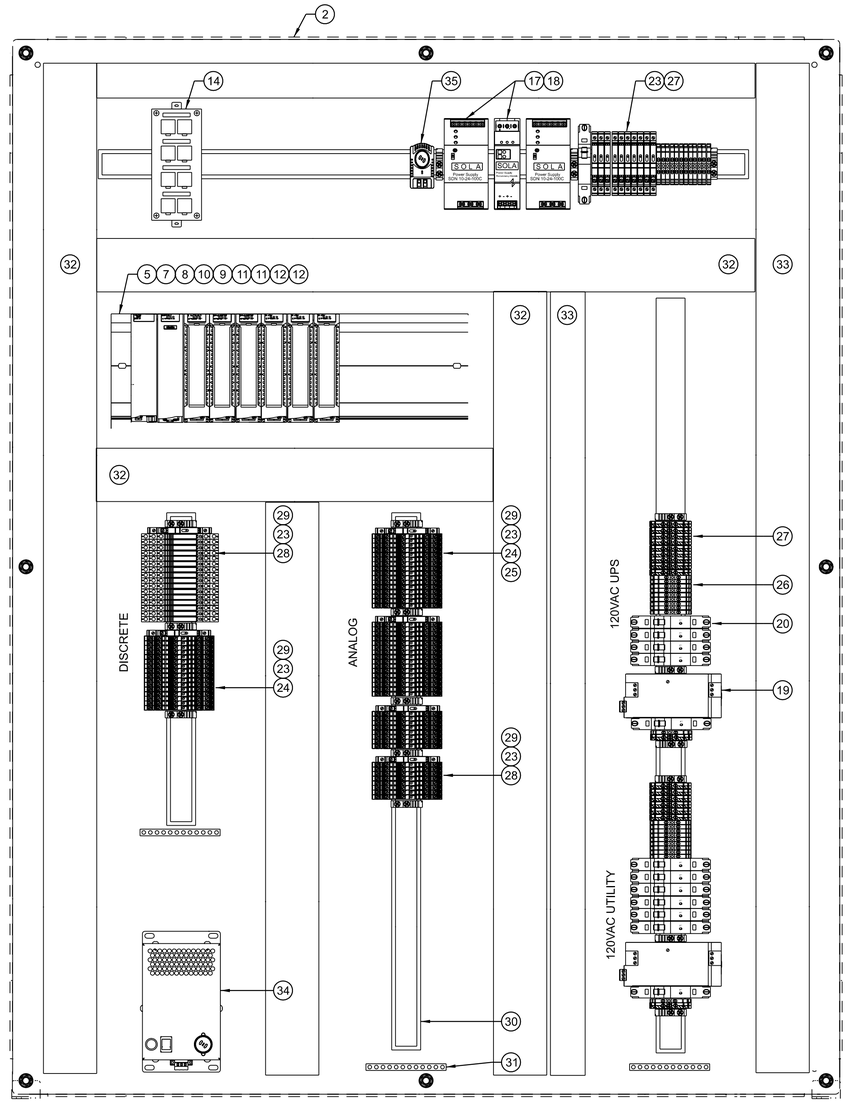
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0103
SHEET	23

FILENAME: 008-N-0103_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:42



EXTERNAL ELEVATION

3"=1'-0"



INTERNAL ELEVATION

3"=1'-0"

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	ENCLOSURE
2	BACK PANEL
3	LIGHT
4	DATA POCKET
5	PLC BACKPLANE
6	PLC PROCESSOR
7	PLC POWER SUPPLY
8	PLC ETHERNET COMMUNICATION MODULES
9	PLC DI MODULES
10	PLC DO MODULES
11	PLC AI MODULES
12	PLC AO MODULES
13	FIBER PATCH PANEL
14	COPPER PATCH PANEL
15	ETHERNET SURGE PROTECTOR
16	ETHERNET SWITCH
17	24VDC POWER SUPPLY
18	REDUNDANCY MODULE
19	120VAC PANEL SURGE PROTECTOR
20	CIRCUIT BREAKERS
21	ANALOG SURGE PROTECTOR
22	FUSED TERMINAL BLOCKS, 120VAC
23	FUSED TERMINAL BLOCKS, 24VDC
24	MULTI LEVEL TERMINAL BLOCKS, FUSED, 24VDC
25	MULTI LEVEL TERMINAL BLOCKS, WITH GROUND
26	TERMINAL BLOCKS, PASS THROUGH
27	GROUNDING TERMINAL BLOCKS,
28	TERMINAL BLOCK RELAYS 24VDC
29	TERMINAL END STOPS
30	DIN RAIL
31	GROUND BAR
32	GRAY WIRE DUCT
33	WHITE WIRE DUCT
34	ENCLOSURE HEATER
35	ENCLOSURE TEMPERATURE ALARM

NAMEPLATE SCHEDULE (CP-3B-RIO-3)				
LABEL	LINE 1	LINE 2	LINE 3	LETTERING
L1	CP-3B-RIO-3			3/4"
L2	WARNING: MULTIPLE POWER SOURCES	ULTILITY AND UPS BACKED 120VAC CIRCUITS	ARE POWERED FROM PANEL-L6C AND CP-3B	1/2"

GENERAL SHEET NOTES

1. ENCLOSURE DRAWING REPRESENTS CONCEPTUAL DESIGN INTENT, CONTRACTOR TO SUPPLY AS-BUILTDRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
2. SECURE ENCLOSURE TO FLOOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
5. CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
6. ALL TIE WRAPS SHALL BE LOCATED OUTSIDE OF THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
7. NO 480VAC CIRCUITS SHALL TERMINATE IN OR PASS THROUGH CONTROL CABINETS.
8. IF OUTDOORS, NO TOP PENETRATIONS DUE TO RISK OF MOISTURE ENTERING CABINET. ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE BOTTOM, OR BOTTOM 10" OF SIDES.
9. QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
10. REFER TO THE SPECIFICATIONS FOR PANEL CONSTRUCTION AND WIRING REQUIREMENTS.
11. PROVIDE PANEL SURGE PROTECTION FOR ALL ANALOG/DIGITAL INSTRUMENTS LOCATED OUTDOORS OR OTHERWISE INDICATED IN THE DRAWING OR SPECIFICATIONS.

REGISTERED PROFESSIONAL ENGINEER — 85838PE — Digitally Signed — OREGON — NOVEMBER 14, 2025 — DONALD PAUL WATSON

EXPIRES: 06/30/2028

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	REVISION	CHK	APVD	BY	APVD
DSGN	S SUNDAHL	DR	J BOSS	D WATSON		T DYE

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.

REUSE OF DOCUMENTS:

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

INSTRUMENTATION AND CONTROL

REMOTE I/O PANEL CP-3B-RIO-3 ELEVATIONS

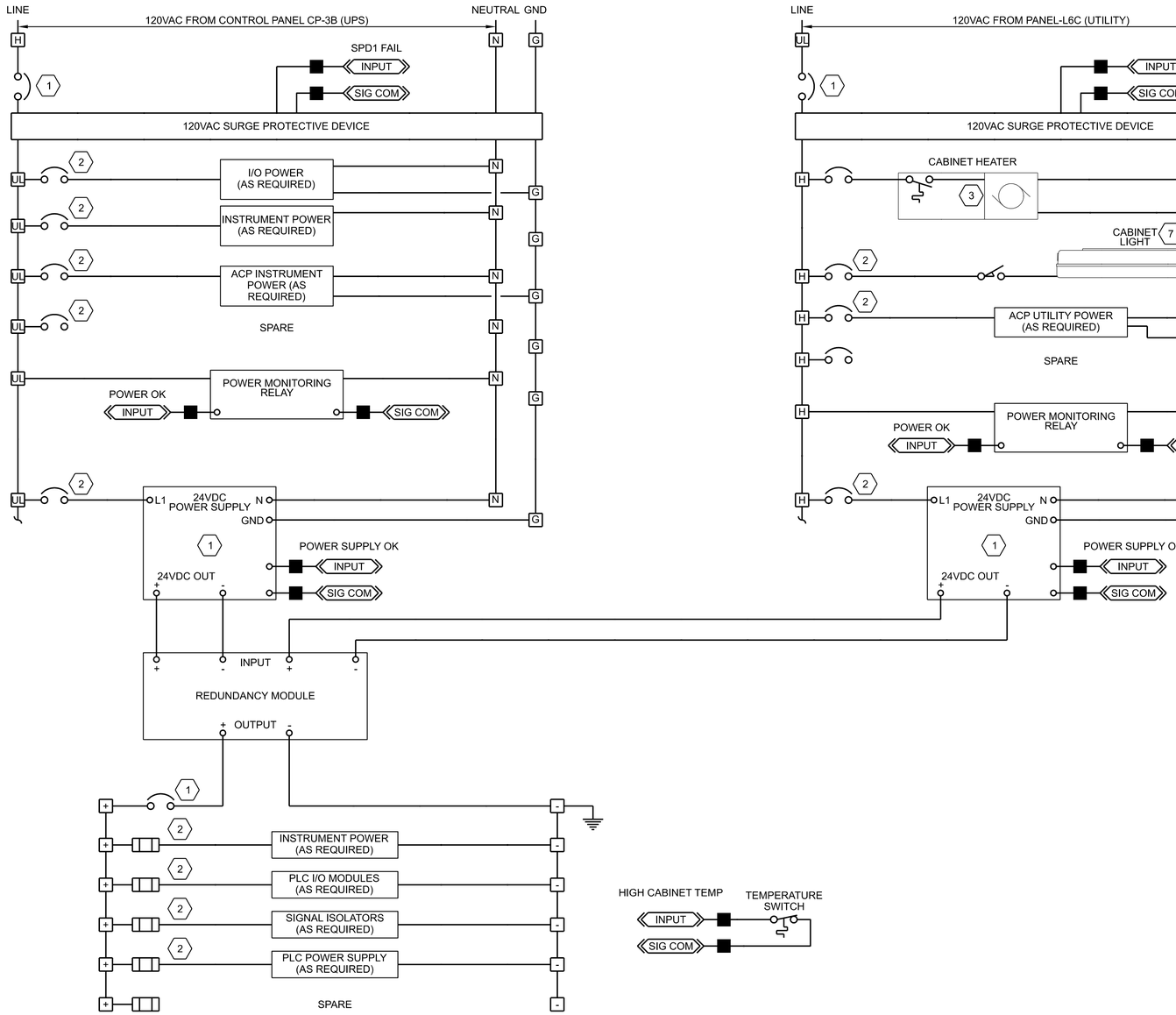
100% DESIGN SUBMITTAL

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0104
SHEET	24

FILENAME: 008-N-0104_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:41



GENERAL SHEET NOTES

1. THE SCHEMATIC ILLUSTRATES DESIGN INTENT ONLY. FURNISH ALL NECESSARY COMPONENTS TO MEET PROJECT REQUIREMENTS.

SHEET KEYNOTES

1. SIZE BASED ON LOAD REQUIREMENT.
2. SIZE BASED ON PROTECTION NEEDS.
3. VERIFY LOADS BASED ON TEMPERATURE CALCULATIONS,
4. SIZE BASED ON PROTECTION NEEDS. PROVIDE SEPARATE CIRCUIT BREAKERS FOR EACH INSTRUMENT POWERED FROM THE PANEL
5. PROVIDE QUANTITY REQUIRED PER SPECIFICATIONS.

TERMINAL BLOCK LEGEND

■	I/O SIGNALS
H	120VAC
N	NEUTRAL
G	GROUND
UL	UPS 120VAC
+	24VDC (+)
-	24VDC (-)

ELECTRICAL SYMBOLS LEGEND

	FUSED TERMINAL
	CIRCUIT BREAKER
	LIMIT SWITCH, NORMALLY CLOSED, OPENS AT END OF TRAVEL
	LIMIT SWITCH, NORMALLY OPEN, CLOSES AT END OF TRAVEL
	TEMPERATURE SWITCH, OPENS ON TEMPERATURE RISE
	TEMPERATURE SWITCH, CLOSES ON TEMPERATURE RISE
INPUT	SIGNAL WIRING TO PROCESS CONTROL PANEL'S PLC

REGISTERED PROFESSIONAL ENGINEER — DONALD PAUL WATSON — 65833PE — OREGON — Digitally Signed — EXPIRES: 06/30/2028

NO.	DATE	DSGN	DR	CHK	BY	APVD
REVISION		S SUNDAHL	J BOSS	D WATSON	T DYE	

© JACOBS 2026. ALL RIGHTS RESERVED.
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.

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

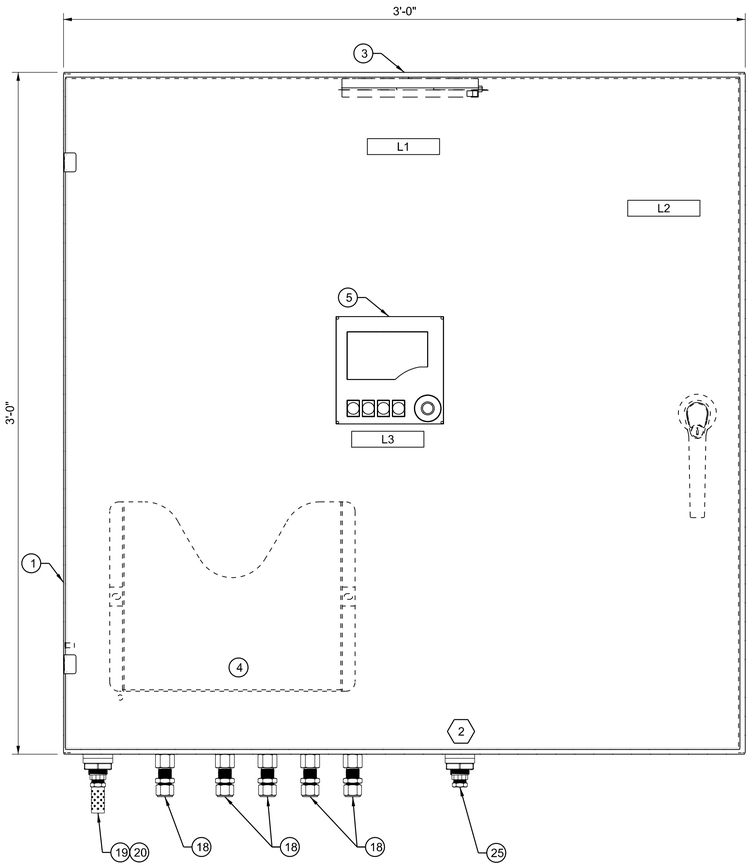
INSTRUMENTATION AND CONTROL

REMOTE I/O PANEL WIRING TYPICAL

100% DESIGN SUBMITTAL

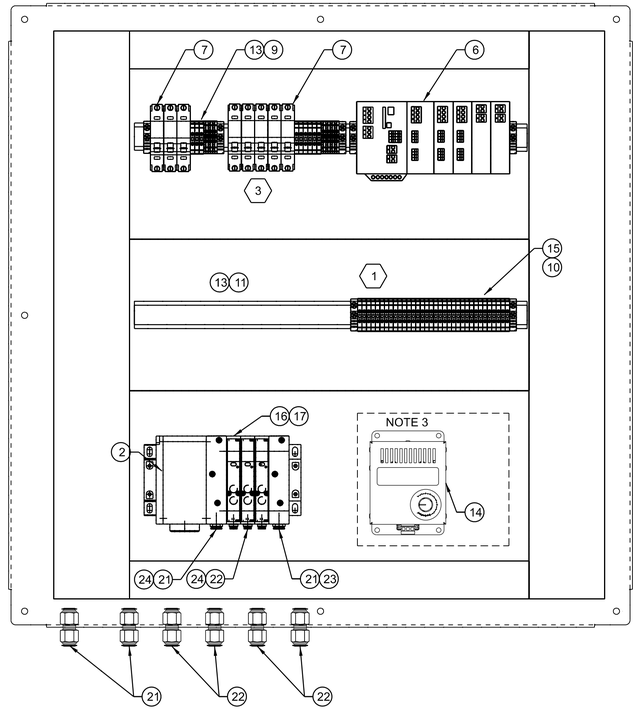
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0105
SHEET	25



EXTERNAL ELEVATION

3"=1'-0"



INTERNAL ELEVATION

3"=1'-0"

GENERAL SHEET NOTES

1. ENCLOSURE DRAWING REPRESENTS CONCEPTUAL DESIGN INTENT, CONTRACTOR TO SUPPLY AS-BUILT DRAWINGS SHOWING FINAL ENCLOSURE LAYOUT WITH ALL EQUIPMENT, MANUFACTURERS, AND PART NUMBERS.
2. SECURE ENCLOSURE TO STANCHION FOLLOWING MANUFACTURER'S RECOMMENDATIONS. ADHERE TO ALL SEISMIC INSTALLATION REQUIREMENTS FOR THE APPROPRIATE LOCATIONS.
3. REFER TO ELECTRICAL PLANS FOR LOCATION OF ALL ENCLOSURES.
4. FOLLOW ALL UL 508 AND 508A SUPPLEMENT SB TO DETERMINE SHORT CIRCUIT RATINGS.
5. CIRCUIT BREAKERS SHALL BE COORDINATED TO TRIP BRANCH CIRCUIT BREAKER PRIOR TO THE MAIN PANEL CIRCUIT BREAKER.
6. ALL TIE WRAPS SHALL BE LOCATED OUTSIDE OF THE WIRE DUCTS. INSTALLATION OF ALL NYLON TIE WRAPS SHALL BE TENSIONED AND TRIMMED FLUSH.
7. IF OUTDOORS, NO TOP PENETRATIONS DUE TO RISK OF MOISTURE ENTERING CABINET. ALL CONDUIT PENETRATIONS SHALL BE LOCATED AT THE BOTTOM, OR BOTTOM 10" OF SIDES.
8. QUANTITY OF COMPONENTS VARY AS REQUIRED FOR EACH CABINET.
9. REFER TO THE SPECIFICATIONS FOR PANEL CONSTRUCTION AND WIRING REQUIREMENTS.
10. USE POLY TUBE TO CONNECT AIR FITTING INTERNAL TO THE PANEL; FOR VALVE ASSEMBLY, ROUTE AND SECURE POLY TUBING BETWEEN SUPPLY AIR AND SOLENOID VALVE MANIFOLD INTAKE PORT, BETWEEN SOLENOID VALVES AND SENSOR CLEANING LINES, AND BETWEEN SOLENOID VALVE MANIFOLD EXHAUST PORT AND AIR SILENCER. PLUG THE UNUSED SPARE INTAKE AND EXHAUST PORTS.

SHEET KEYNOTES

1. PRE WIRE ANALYZER SENSOR PORTS TO TERMINAL BLOCKS
2. WIRE M12 PLUG TO ANALYZER PORT 5 FOR USE AS SPARE OR SENSOR TEST PORT.
3. PROVIDE CIRCUIT PROTECT AND MEANS OF DISCONNECT FOR EACH SOLENOID VALVE.

MAJOR EQUIPMENT SCHEDULE	
ITEM	DESCRIPTION
1	ENCLOSURE
2	BACK PANEL
3	ENCLOSURE LIGHT
4	DATA POCKET
5	LIQUILINEANALYZER DISPLAY
6	LIQUILINE CM448R
7	CIRCUIT BREAKERS
8	TERMINAL BLOCKS, PASS THROUGH
9	GROUNDING TERMINAL BLOCKS,
10	TERMINAL END STOPS
11	DIN RAIL
12	WIRE DUCT
13	WIRE DUCT, PANDUIT PANELMAX
14	ENCLOSURE HEATER
15	BREATHER DRAIN
16	SOLENOID VALVE MANIFOLD
17	SOLENOID VALVE WITH SPEED CONTROLS
18	SST FITTING BULKHEAD, TUBE x NPTF
19	SST FITTING BULKHEAD, NPTF x NPTF
20	SST AIR SILENCERS
21	3/8" PUSH CONNECTOR
22	1/4" PUSH CONNECTOR
23	PUSH TO CONNECT PLUG
24	POLYETHYLENE TUBING
25	M12 RECEPTACLE, FEMALE, W PIGTAIL

NAMEPLATE SCHEDULE (ACP - x)				
LABEL	LINE 1	LINE 2	LINE 3	LETTERING
L1	ACP-326x			3/4"
L2	WARNING: MULTIPLE POWER SOURCES	ULTILITY AND UPS BACKED 120VAC CIRCUITS	ARE POWERED FROM PANEL-CP-3B-RIO-X	1/2"
L3	AIT-326x			1/2"

REGISTERED PROFESSIONAL ENGINEER — Digitally Signed — OREGON — DONALD PAUL WATSON — EXPIRES: 06/30/2028

NO.	DATE	DR	CHK	BY	APVD
DSGN	S SUNDAHL	J BOSS	D WATSON	APVD	T DYE

REVISION

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

INSTRUMENTATION AND CONTROL

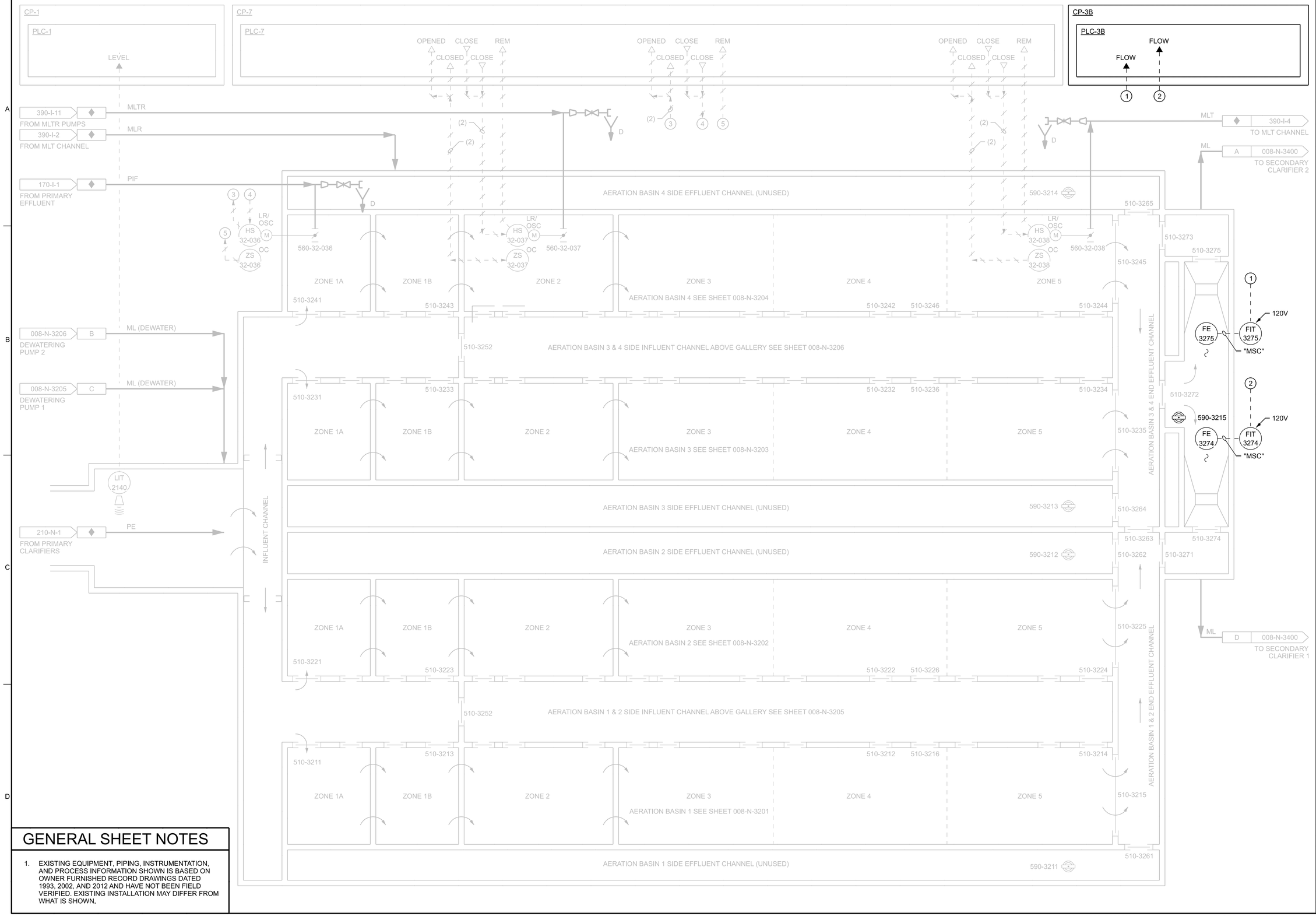
ACP PANEL ELEVATIONS
TYPICAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-0107
SHEET	26

100% DESIGN SUBMITTAL

FILENAME: 008-N-0107_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:40



GENERAL SHEET NOTES

1. EXISTING EQUIPMENT, PIPING, INSTRUMENTATION, AND PROCESS INFORMATION SHOWN IS BASED ON OWNER FURNISHED RECORD DRAWINGS DATED 1993, 2002, AND 2012 AND HAVE NOT BEEN FIELD VERIFIED. EXISTING INSTALLATION MAY DIFFER FROM WHAT IS SHOWN.

REGISTERED PROFESSIONAL ENGINEER — Digitally Signed — DONALD PAUL WATSON — OREGON — 65833PE — EXPIRES: 06/30/2028

© JACOBS 2025. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	REVISION	BY	APVD
		S SUNDAHL	J BOSS	D WATSON	T DYE
		DR	CHK	APVD	

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

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.

Jacobs

INSTRUMENTATION AND CONTROL

AERATION BASINS 1-4 P&ID

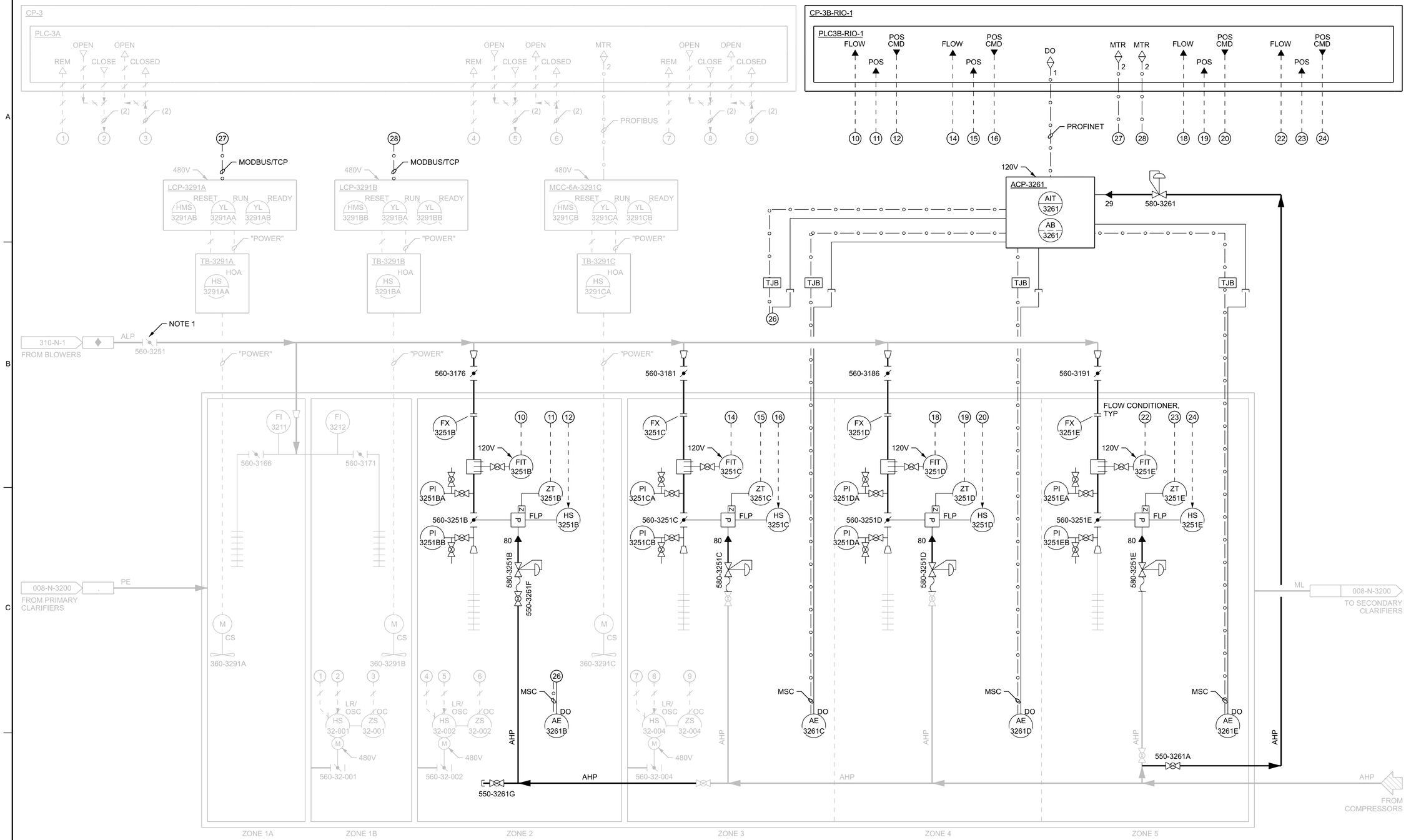
100% DESIGN SUBMITTAL

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-3200
SHEET	27

FILENAME: 008-N-3200_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:39



GENERAL SHEET NOTES

1. REPLACE PNEUMATIC ACTUATOR WITH HAND WHEEL OPERATOR FOR MANUAL ACTUATION OF FLOW CONTROL VALVE 560-3251 LOCATED IN THE BASIN GALLERY.
2. EXISTING EQUIPMENT, PIPING, INSTRUMENTATION, AND PROCESS INFORMATION SHOWN IS BASED ON OWNER FURNISHED RECORD DRAWINGS DATED 1993, 2002, AND 2012 AND HAVE NOT BEEN FIELD VERIFIED. EXISTING INSTALLATION MAY DIFFER FROM WHAT IS SHOWN.

REGISTERED PROFESSIONAL ENGINEER — 65853PE — OREGON — JANUARY 14, 2005 — DONALD PAUL WATSON — Digitally Signed

EXPIRES: 06/30/2028

© JACOBS 2026. ALL RIGHTS RESERVED.
THIS DRAWING 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.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		S SUNDAHL	J BOSS	D WATSON			T DYE

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

INSTRUMENTATION AND CONTROL
AERATION BASIN 1 P&ID

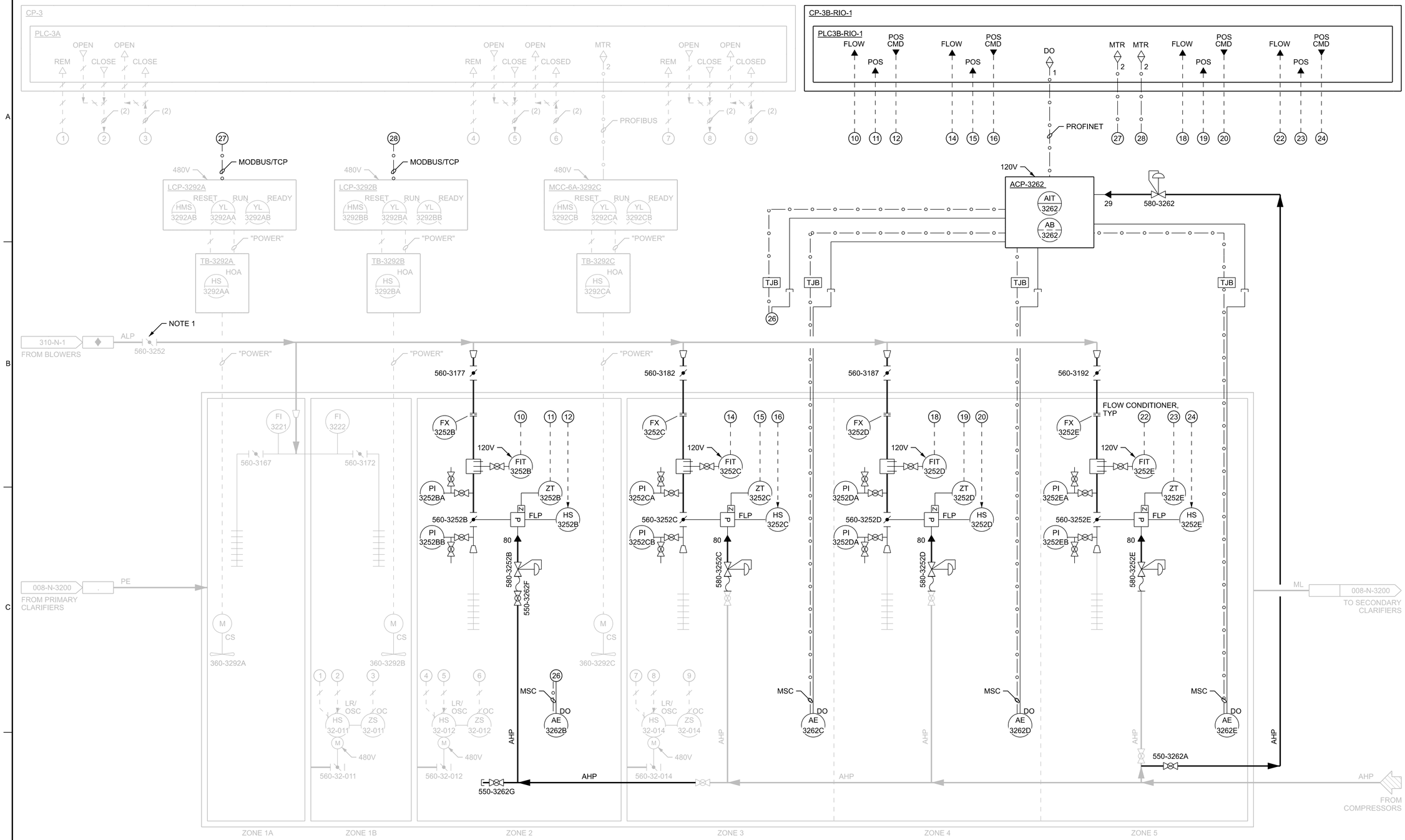
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-3201
SHEET	28

FILENAME: 008-N-3201_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:40



GENERAL SHEET NOTES

1. REPLACE PNEUMATIC ACTUATOR WITH HAND WHEEL OPERATOR FOR MANUAL ACTUATION OF FLOW CONTROL VALVE 560-3252 LOCATED IN THE BASIN GALLERY.
2. EXISTING EQUIPMENT, PIPING, INSTRUMENTATION, AND PROCESS INFORMATION SHOWN IS BASED ON OWNER FURNISHED RECORD DRAWINGS DATED 1993, 2002, AND 2012 AND HAVE NOT BEEN FIELD VERIFIED. EXISTING INSTALLATION MAY DIFFER FROM WHAT IS SHOWN.

REGISTERED PROFESSIONAL ENGINEER 65533PE OREGON JANUARY 14, 2005 DONALD PAUL WATSON
Digitally Signed
EXPIRES: 06/30/2028

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		S SUNDAHL	J BOSS	D WATSON		T DYE	

© JACOBS 2026. ALL RIGHTS RESERVED.
THIS DRAWING 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.
REUSE OF DOCUMENTS:

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

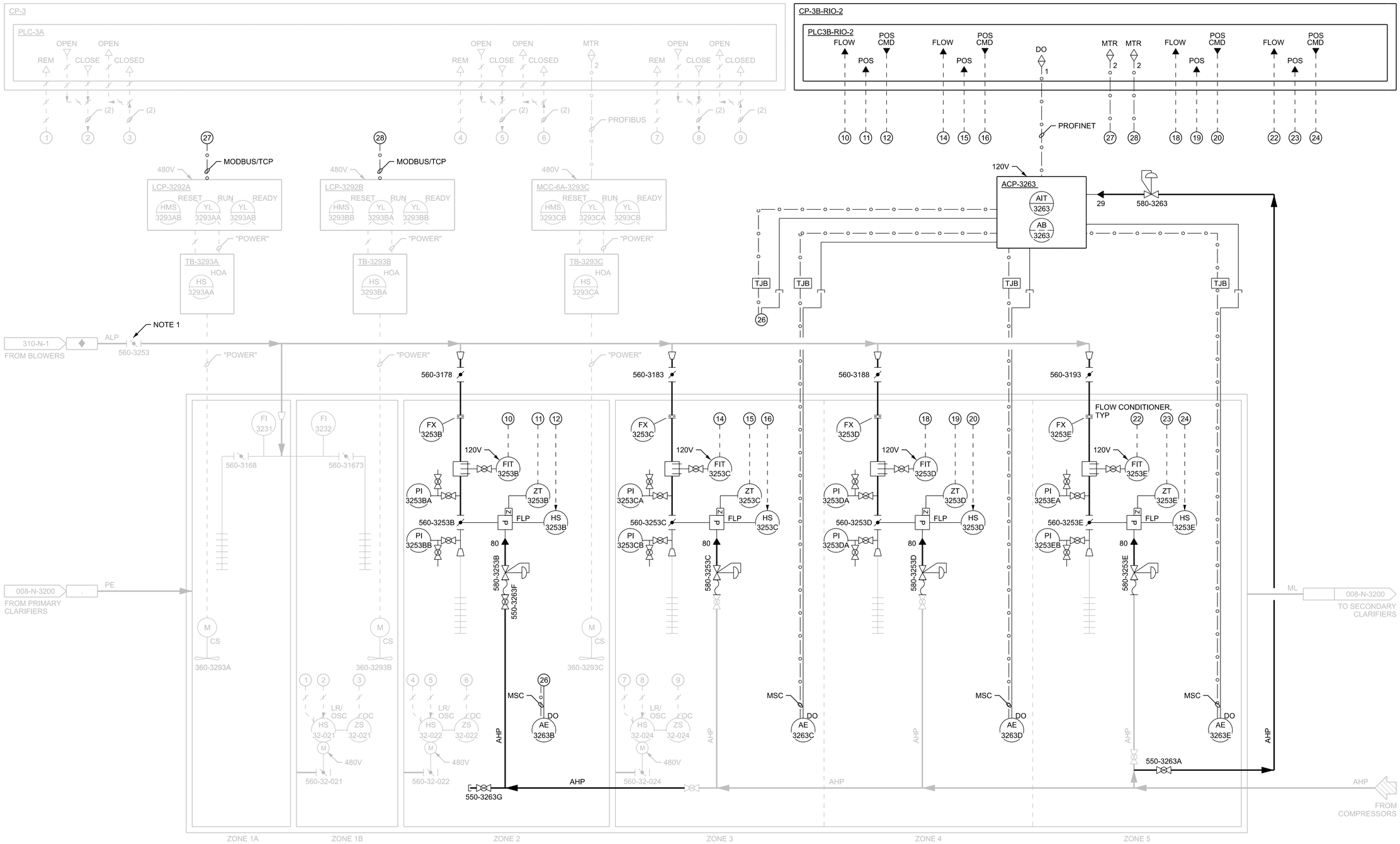
INSTRUMENTATION AND CONTROL
AERATION BASIN 2 P&ID

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-3202
SHEET	29

FILENAME: 008-N-3202_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:42



GENERAL SHEET NOTES

1. REPLACE PNEUMATIC ACTUATOR WITH HAND WHEEL OPERATOR FOR MANUAL ACTUATION OF FLOW CONTROL VALVE 560-3253 LOCATED IN THE BASIN GALLERY.
2. EXISTING EQUIPMENT, PIPING, INSTRUMENTATION, AND PROCESS INFORMATION SHOWN IS BASED ON OWNER FURNISHED RECORD DRAWINGS DATED 1993, 2002, AND 2012 AND HAVE NOT BEEN FIELD VERIFIED. EXISTING INSTALLATION MAY DIFFER FROM WHAT IS SHOWN.

REGISTERED PROFESSIONAL ENGINEER — 65853PE — OREGON — JANUARY 14, 2005 — DONALD PAUL WATSON — Digitally Signed

EXPIRES: 06/30/2028

© JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		S SUNDAHL	J BOSS	D WATSON			T DYE

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

INSTRUMENTATION AND CONTROL
AERATION BASIN 3
P&ID

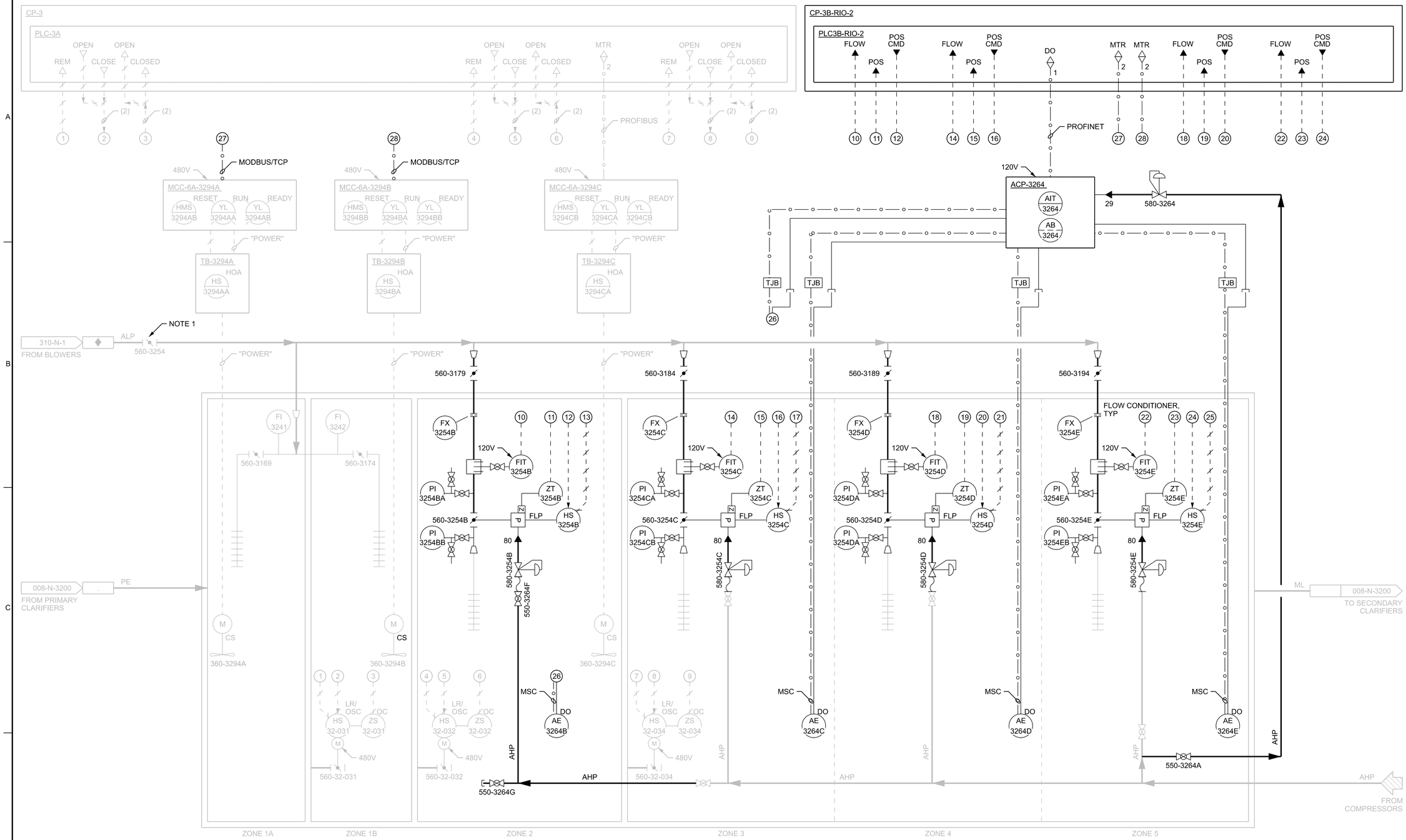
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-3203
SHEET	30

FILENAME: 008-N-3203_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:41



GENERAL SHEET NOTES

1. REPLACE PNEUMATIC ACTUATOR WITH HAND WHEEL OPERATOR FOR MANUAL ACTUATION OF FLOW CONTROL VALVE 560-3254 LOCATED IN THE BASIN GALLERY.
2. EXISTING EQUIPMENT, PIPING, INSTRUMENTATION, AND PROCESS INFORMATION SHOWN IS BASED ON OWNER FURNISHED RECORD DRAWINGS DATED 1993, 2002, AND 2012 AND HAVE NOT BEEN FIELD VERIFIED. EXISTING INSTALLATION MAY DIFFER FROM WHAT IS SHOWN.

REGISTERED PROFESSIONAL ENGINEER — 65533PE — OREGON — JANUARY 14, 2005 — DONALD PAUL WATSON — Digitally Signed
EXPIRES: 06/30/2028

© JACOBS 2026. ALL RIGHTS RESERVED.
THIS DRAWING 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.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		S SUNDAHL	J BOSS	D WATSON	APVD	T DYE	

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

INSTRUMENTATION AND CONTROL
AERATION BASIN 4
P&ID

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-3204
SHEET	31

FILENAME: 008-N-3204_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:41

CP-7

PLC-7

MTR 2 → 2

MTR 2 → 3

CP-3

PLC-3A

ON → 2

HIGH LEVEL → 1

HIGH LEVEL → 9

FLOW → 7

FLOW → 8

CP-3B-RIO-3

PLC3B-RIO-3

POS → 4

POS CMD → 5

480VAC

CP 150-3920

HOA ON FAIL

HS 3281 | JL 3281 | YA 3281

RUN RESET

KQI 3281 | YL 3281 | HMS 3281

2 PROFIBUS

480VAC

SC-3203 VFD

HOA ON FAIL

HS 32-003 | JL 32-003 | FAL 32-003 | YA 32-003 | SI 32-003

SPEED RUN RESET

SK 32-003 | YL 32-003 | HMS 32-003 | TAH 32-003 | KQI 32-003

3 PROFIBUS

480VAC

SC-3213 VFD

HOA ON FAIL

HS 32-013 | JL 32-013 | FAL 32-013 | YA 32-013 | SI 32-013

SPEED RUN RESET

SK 32-013 | YL 32-013 | HMS 32-013 | TAH 32-013 | KQI 32-013

"POWER"

"POWER"

"POWER"

AERATION BASIN 1 SEE SHEET 008-N-3201

ZONE 1A | ZONE 1B | ZONE 2 | ZONE 3 | ZONE 4 | ZONE 5

530-3491 | 540-3491 | 540-3481 | 540-3471 | 540-3461 | 540-3451 | 540-3441

ZT 3471 | HS 3471 | FLP | P | 80

8 → FIT 3471

560-3471

530-3411

RAS → 340-N-1 FROM RAS PUMP STATION

580-3471

AHP FROM COMPRESSORS

580-3472

LOS

HS 32-003A | TSH 32-003

FSL 32-003 | PI 32-003B | M | PI 32-003A

540-32-003B | 570-32-003 | 110-32-003 MLR PUMP 1 | AS | 540-32-003A

LOS

HS 32-013A | TSH 32-013

FSL 32-013 | PI 32-013B | M | PI 32-013A

540-32-013B | 570-32-013 | 110-32-013 MLR PUMP 2 | AS | 540-32-013A

008-N-3200 B TO INFLUENT SPLITTER

1 → LSH 3940

D

540-3281 | 570-3281

PI 3281 | M

110-3281 DEWATERING PUMP 1 | CS

540-3211

540-3212

9 → LSH 3950

4 | 5 → ZT 3472 | HS 3472 | FLP | P | 80

7 → FIT 3472

560-3472

530-3412

RAS → 340-N-1 FROM RAS PUMP STATION

530-3492 | 540-3492 | 540-3482 | 540-3472 | 540-3462 | 540-3452 | 540-3442

ZONE 1A | ZONE 1B | ZONE 2 | ZONE 3 | ZONE 4 | ZONE 5

AERATION BASIN 2 SEE SHEET 008-N-3202

GENERAL SHEET NOTES

1. EXISTING EQUIPMENT, PIPING, INSTRUMENTATION, AND PROCESS INFORMATION SHOWN IS BASED ON OWNER FURNISHED RECORD DRAWINGS DATED 1993, 2002, AND 2012 AND HAVE NOT BEEN FIELD VERIFIED. EXISTING INSTALLATION MAY DIFFER FROM WHAT IS SHOWN.

REGISTERED PROFESSIONAL ENGINEER — 65533PE — OREGON — JANUARY 14, 2005 — DONALD PAUL WATSON — Digitally Signed

EXPIRES: 06/30/2028

©JACOBS 2025. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		S SUNDAHL	J BOSS	D WATSON	APVD	T DYE	

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

INSTRUMENTATION AND CONTROL

AERATION BASINS 1 AND 2 GALLERY P&ID

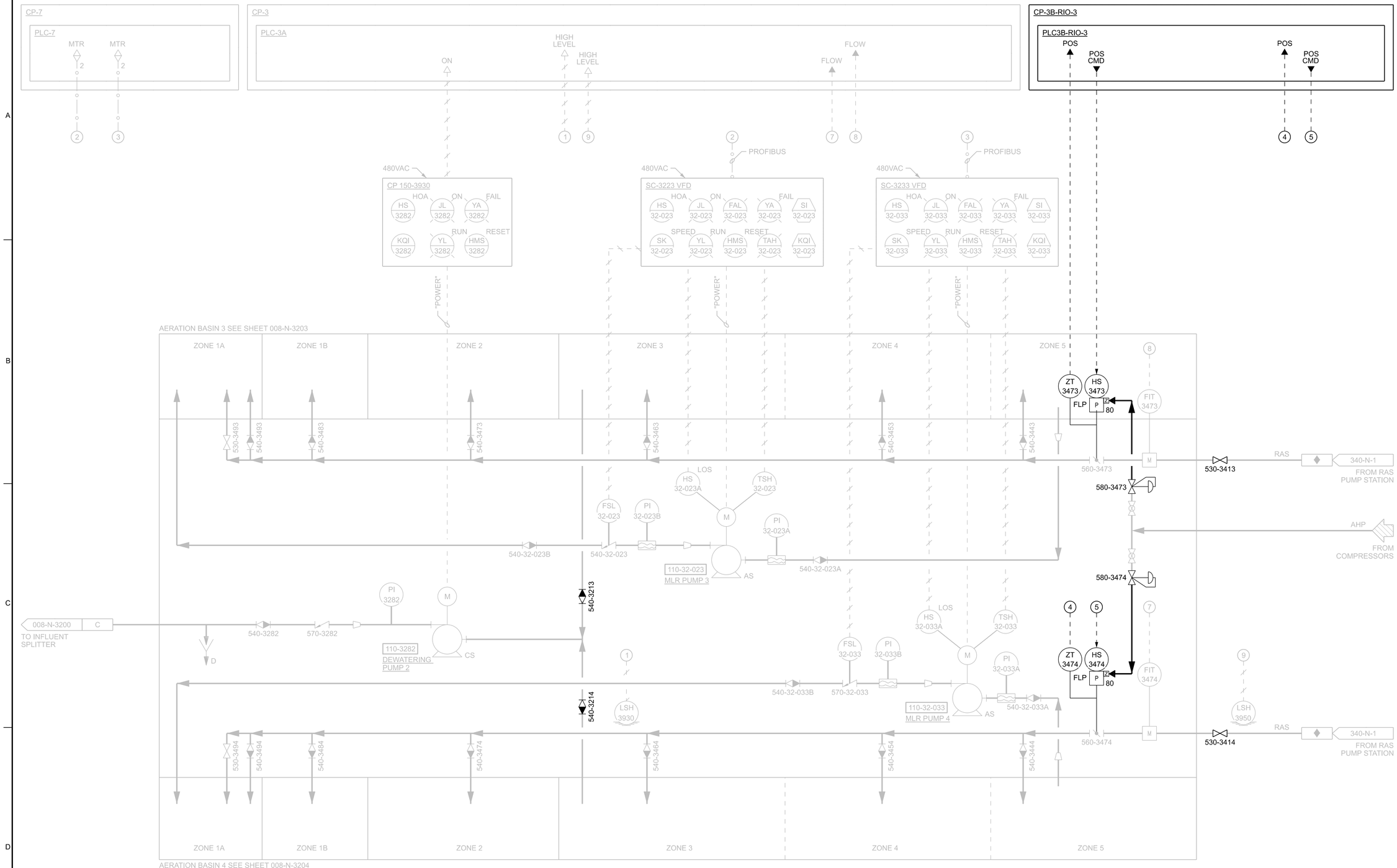
VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 — 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-3205
SHEET	32

100% DESIGN SUBMITTAL

FILENAME: 008-N-3205_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:40



GENERAL SHEET NOTES

1. EXISTING EQUIPMENT, PIPING, INSTRUMENTATION, AND PROCESS INFORMATION SHOWN IS BASED ON OWNER FURNISHED RECORD DRAWINGS DATED 1993, 2002, AND 2012 AND HAVE NOT BEEN FIELD VERIFIED. EXISTING INSTALLATION MAY DIFFER FROM WHAT IS SHOWN.

REGISTERED PROFESSIONAL ENGINEER — Digitally Signed — OREGON — JANUARY 14, 2005 — DONALD PAUL WATSON
EXPIRES: 06/30/2028

©JACOBS 2025. ALL RIGHTS RESERVED.
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.

NO.	DATE	DR	CHK	BY	APVD
DSGN	S SUNDAHL	J BOSS	D WATSON	T DYE	APVD

REVISION

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

INSTRUMENTATION AND CONTROL

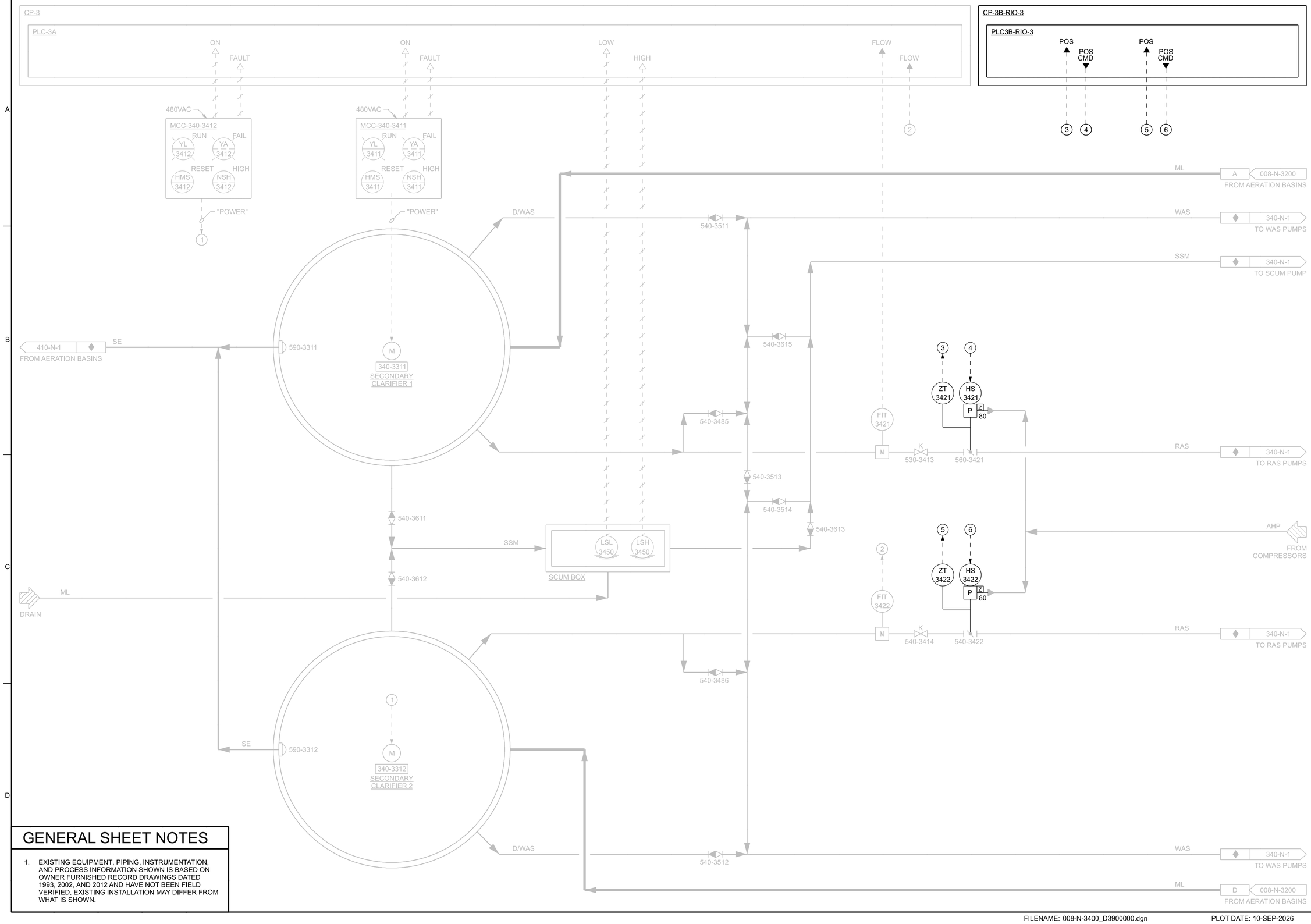
AERATION BASINS 3 AND 4 GALLERY P&ID

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-3206
SHEET	33

FILENAME: 008-N-3206_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:40



GENERAL SHEET NOTES

1. EXISTING EQUIPMENT, PIPING, INSTRUMENTATION, AND PROCESS INFORMATION SHOWN IS BASED ON OWNER FURNISHED RECORD DRAWINGS DATED 1993, 2002, AND 2012 AND HAVE NOT BEEN FIELD VERIFIED. EXISTING INSTALLATION MAY DIFFER FROM WHAT IS SHOWN.

REGISTERED PROFESSIONAL ENGINEER — Digitally Signed — OREGON — JANUARY 14, 2000 — DONALD PAUL WATSON — 66653PE

EXPIRES: 06/30/2028

© JACOBS 2025. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

NO.	DATE	DSGN	DR	CHK	APVD	BY
REVISION		S SUNDAHL	J BOSS	D WATSON	APVD	T DYE

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

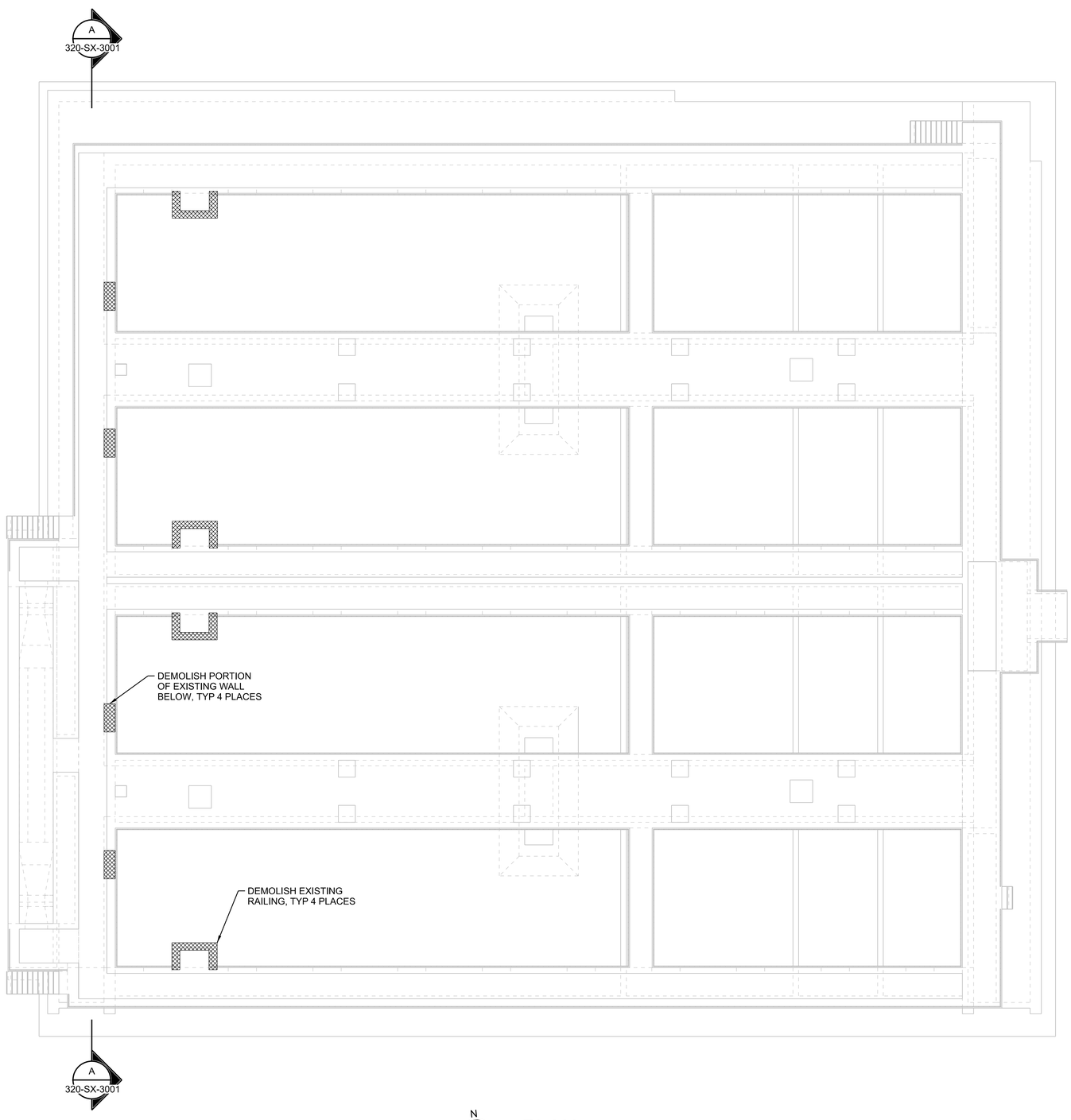
INSTRUMENTATION AND CONTROL
RAS FLOW CONTROL P&ID

100% DESIGN SUBMITTAL

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

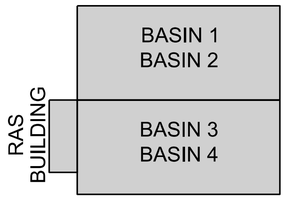
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	008-N-3400
SHEET	34

FILENAME: 008-N-3400_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:42



N

PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 31, 1992
ALEX L. FIRTH
Digital Signature
EXP 12/31/2027

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
		A FIRTH	H JOCHIMSEN	L SCOGGINS			T DYE

REVISION

©JACOBS 2025. ALL RIGHTS RESERVED.
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.

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

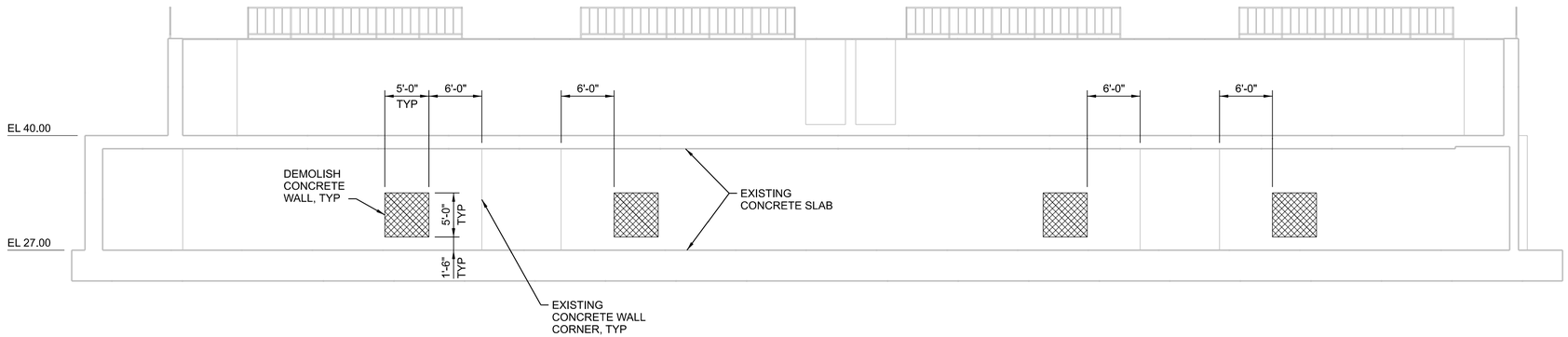
AERATION BASINS
STRUCTURAL DEMOLITION
TOP OF BASINS - OVERALL

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-SX-1010
SHEET	35

FILENAME: 320-SX-1010_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:51



A SECTION
1/8"=1'-0"
320-SX-1010

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 31, 1992
ALEX L. FIRTH
Digital Signature
EXP 12/31/2027

NO.	DATE	DR	REVISION	CHK	APVD	BY	APVD
DSGN	A FIRTH	H JOCHIMSEN		L SCOGGINS		T DYE	

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
STRUCTURAL DEMOLITION SECTION

100% DESIGN SUBMITTAL

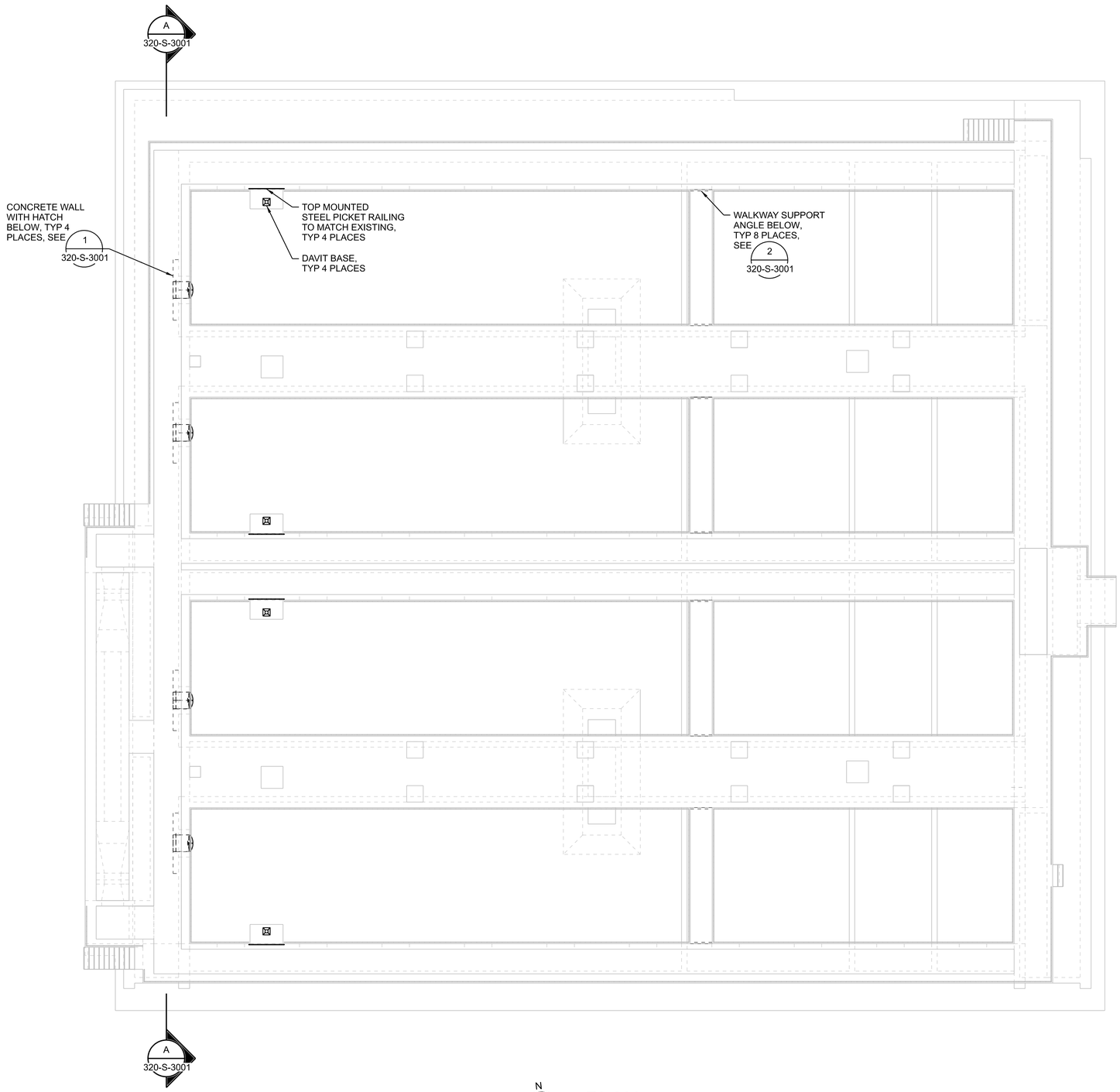
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-SX-3001
SHEET	36

FILENAME: 320-SX-3001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:49

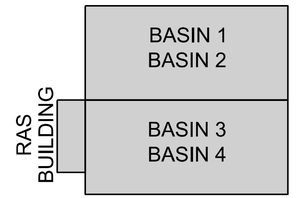
GENERAL NOTES

1. NOTIFY ENGINEER WHEN BASINS ARE EMPTY AND CLEAN FOR VISUAL INSPECTION OF CONCRETE SURFACES.
2. DURING CLEANING, CONTRACTOR TO NOTE THE LOCATIONS OF ANY POTENTIAL CRACKING OR DETERIORATED CONCRETE.
3. IF CRACKING OR DETERIORATION IS ENCOUNTERED DURING CONSTRUCTION, REFERENCE SECTIONS 03 01 32 REPAIR OF VERTICAL AND OVERHEAD SURFACES AND 03 64 24 POLYURETHANE INJECTION GROUTING.
4. SECTIONS 03 01 32 AND 03 64 24 CONTAIN BID QUANTITIES FOR REPAIR AND CRACK INJECTION.



N

PLAN
3/32"=1'-0"



KEY PLAN

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
		A FIRTH	H JOCHIMSEN	L SCOGGINS			T DYE

REVISION

REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 31, 1973
ALEX L. FIRTH
Digital Signature
EXP 12/31/2027

© JACOBS 2025. ALL RIGHTS RESERVED.
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.

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
STRUCTURAL
TOP OF BASINS
OVERALL

100% DESIGN SUBMITTAL

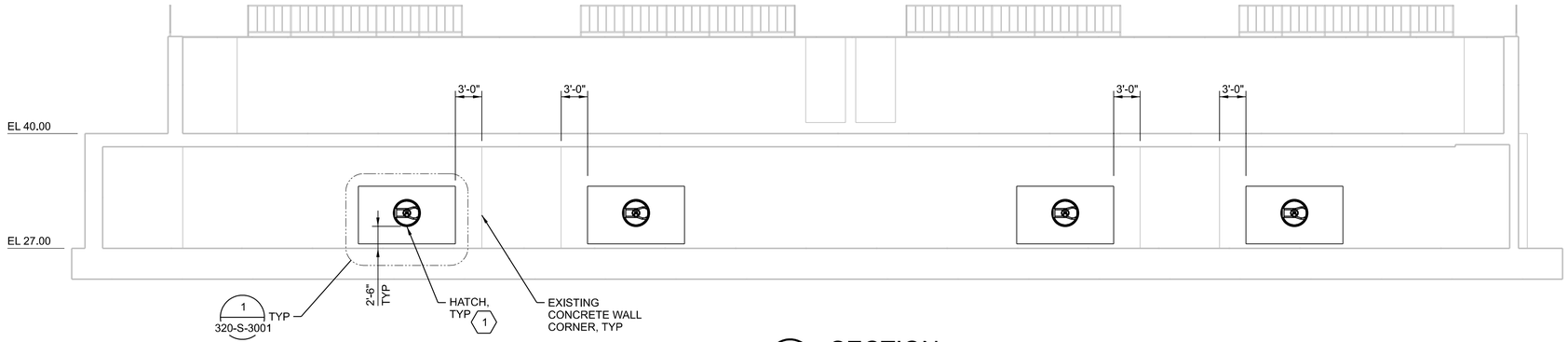
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-S-1010
SHEET	37

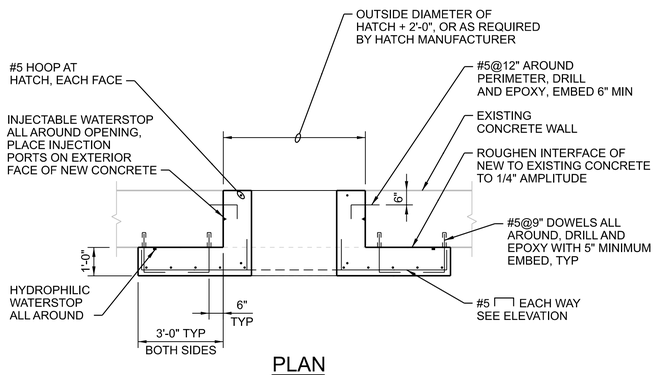
FILENAME: 320-S-1010_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:50

SHEET KEYNOTES

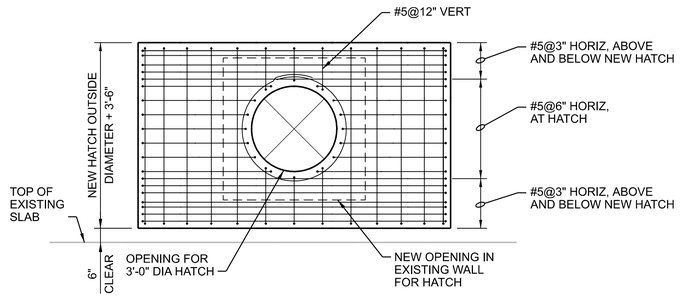
1. HATCHES SHALL BE CHASE ASSOCIATES, CM-1 MANWAY. MATERIAL SHALL COMPLY WITH ASTM A240, TYPE 316L. THE DIAMETER OF THE HATCH IS 36 INCHES.



A SECTION
1/8"=1'-0"
320-S-1010

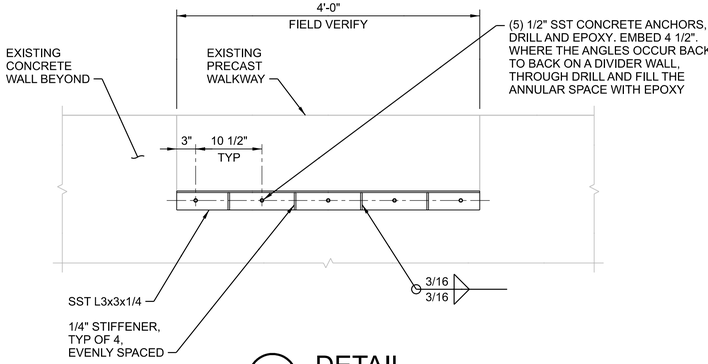


PLAN

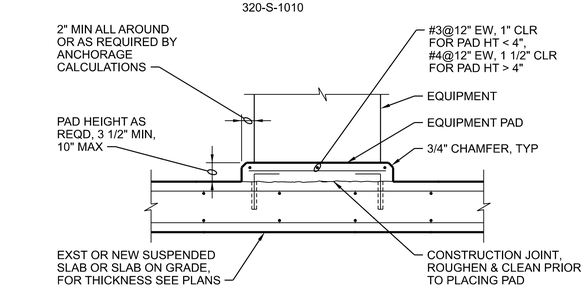


ELEVATION

1 DETAIL
3/8"=1'-0"
320-S-1010
320-S-3001



2 DETAIL
3/8"=1'-0"
320-S-1010

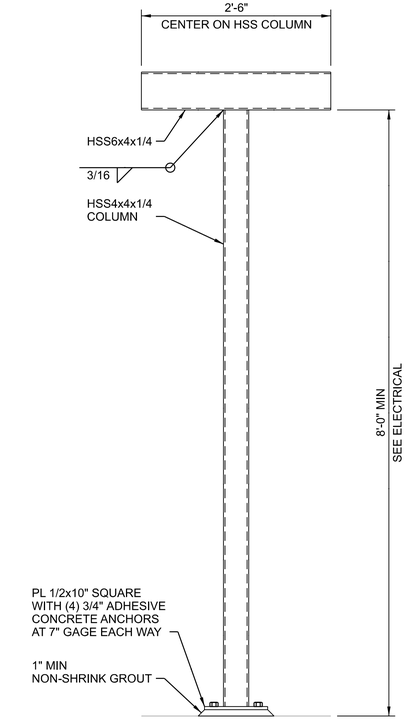


NOTES:

1. WHEN ANCHORAGE OF EQUIPMENT TO PAD IS REQUIRED, USE CONCRETE ANCHORS SPECIFIED.
2. CONCRETE PADS FOR ELECTRICAL EQUIPMENT SHALL BE 3 1/2" HIGH, UNLESS NOTED OTHERWISE.

TYPE 'E'

3 ELECTRICAL EQUIPMENT PAD
NTS



4 ELECTRICAL CONDUIT SUPPORT
3/8"=1'-0"

REGISTERED PROFESSIONAL ENGINEER — OREGON — ALEX L. FIRTH — Digital Signature — EXP 12/31/2027

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
	A FIRTH		H JOCHIMSEN	L SCOGGINS	APVD	T DYE	

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
STRUCTURAL
SECTION AND DETAILS

100% DESIGN SUBMITTAL

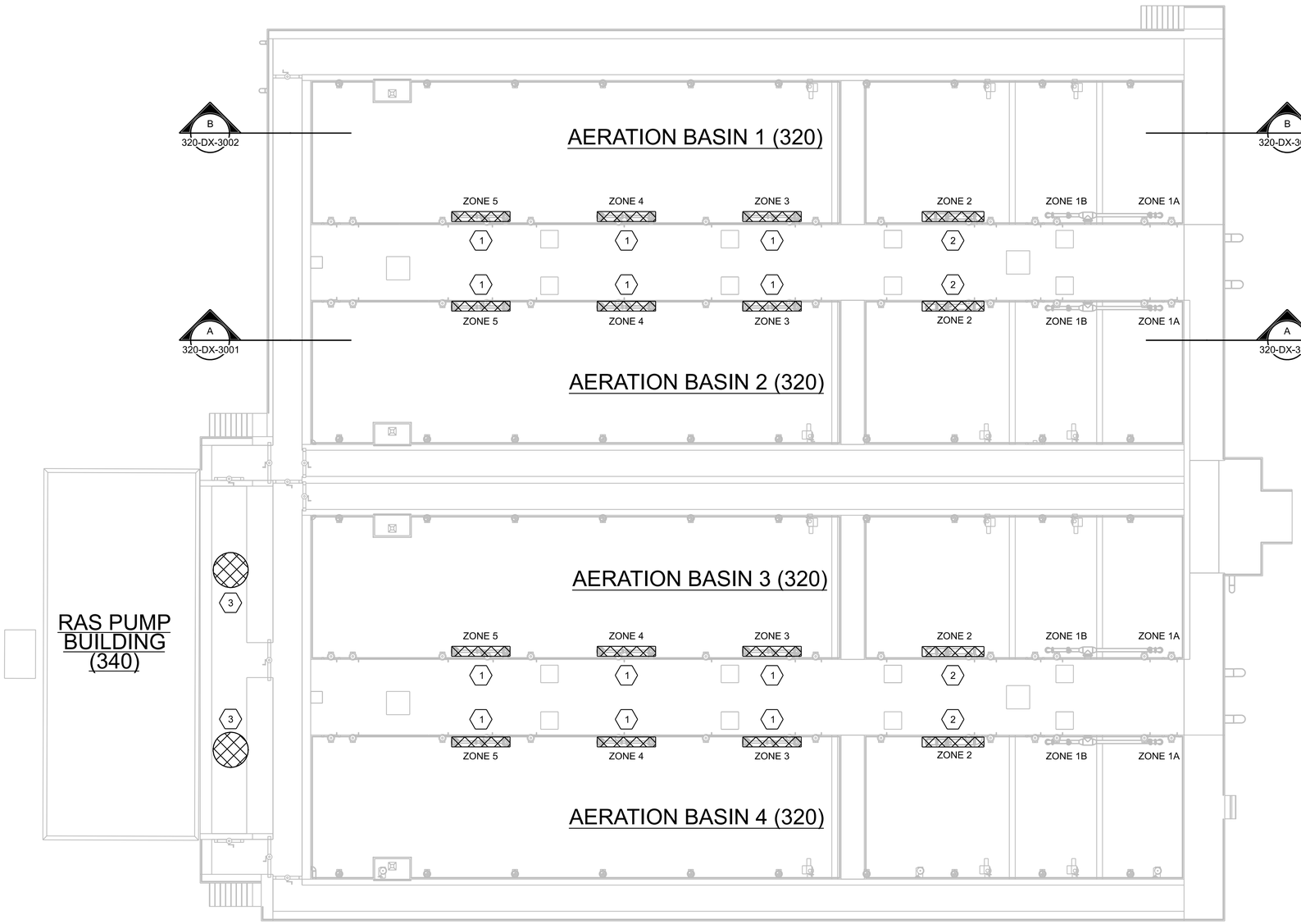
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-S-3001
SHEET	38

FILENAME: 320-S-3001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:50

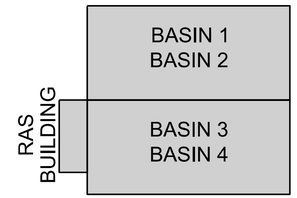
SHEET KEYNOTES

1. FOR ALP MANIFOLDS WITH AUTOMATED CONTROL VALVES, DEMOLISH THE ALP PIPING FROM THE 10" FLANGE WITH BUTTERFLY VALVE, INCLUDING BUTTERFLY VALVE, UP AND OVER TO THE LAST FLANGED PIPING CONNECTION IN THE VERTICAL STAINLESS STEEL PIPE. PROVIDE TEMPORARY SUPPORT FOR THE VERTICAL STAINLESS STEEL PIPE DROPPING DOWN TO THE PVC DIFFUSER PIPING.
2. FOR ALP MANIFOLDS WITH MANUAL BUTTERFLY VALVE CONTROL, DEMOLISH THE ALP PIPING MANIFOLD FROM THE FIRST FLANGED CONNECTION ENTERING THE BASIN OVER TO THE LAST FLANGED PIPING CONNECTION IN THE VERTICAL STAINLESS STEEL PIPE. PROVIDE TEMPORARY SUPPORT FOR THE VERTICAL STAINLESS STEEL PIPE DROPPING DOWN TO THE PVC DIFFUSER PIPING. AT THE FIRST FLANGE ENTERING THE BASIN CUT 90 DEGREE ELBOW AND RE-WELD ELBOW SUCH THAT THE FLANGED CONNECTION IS IN THE VERTICAL.
3. DEMOLISH THE TWO POLYMER STORAGE TANKS NEXT TO THE RAS PUMP STATION BUILDING, AND SALVAGE THE MIXERS IN EACH TANK TO OWNER.



N

PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER — 65709PE — Digital Signature — OREGON — JUNE 11, 2008 — ERIK JON THOMPSON
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

© JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	REVISION	BY	APVD
DSGN	E THOMPSON	DR	J SETNIK	CHK	B YOUKER	APVD	T DYE

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.

REUSE OF DOCUMENTS:

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

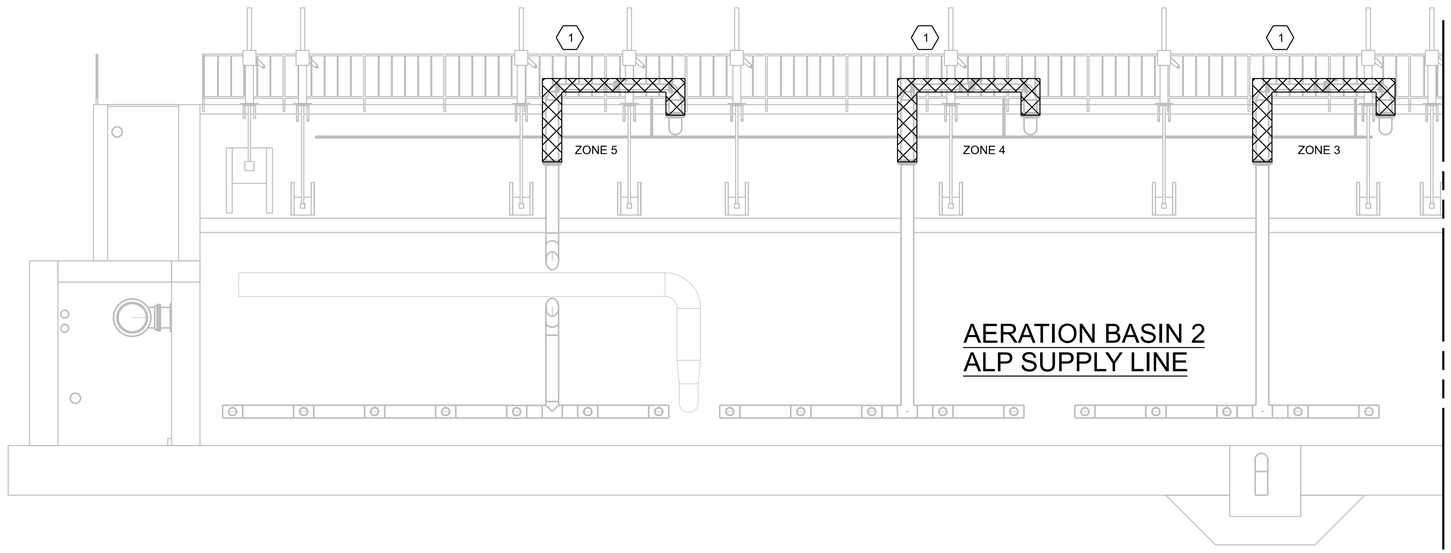
AERATION BASINS
PROCESS MECHANICAL DEMOLITION
TOP OF BASINS - OVERALL

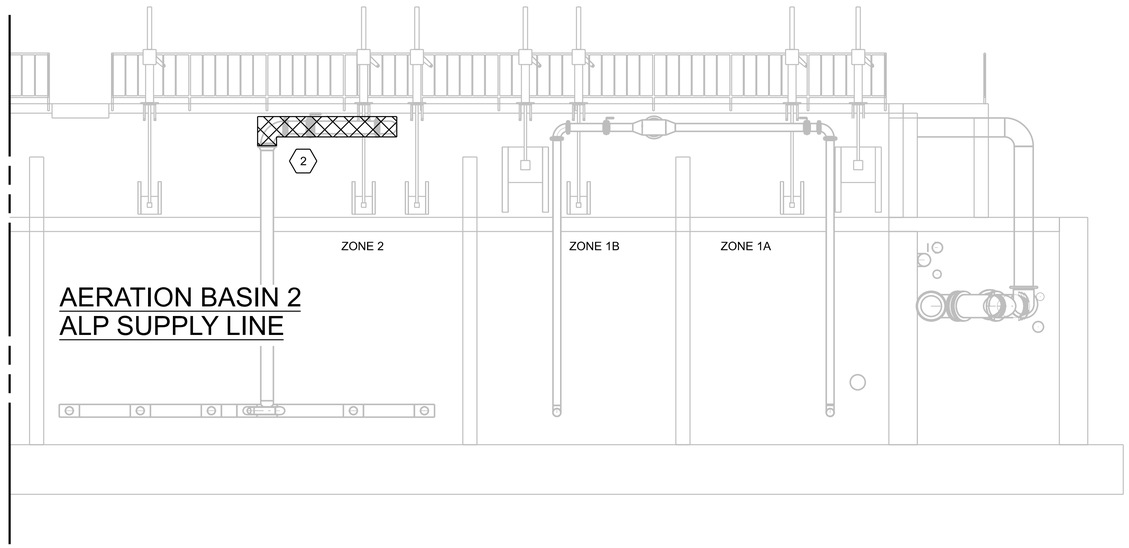
100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-DX-1010
SHEET	39

FILENAME: 320-DX-1010_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:50





A SECTION
3/16"=1'-0"
320-DX-1010

GENERAL SHEET NOTES

1. THE SECTION VIEW SHOWN ON THIS SHEET IS OF THE AERATION BASIN 2 - AHP CONTROL MANIFOLD SIDE. DEMOLITION SCOPE OF WORK SIMILAR FOR AERATION BASINS 1, 3 AND 4.

SHEET KEYNOTES

1. FOR ALP MANIFOLDS WITH AUTOMATED CONTROL VALVES, DEMOLISH THE ALP PIPING FROM THE 10" FLANGE WITH BUTTERFLY VALVE, INCLUDING BUTTERFLY VALVE, UP AND OVER TO THE LAST FLANGED PIPING CONNECTION IN THE VERTICAL STAINLESS STEEL PIPE. PROVIDE TEMPORARY SUPPORT FOR THE VERTICAL STAINLESS STEEL PIPE DROPPING DOWN TO THE PVC DIFFUSER PIPING.
2. FOR ALP MANIFOLDS WITH MANUAL BUTTERFLY VALVE CONTROL, DEMOLISH THE ALP PIPING MANIFOLD FROM THE FIRST FLANGED CONNECTION ENTERING THE BASIN OVER TO THE LAST FLANGED PIPING CONNECTION IN THE VERTICAL STAINLESS STEEL PIPE. PROVIDE TEMPORARY SUPPORT FOR THE VERTICAL STAINLESS STEEL PIPE DROPPING DOWN TO THE PVC DIFFUSER PIPING. AT THE FIRST FLANGE ENTERING THE BASIN CUT 90 DEGREE ELBOW AND RE-WELD ELBOW SUCH THAT THE FLANGED CONNECTION IS IN THE VERTICAL.

REGISTERED PROFESSIONAL ENGINEER — 65709PE — Digital Signature — OREGON — JUNE 11, 2004 — ERIK JON THOMPSON
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	REVISION	CHK	BY
DSGN	E THOMPSON	DR	J SETNIK	B YOUKER	APVD	T DYE	APVD

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
PROCESS MECHANICAL
DEMOLITION SECTION A

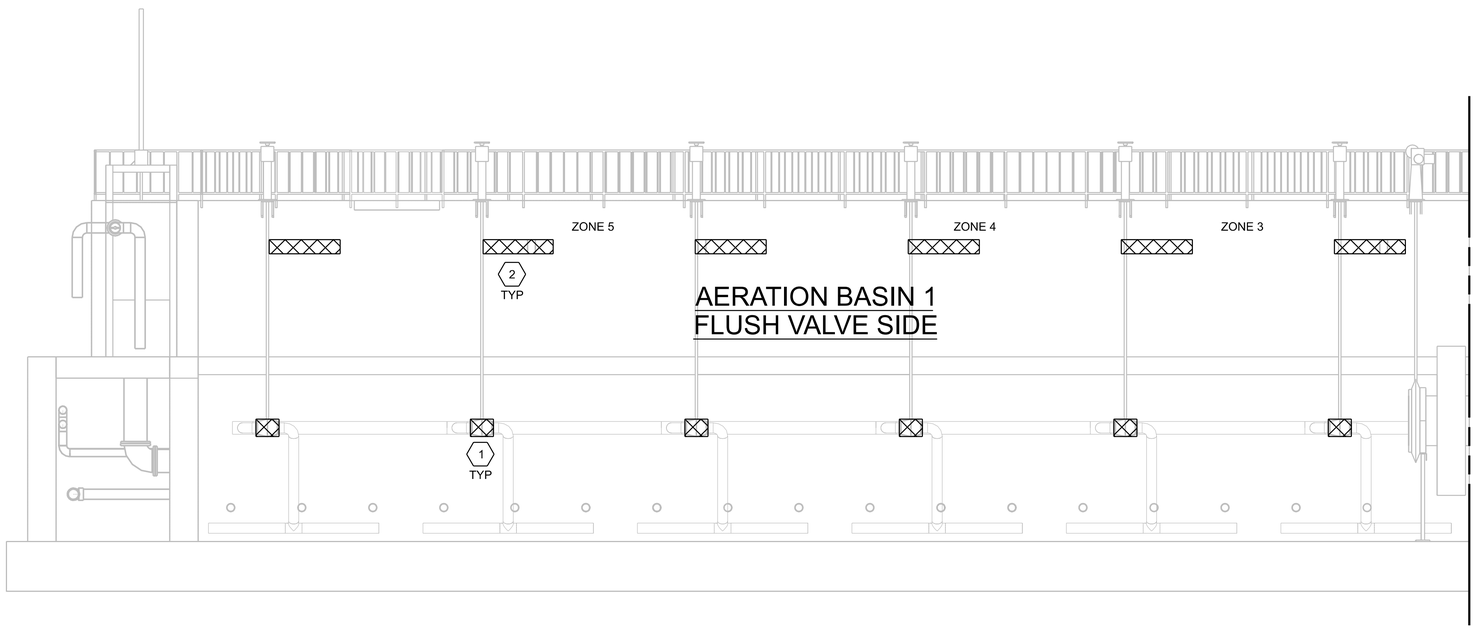
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

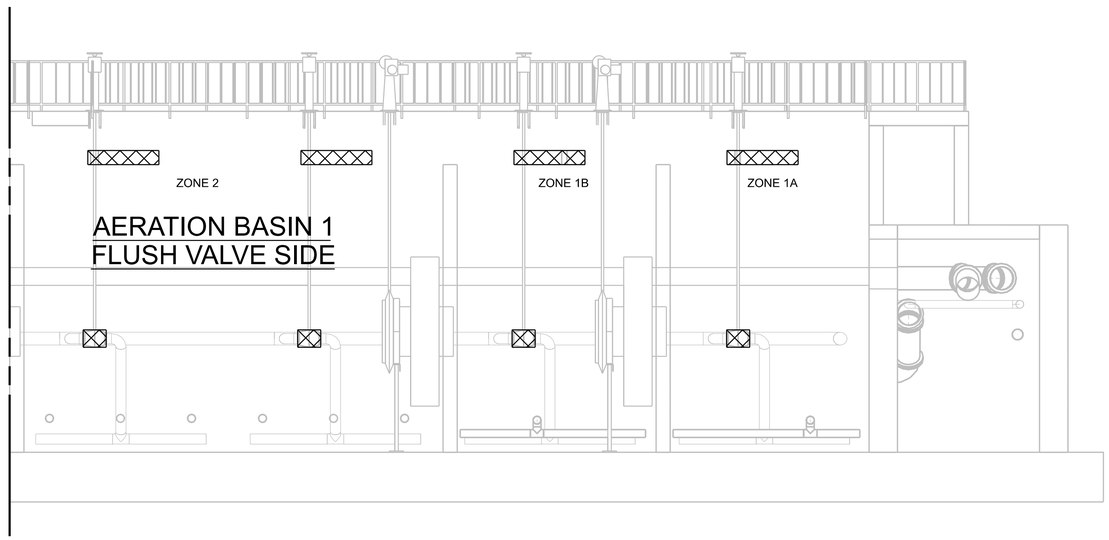
100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-DX-3001
SHEET	40

FILENAME: 320-DX-3001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:50





B SECTION
3/16"=1'-0"
320-DX-1010

GENERAL SHEET NOTES

1. THE SECTION VIEW SHOWN ON THIS SHEET IS OF THE AERATION BASIN 1 - FLUSH VALVE SIDE. DEMOLITION SCOPE OF WORK SIMILAR FOR AERATION BASINS 2, 3 AND 4.

SHEET KEYNOTES

1. REMOVE 8" W5 FLUSH WATER FLANGED PLUG VALVE FOR REPLACEMENT, LEAVE IN PLACE REMOTE ACTUATOR AND HAND WHEEL FOR RE-USE, TYPICAL (10) PER BASIN. SEE SHEET 320-D-3002 FOR INSTALL OF REPLACEMENT VALVES.

2. REMOVE ALL BASIN SIDE AND EFFLUENT CHANNEL SIDE WALL WEIR SLOT COVER PLATES, TYPICAL 10x SLOTS PER AERATION BASIN, FOR ALL (4) BASINS. CUT ALL MOUNTING BOLTS FLUSH AND BRUSH OFF LOOSE CONCRETE AND REMOVE ANY ORGANIC MATERIALS.
NOTE, CONTRACTOR WILL NEED TO REMOVE EFFLUENT WALKWAY GRATING TO GAIN ACCESS TO EFFLUENT SIDE WALL COVER PLATES. COORDINATE RE-INSTALL OF WALKWAY GRATING WITH INSTALL OF NEW REPLACEMENT COVER PLATES ON THE EFFLUENT WALL SIDE. SEE SHEET 320-D-3003 FOR NEW SIDE WALL SLOT COVER PLATE FABRICATION AND INSTALL.

REGISTERED PROFESSIONAL ENGINEER — ERIK JON THOMPSON — OREGON — JUNE 11, 2004
Digital Signature
65709PE
EXP: 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	REVISION	DR	CHK	APVD	BY
		E THOMPSON		J SETNIK	B YOUKER	APVD	T DYE

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
PROCESS MECHANICAL
DEMOLITION SECTION B

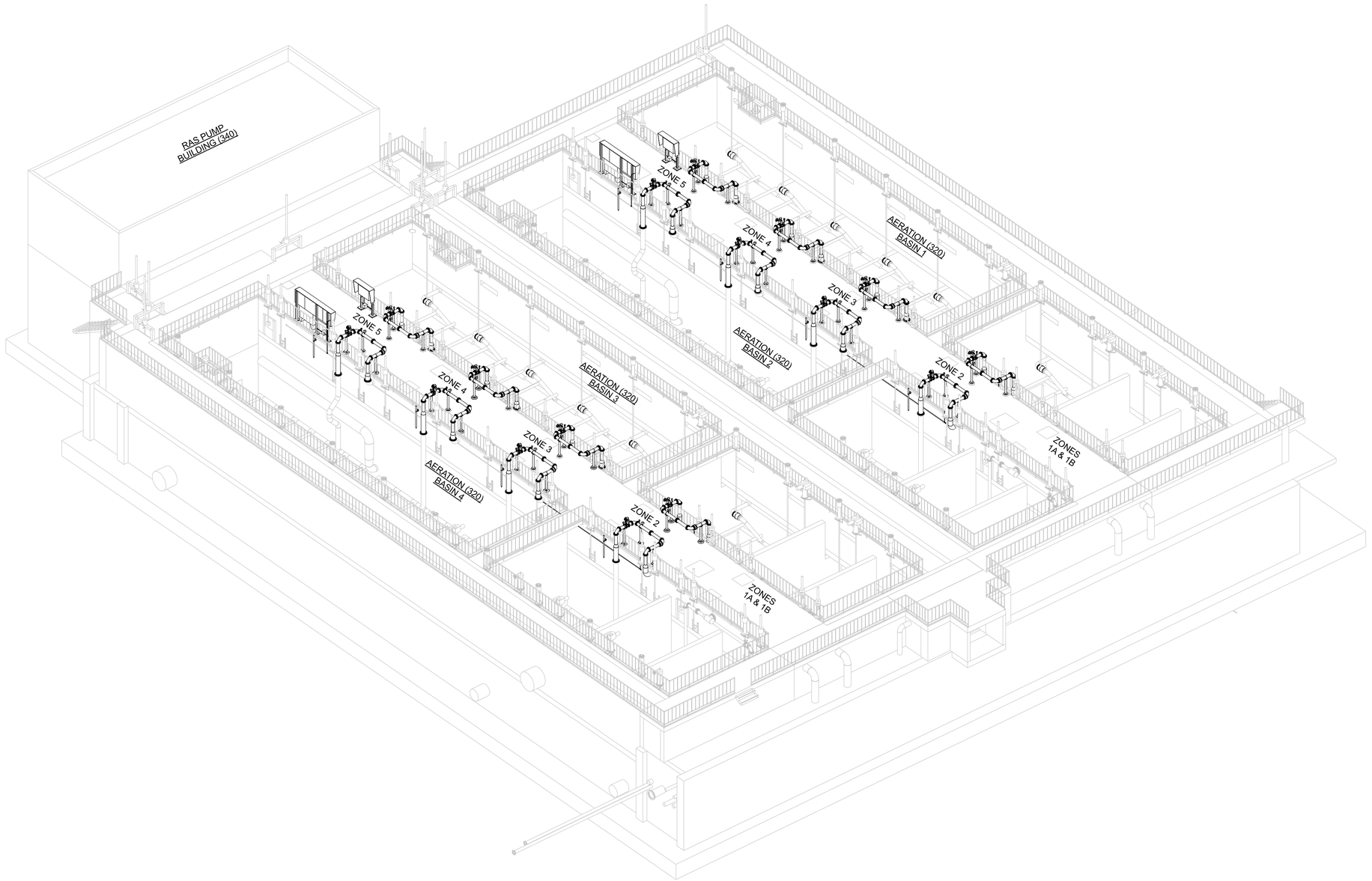
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-DX-3002
SHEET	41

FILENAME: 320-DX-3002_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:51



REGISTERED PROFESSIONAL ENGINEER — OREGON — JULY 11, 2006 — ERIK JON THOMPSON — 65709PE
Digital Signature
EXP: 06/30/28
DIGITALLY SIGNED: 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	REVISION	BY	APVD
DSGN	E THOMPSON	DR J SETNIK	CHK B YOUKER	APVD T DYE

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

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.

Jacobs

AERATION BASINS

PROCESS MECHANICAL AERATION BASINS

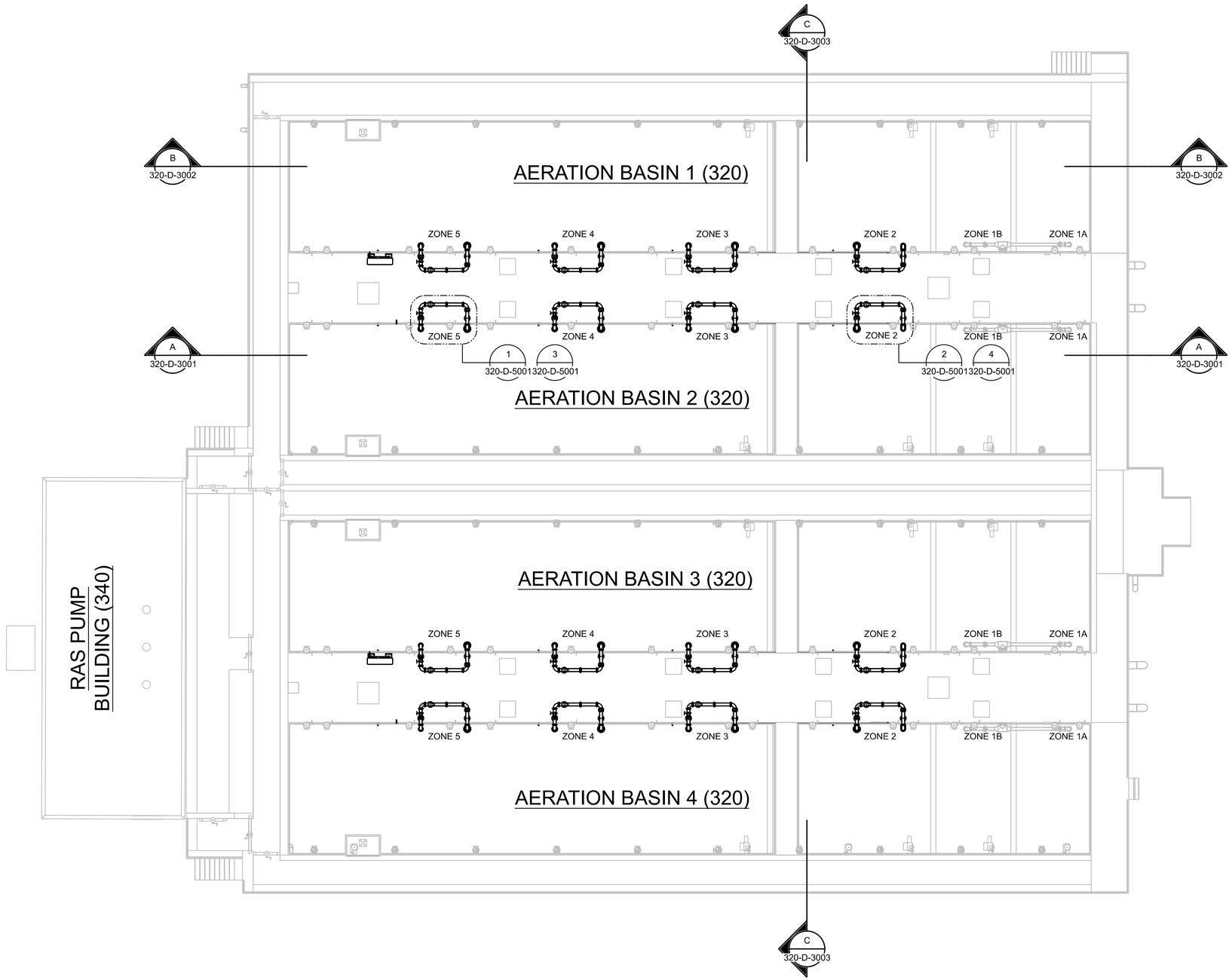
100% DESIGN SUBMITTAL

VERIFY SCALE

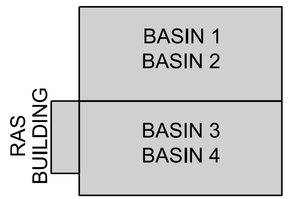
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1000
SHEET	42

FILENAME: 320-D-1000_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:55



PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
65709PE
OREGON
JUNE 11, 2004
ERIK JON THOMPSON
Digital Signature
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY
		E THOMPSON	J SETNIK	B YOUKER	APVD	T DYE

REVISION

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS

PROCESS MECHANICAL
TOP OF BASINS
OVERALL

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1010
SHEET	43

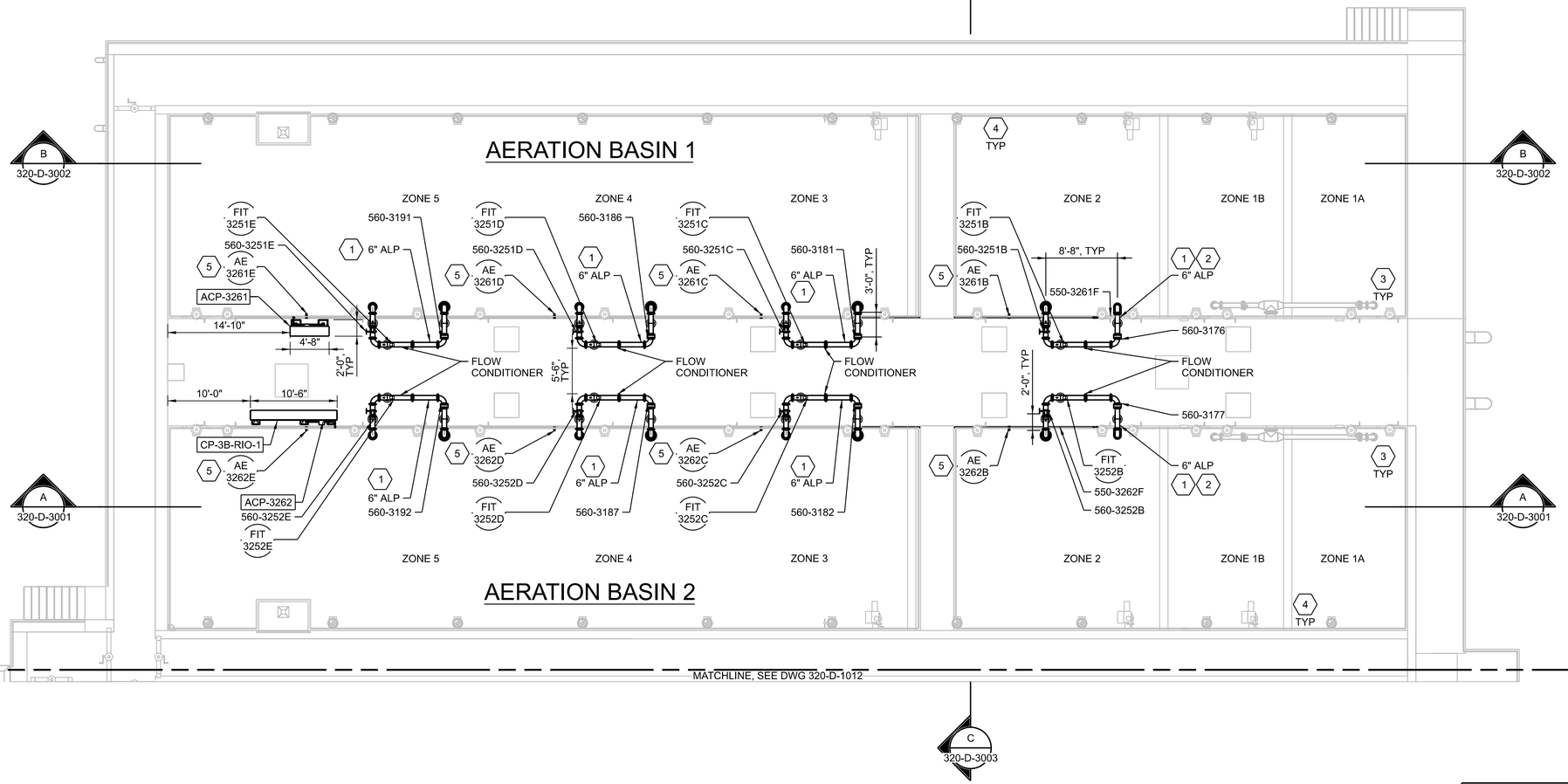
FILENAME: 320-D-1010_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:51

GENERAL SHEET NOTES

1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.

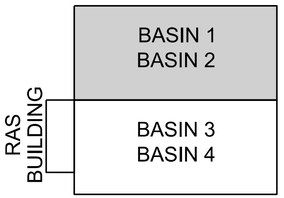
SHEET KEYNOTES

1. FABRICATE NEW ALP PIPING FLOW METER AND CONTROL VALVE MANIFOLD, REDUCING FROM EXISTING 10" FLANGE TO 6" PIPING ROUTING UP AND OVER THE BASIN HAND RAIL TO A CENTER OF PIPE ELEVATION OF 48" ABOVE CONCRETE WALKING SURFACE. SUPPORT NEW ALP PIPING MANIFOLD FROM CONCRETE WALKING SURFACE AND ROUTE BACK TO EXISTING 10" FLANGED DIFFUSER MANIFOLD PIPING CONNECTION.
2. NOTE, FOR ZONE 2 SEE DEMOLITION SHEET 320-DX-3001. ZONE 2 10" ALP SUPPLY PIPE NEEDS TO CUT BACK AND A NEW SPOOL PIECE ATTACHED TO MATCH ALP PIPING CONFIGURATION OF ZONES 3 THRU 5.
3. REPLACE INFLUENT SIDE WALL SLIDE GATE SEALS AND CLEAN AND RECONDITION SLIDE GATES TO PROVIDE A SMOOTH SEALING SURFACE. EACH BASIN HAS (4) 24" BY 24" SLIDE GATES AND (12) 10" BY 10" SLIDE GATES ALONG THE FLUSH VALVE SIDE OF THE BASIN.
4. INSTALL NEW BASIN EFFLUENT OVERFLOW SLOT COVER PLATES WITH NEW COVER PLATES (10 PER BASIN), COMPLETELY COVERING AND SEALING THE OVERFLOW OPENINGS. SEE SHEET 320-D-3003 FOR COVER PLATE SPECIFICATIONS AND INSTALL REQUIREMENTS.
5. COORDINATE AHP TUBING ROUTING ALONG EDGE OF BASIN FROM BASIN ANALYZER CONTROL PANEL TO DO SENSORS MOUNTED IN BASIN WITH EXISTING AHP PIPING SUPPORTS. SEE DETAIL 4091-159 FOR ADDITIONAL DETAILS ON THE INSTALL OF THE DISSOLVED OXYGEN SENSOR AND RELATED AIR PIPING.



N

PLAN
1/8"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
65709PE
Digital Signature
OREGON
JUNE 11, 2004
ERIK JON THOMSEN
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.
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.

NO.	DATE	REVISION	BY	APVD
DSGN	E THOMPSON	DR J SETNIK	CHK B YOUKER	APVD T DYE

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
PROCESS MECHANICAL
TOP OF BASINS
1 AND 2

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1011
SHEET	44

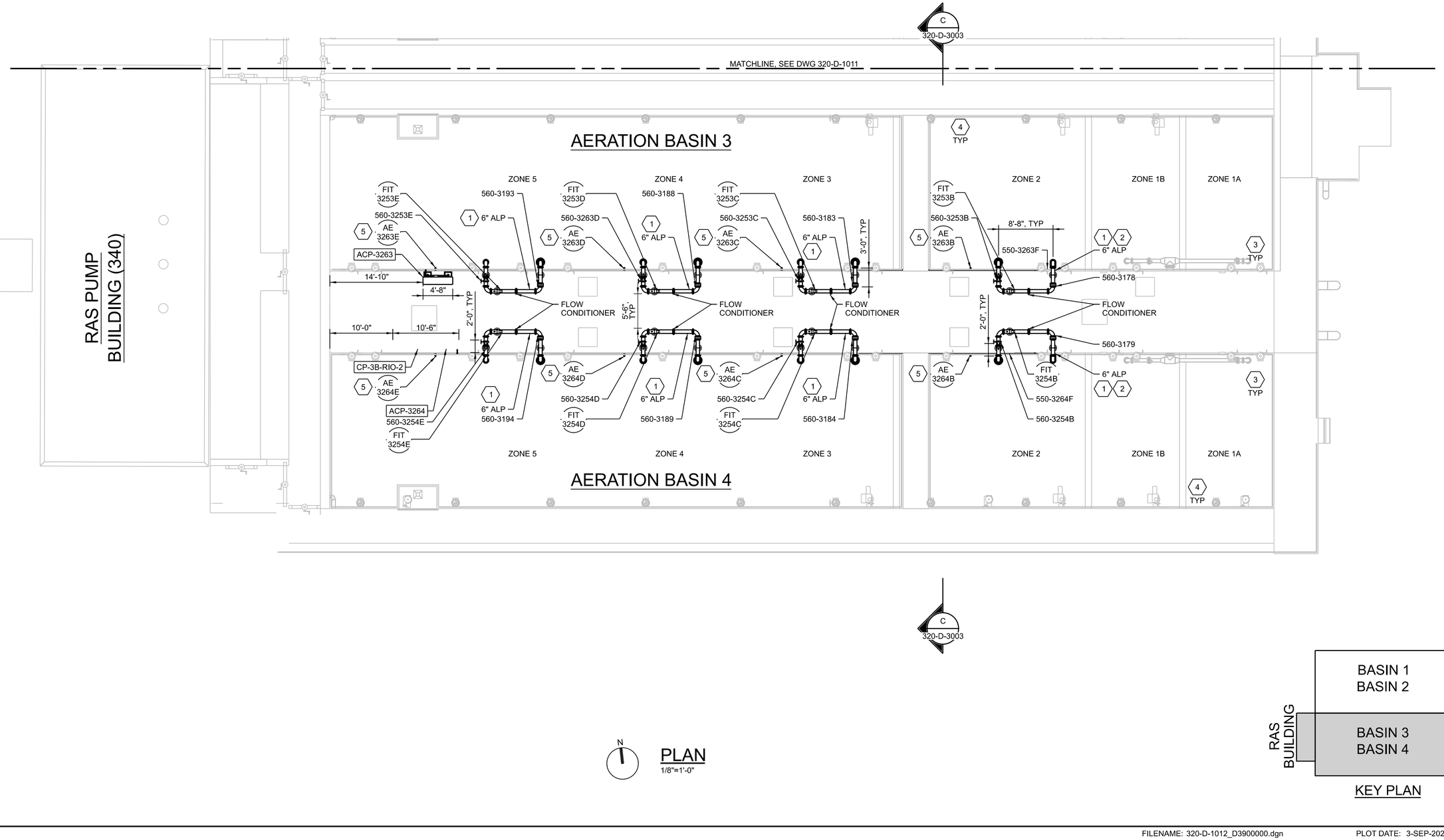
FILENAME: 320-D-1011_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:49

GENERAL SHEET NOTES

1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.

SHEET KEYNOTES

1. FABRICATE NEW ALP PIPING FLOW METER AND CONTROL VALVE MANIFOLD, REDUCING FROM EXISTING 10" FLANGE TO 6" PIPING ROUTING UP AND OVER THE BASIN HAND RAIL TO A CENTER OF PIPE ELEVATION OF 48" ABOVE CONCRETE WALKING SURFACE. SUPPORT NEW ALP PIPING MANIFOLD FROM CONCRETE WALKING SURFACE AND ROUTE BACK TO EXISTING 10" FLANGED DIFFUSER MANIFOLD PIPING CONNECTION.
2. NOTE, FOR ZONE 2 SEE DEMOLITION SHEET 320-DX-3001. ZONE 2 10" ALP SUPPLY PIPE NEEDS TO CUT BACK AND A NEW SPOOL PIECE ATTACHED TO MATCH ALP PIPING CONFIGURATION OF ZONES 3 THRU 5.
3. REPLACE INFLUENT SIDE WALL SLIDE GATE SEALS AND CLEAN AND RECONDITION SLIDE GATES TO PROVIDE A SMOOTH SEALING SURFACE. EACH BASIN HAS (4) 24" BY 24" SLIDE GATES AND (12) 10" BY 10" SLIDE GATES ALONG THE FLUSH VALVE SIDE OF THE BASIN.
4. INSTALL NEW BASIN EFFLUENT OVERFLOW SLOT COVER PLATES WITH NEW COVER PLATES (10 PER BASIN), COMPLETELY COVERING AND SEALING THE OVERFLOW OPENINGS. SEE SHEET 320-D-3003 FOR COVER PLATE SPECIFICATIONS AND INSTALL REQUIREMENTS.
5. COORDINATE AHP TUBING ROUTING ALONG EDGE OF BASIN FROM BASIN ANALYZER CONTROL PANEL TO DO SENSORS MOUNTED IN BASIN WITH EXISTING AHP PIPING SUPPORTS. SEE DETAIL 4091-159 FOR ADDITIONAL DETAILS ON THE INSTALL OF THE DISSOLVED OXYGEN SENSOR AND RELATED AIR PIPING.



REGISTERED PROFESSIONAL ENGINEER — OREGON — 65709PE — Digital Signature — JUNE 11, 2006 — ERIK JON THOMPSON

EXP. 06/30/26

DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DR	REVISION	CHK	APVD	BY
		E THOMPSON		J SETNIK	B YOUKER	T DYE

DSGN

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

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.

Jacobs

AERATION BASINS

PROCESS MECHANICAL TOP OF BASINS 3 AND 4

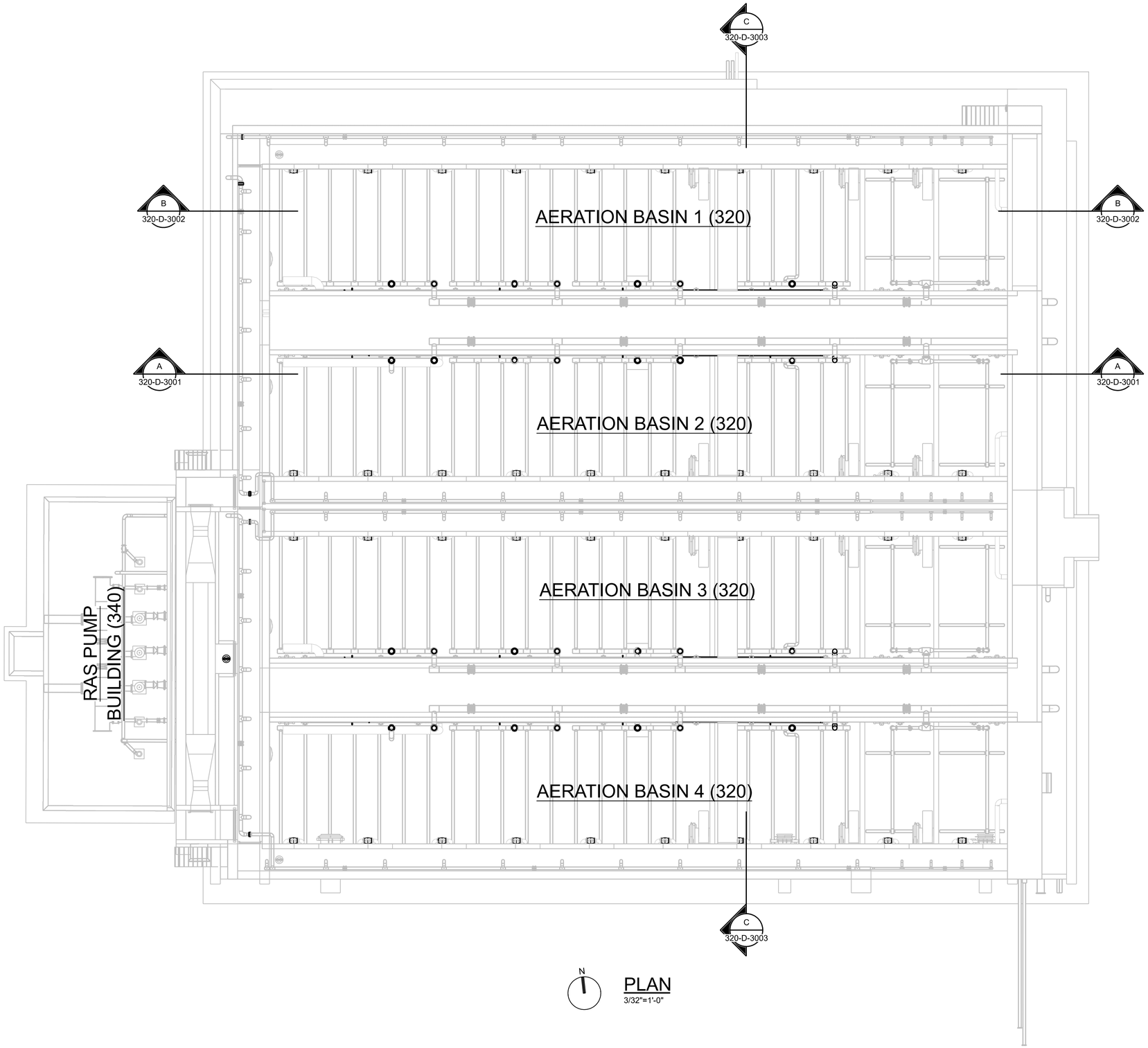
100% DESIGN SUBMITTAL

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

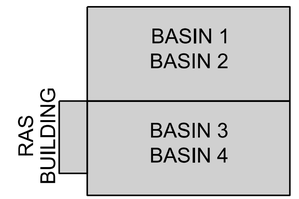
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1012
SHEET	45

FILENAME: 320-D-1012_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:49



N

PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
Digital Signature
65709PE
OREGON
JUNE 11, 2004
ERIK JON THOMPSON
EXP: 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD
		E THOMPSON	J SETNIK	B YOUKER	APVD

REVISION BY: T DYE

Water Environment Services

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
PROCESS MECHANICAL
LOWER BASINS
OVERALL

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1020
SHEET	46

GENERAL SHEET NOTES

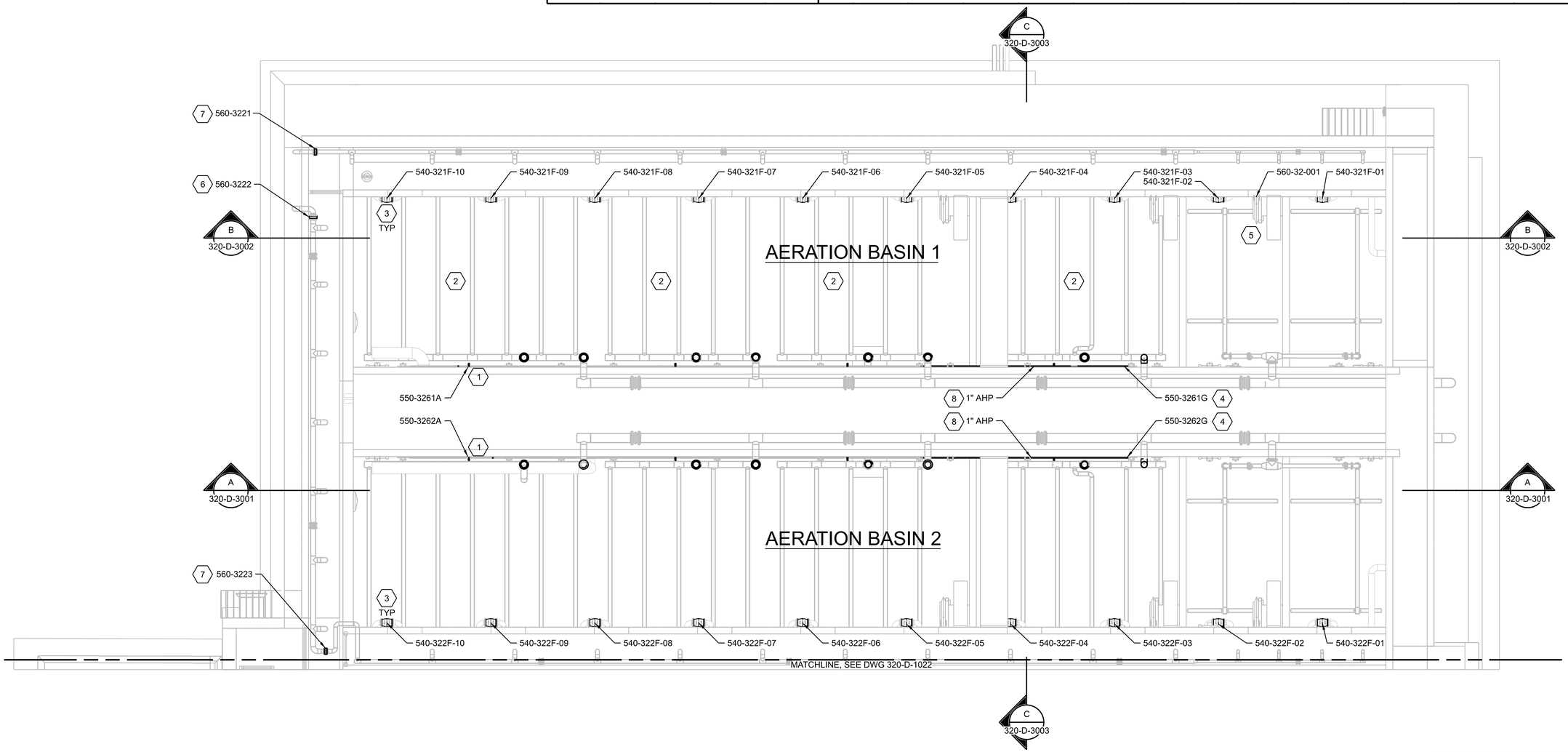
1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.

DIFFUSER MEMBRANES MUST MEET THE FOLLOWING:

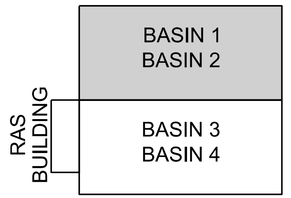
- EFFECTIVE AREA: 0.41 FT^2
- ORIFICE SIZE: 5MM (13/64")
- AIR FLOW RANGE: 0.5 TO 4.0 SCFM
- STANDARD O2 TRANSFER EFFICIENCY (SOTE): 2% TO 2.5% PER FOOT SUBMERGED
- STANDARD AERATION EFFICIENCY (SAE): 4 TO 10 LBS O2 / HPH

SHEET KEYNOTES

1. JUST BEFORE ZONE 5 PNEUMATIC AHP ISOLATION VALVE CUT IN NEW 1" BY 3/4" TEE AND ADD 3/4" ISOLATION VALVE TO PROVIDE AHP TO NEW ACP PANEL. FIELD ROUTE 3/4" PIPE FROM ISOLATION VALVE UP TO NEW ACP PANEL PRV.
2. IN BASIN 1 ONLY REPLACE ALL OF THE ALP DIFFUSER MEMBRANES. IF DIFFUSER HOUSING DAMAGED, NOTIFY OWNER AND OWNER SHALL PROVIDE REPLACEMENT DIFFUSER HOUSING FOR CONTRACTOR TO INSTALL. ESTIMATE THERE TO BE 1,105 DIFFUSER MEMBRANES TO BE REPLACED, MATCH EXISTING DIFFUSER MEMBRANES, SANITARY SSII-9 (EPDM) MEMBRANES. LEAK TEST MEMBRANE INSTALL AS PER SPEC SECTION 40 80 01.
3. REPLACE 8" DEWATERING FLANGED PLUG VALVE LOCATED APPROXIMATELY 7-FEET ABOVE BASIN FLOOR, RE-USE REMOTE HAND WHEEL ACTUATOR, TYPICAL (10) PER BASIN. INSULATE NEW-TO-EXISTING CONNECTIONS WITH INSULATING FLANGE, AS PER DETAIL 2642-930. FOR TAPPED FLANGES USE INSULATING BOLTS, AS PER DETAIL 2642-932. SEE DRAWING 320-D-3002 FOR ADDITIONAL INFORMATION.
4. AS PART OF AHP PIPE EXTENSION TO SUPPORT NEW ZONE 2 PNEUMATIC CONTROL VALVE ADD FUTURE ISOLATION BALL VALVE AND CAP JUST PAST TEE FOR NEW ZONE 2 AHP SUPPLY. SEE SECTION ON SHEET 320-D-3001.
5. SEE DETAIL SHEET 320-D-3002 FOR MORE INFORMATION WITH RESPECT TO VALVE 560-32-001.
6. REPLACE 8" ALP BUTTERFLY VALVE.
7. REPLACE 6" ALP BUTTERFLY VALVE.
8. EXTEND EXISTING COMPRESSED AIR (AHP) PIPING ALONG THE EDGE OF EACH BASIN FROM THE EXISTING END OF LINE ISOLATION VALVE EAST TO THE NEW ALP CONTROL VALVE MANIFOLD REPLACING THE MANUAL VALVE. AT NEW CONTROL VALVE LOCATION TEE UP WITH 3/4" PIPE AND TERMINATE WITH MANUAL VALVE, MATCH EXISTING PNEUMATIC CONTROL VALVE PIPING. SEE SECTION A ON DRAWING 320-D-3001 FOR TYPICAL AHP PIPING EXTENSION.



PLAN
1/8"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER — 65709PE — Digital Signature — OREGON — JUNE 11, 1980 — ERIK JON THOMPSON
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		E THOMPSON	J SETNIK	B YOUKER		T DYE	

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS

PROCESS MECHANICAL LOWER BASINS 1 AND 2

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1021
SHEET	47

FILENAME: 320-D-1021_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:49

GENERAL SHEET NOTES

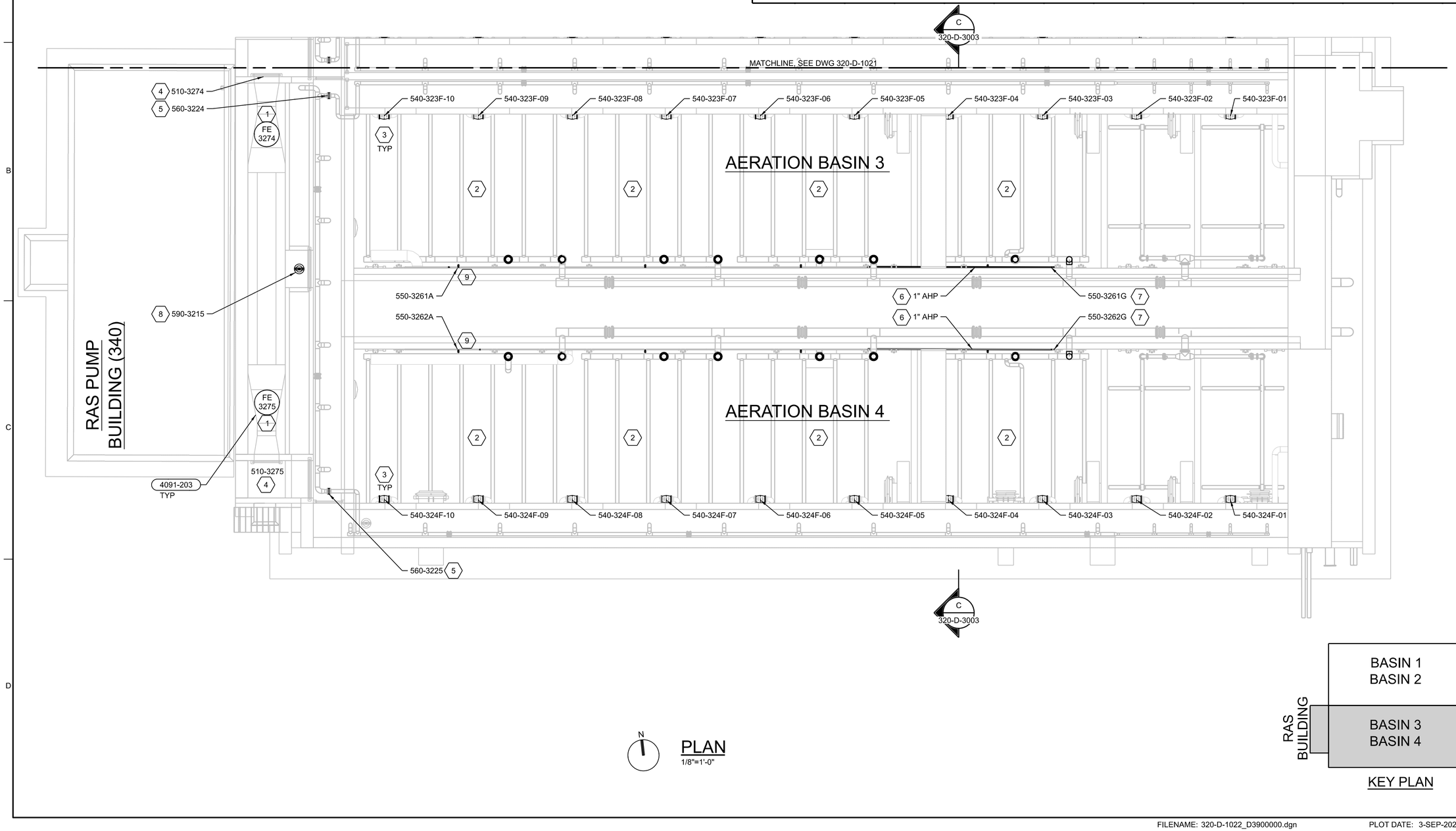
1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.

DIFFUSER MEMBRANES MUST MEET THE FOLLOWING:

- EFFECTIVE AREA: 0.41 FT^2
- ORIFICE SIZE: 5MM (13/64")
- AIR FLOW RANGE: 0.5 TO 4.0 SCFM
- STANDARD O2 TRANSFER EFFICIENCY (SOTE): 2% TO 2.5% PER FOOT SUBMERGED
- STANDARD AERATION EFFICIENCY (SAE): 4 TO 10 LBS O2 / HPH

SHEET KEYNOTES

1. INSTALL NEW LEVEL FLOW METERS AT THE TWO DISCHARGE FLUMES TO CLARIFIERS.
2. IN BASIN 3 AND 4 REPLACE ALL OF THE ALP DIFFUSER MEMBRANES. IF DIFFUSER HOUSING DAMAGED, NOTIFY OWNER AND OWNER SHALL PROVIDE REPLACEMENT DIFFUSER HOUSING FOR CONTRACTOR TO INSTALL. ESTIMATE THERE TO BE 1,105 DIFFUSER MEMBRANES IN EACH BASIN TO BE REPLACED, MATCH EXISTING DIFFUSE MEMBRANES, SANITARY SSI-9 (EPDM) MEMBRANES, OR APPROVED EQUAL. LEAK TEST MEMBRANE INSTALL AS PER SPEC SECTION 40 80 01.
3. REPLACE 8" DEWATERING FLANGED PLUG VALVE LOCATED APPROXIMATELY 7-FEET ABOVE BASIN FLOOR, RE-USE REMOTE HAND WHEEL ACTUATOR, TYPICAL (10) PER BASIN. INSULATE NEW-TO-EXISTING CONNECTIONS WITH INSULATING FLANGE, AS PER DETAIL 2642-930. FOR TAPPED FLANGES USE INSULATING BOLTS, AS PER DETAIL 2642-932.
4. REMOVE AND REINSTALL MIXED LIQUOR GATE TO CLARIFIER DOWNSTREAM OF THE NEW FLOW METER, RESURFACE GATE SEALING SURFACES (REUSING GATE), REPLACE GATE SEALS, AND REPLACE GATE ABOVE GRADE OPERATOR.
5. REPLACE 6" ALP BUTTERFLY VALVE.
6. EXTEND EXISTING COMPRESSED AIR (AHP) PIPING ALONG THE EDGE OF EACH BASIN FROM THE EXISTING END OF LINE ISOLATION VALVE EAST TO THE NEW ALP CONTROL VALVE MANIFOLD REPLACING THE MANUAL VALVE. AT NEW CONTROL VALVE LOCATION TEE UP WITH 3/4" PIPE AND TERMINATE WITH MANUAL VALVE, MATCH EXISTING PNEUMATIC CONTROL VALVE PIPING.
7. AS PART OF AHP PIPE EXTENSION TO SUPPORT NEW ZONE 2 PNEUMATIC CONTROL VALVE ADD FUTURE ISOLATION BALL VALVE AND CAP JUST PAST TEE FOR NEW ZONE 2 AHP SUPPLY. SEE SECTION ON SHEET 320-D-3001.
8. MUD VALVE 590-3215 IS NOT OPERABLE. REPLACE MUD VALVE, TEST AND CONFIRM NEW VALVE IS OPERABLE AND WATER TIGHT.
9. JUST BEFORE ZONE 5 PNEUMATIC AHP ISOLATION VALVE CUT IN NEW 1" BY 3/4" TEE AND ADD 3/4" ISOLATION VALVE TO PROVIDE AHP TO NEW ACP PANEL.



N

PLAN
1/8"=1'-0"

KEY PLAN

REGISTERED PROFESSIONAL ENGINEER — 65709PE — Digital Signature — OREGON — JUNE 11, 2004 — ERIK JON THOMPSON
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

© JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		E THOMPSON	J SETNIK	B YOUKER	APVD	T DYE	

Water Environment Services

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
PROCESS MECHANICAL
LOWER BASINS
3 AND 4

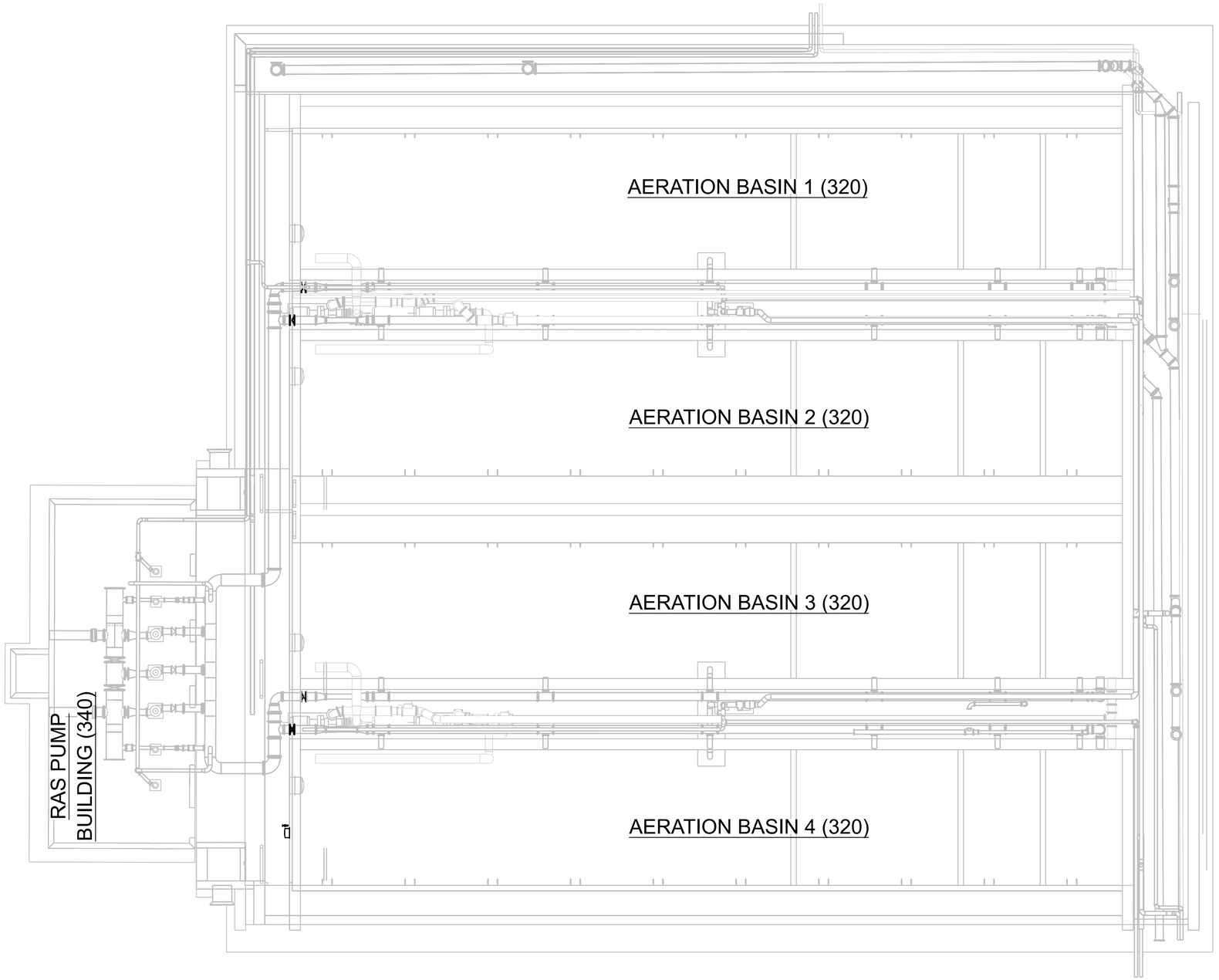
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

100% DESIGN SUBMITTAL

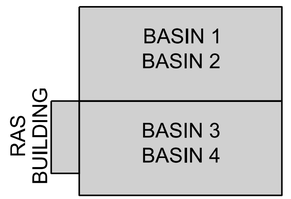
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1022
SHEET	48

FILENAME: 320-D-1022_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:49



PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
65709PE
OREGON
JUNE 11, 2004
ERIK JON THOMPSON
Digital Signature
EXP: 06/30/28
DIGITALLY SIGNED: 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	REVISION	BY	APVD
DSGN	E THOMPSON	DR J SETNIK	CHK B YOUKER	APVD T DYE

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
PROCESS MECHANICAL
BASIN GALLERIES
OVERALL

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1030
SHEET	49

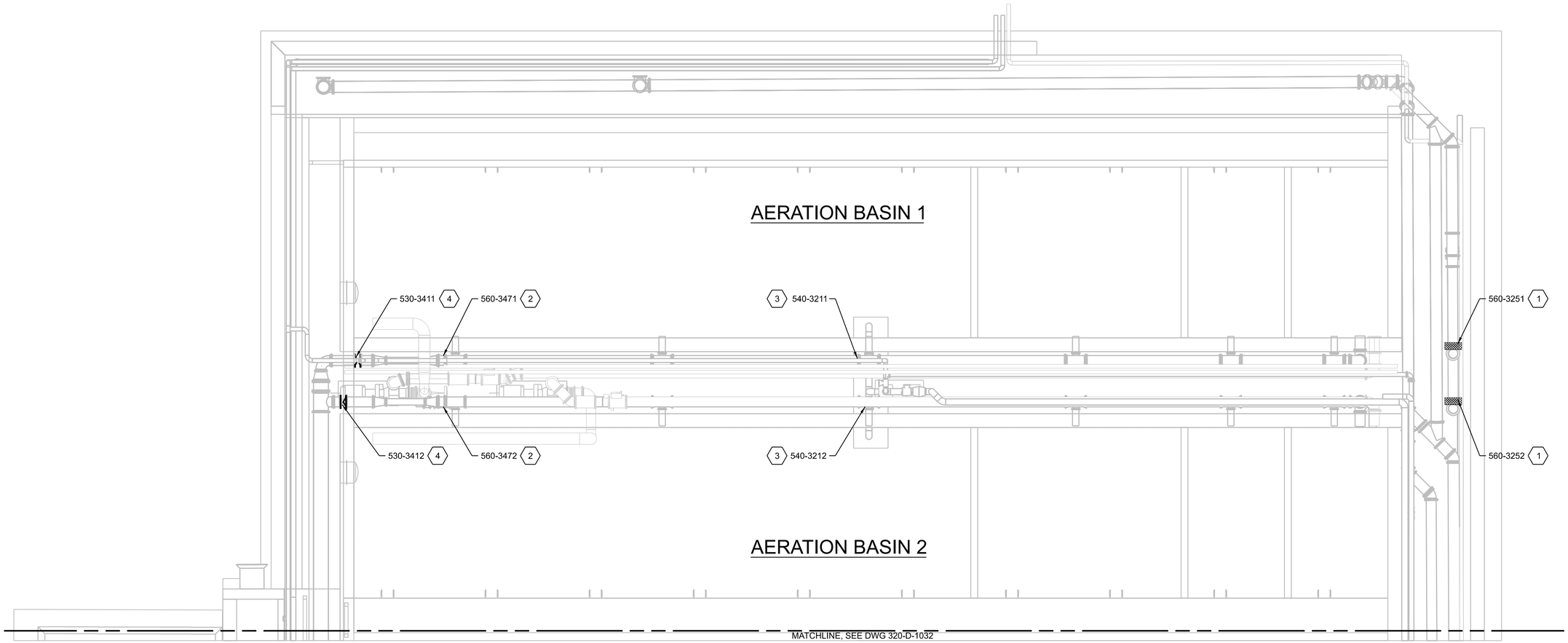
FILENAME: 320-D-1030_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:53

GENERAL SHEET NOTES

1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.
2. WHILE REPLACING VALVES OR VALVE ACTUATORS IF PIPE OR FLANGE COATING IS DAMAGED OR IF THERE IS EXISTING DAMAGE TO THE PIPE COATING IN THE WORK AREA, REPAIR DAMAGED PIPE COATING AS PER SPEC 09 90 00 FOLLOWING COATING SYSTEM NO. 2, WHILE ALSO MATCHING THE EXISTING PIPE PAINT COLOR.

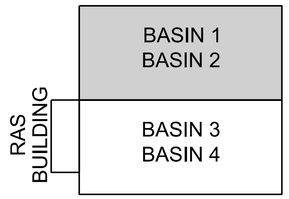
SHEET KEYNOTES

1. REMOVE PNEUMATIC VALVE ACTUATOR ASSEMBLY FROM ABANDONED MAIN BASIN ALP 16" FLOW CONTROL BUTTERFLY VALVE. REPLACE AUTOMATED VALVE ACTUATOR WITH MANUAL HAND WHEEL OPERATOR, VERIFY VALVE OPENS AND CLOSES COMPLETELY AND REPORT TO OWNER VALVE OPERATIONAL STATUS. CAP COMPRESSED AIR PIPING AT EXISTING VALVE LOCATION AND REPLACE AND/OR REPAIR INSULATION.
2. REPLACE EXISTING RAS BUTTERFLY VALVE ACTUATOR, LEAVING EXISTING VALVE IN PLACE. SEE PNEUMATICALLY ACTUATED VALVE SCHEDULE FOR ADDITIONAL INFORMATION.
3. REPLACE BOTH MANUAL 10" PLUG ISOLATION VALVES FOR THE DEWATERING PUMP, VALVE LOCATED BELOW GRATING. INSULATE NEW-TO-EXISTING CONNECTIONS WITH INSULATING FLANGE, AS PER DETAIL 2642-930. FOR TAPPED FLANGES USE INSULATING BOLTS, AS PER DETAIL 2642-932.
4. REPLACE LEAKING 16" RAS KNIFE GATE VALVE WITH RESILIENT SEAT FULL PORT FULL BONNET GATE VALVE. INSULATE NEW-TO-EXISTING CONNECTIONS WITH INSULATING FLANGE, AS PER DETAIL 2642-930. FOR TAPPED FLANGES USE INSULATING BOLTS, AS PER DETAIL 2642-932.



N

PLAN
1/8"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER — ERIK JON THOMPSEN — 65709PE — OREGON — JUNE 11, 2004 — Digital Signature
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		E THOMPSON	J SETNIK	B YOUKER	APVD	T DYE	

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
PROCESS MECHANICAL GALLERIES BASINS 1 AND 2

100% DESIGN SUBMITTAL

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

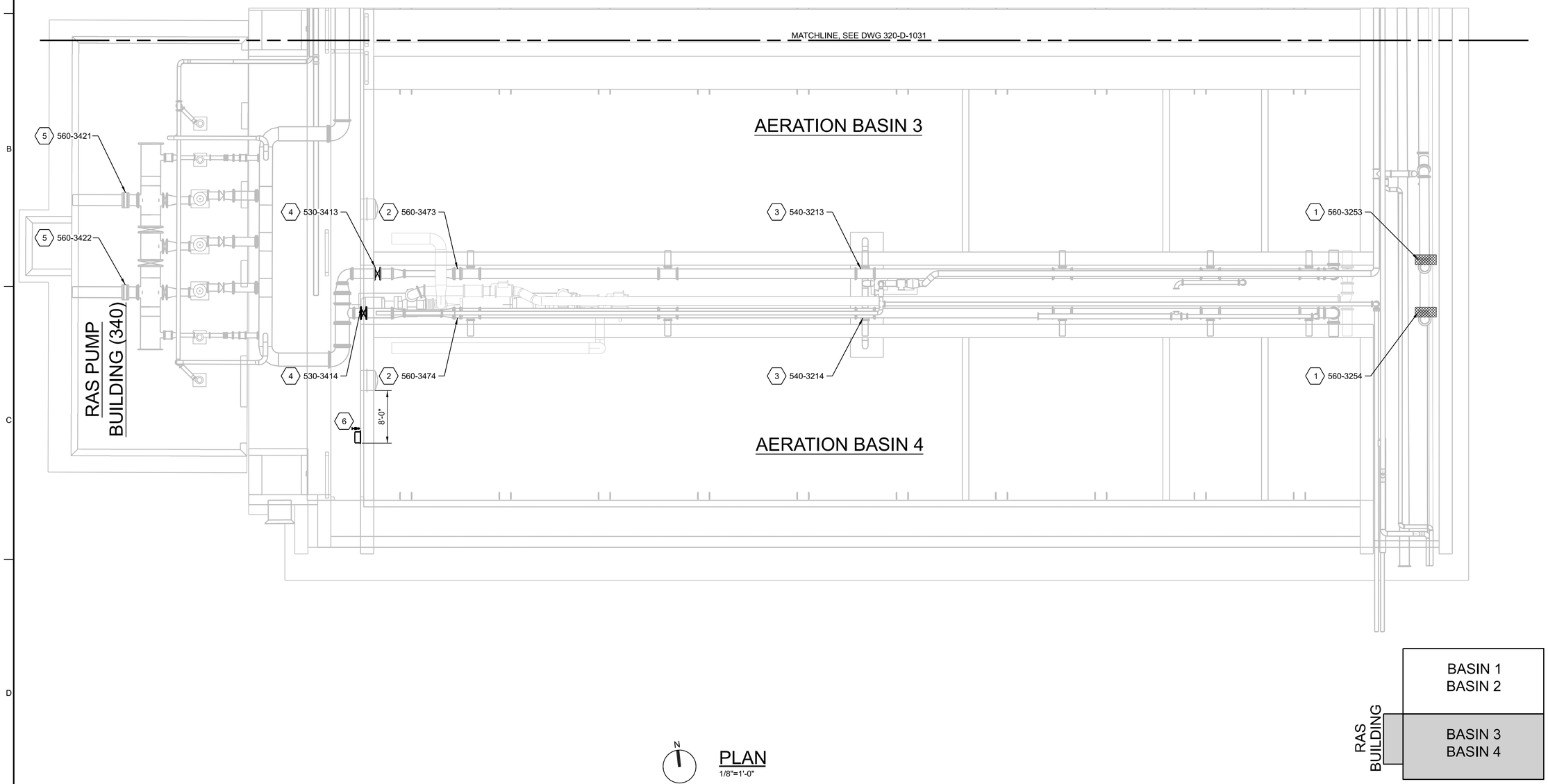
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1031
SHEET	50

GENERAL SHEET NOTES

1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.
2. WHILE REPLACING VALVES OR VALVE ACTUATORS IF PIPE OR FLANGE COATING IS DAMAGED OR IF THERE IS EXISTING DAMAGE TO THE PIPE COATING IN THE WORK AREA, REPAIR DAMAGED PIPE COATING AS PER SPEC 09 90 00 FOLLOWING COATING SYSTEM NO. 4, WHILE ALSO MATCHING THE EXISTING PIPE PAINT COLOR.

SHEET KEYNOTES

1. REMOVE PNEUMATIC VALVE ACTUATOR ASSEMBLY FROM ABANDONED MAIN BASIN ALP 16" FLOW CONTROL BUTTERFLY VALVE. REPLACE AUTOMATED VALVE ACTUATOR WITH MANUAL HAND WHEEL OPERATOR, VERIFY VALVE OPENS AND CLOSES COMPLETELY AND REPORT TO OWNER VALVE OPERATIONAL STATUS. CAP COMPRESSED AIR PIPING AT EXISTING VALVE LOCATION AND REPLACE AND/OR REPAIR INSULATION.
2. REPLACE EXISTING RAS BUTTERFLY VALVE ACTUATOR, LEAVING EXISTING VALVE IN PLACE. SEE PNEUMATICALLY ACTUATED VALVE SCHEDULE FOR ADDITIONAL INFORMATION.
3. REPLACE BOTH MANUAL 10" PLUG ISOLATION VALVES FOR THE DEWATERING PUMP, VALVE LOCATED BELOW GRATING. INSULATE NEW-TO-EXISTING CONNECTIONS WITH INSULATING FLANGE, AS PER DETAIL 2642-930. FOR TAPPED FLANGES USE INSULATING BOLTS, AS PER DETAIL 2642-932.
4. REPLACE LEAKING 16" RAS KNIFE GATE VALVE WITH RESILIENT SEAT FULL PORT FULL BONNET GATE VALVE. INSULATE NEW-TO-EXISTING CONNECTIONS WITH INSULATING FLANGE, AS PER DETAIL 2642-930. FOR TAPPED FLANGES USE INSULATING BOLTS, AS PER DETAIL 2642-932.
5. REPLACE MODULATING BUTTERFLY CONTROL VALVE ACTUATOR ON INLET TO RAS PUMPS HEADER.
6. RELOCATE EXISTING HOSE STATION ON END OF BASIN 8-FEET SOUTH ALONG WALL TO MAKE ROOM FOR NEW SUBMARINE HATCH BEING INSTALLED IN BASIN 4 END WALL.



N

PLAN
1/8"=1'-0"

KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
Digital Signature
65709PE
OREGON
JUNE 11, 2008
ERIK JON THOMPSON
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

NO.	DATE	DSGN	DR	REVISION	CHK	APVD	BY
		E THOMPSON	J SETNIK		B YOUKER	APVD	T DYE

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASINS

PROCESS MECHANICAL GALLERIES BASINS 3 AND 4

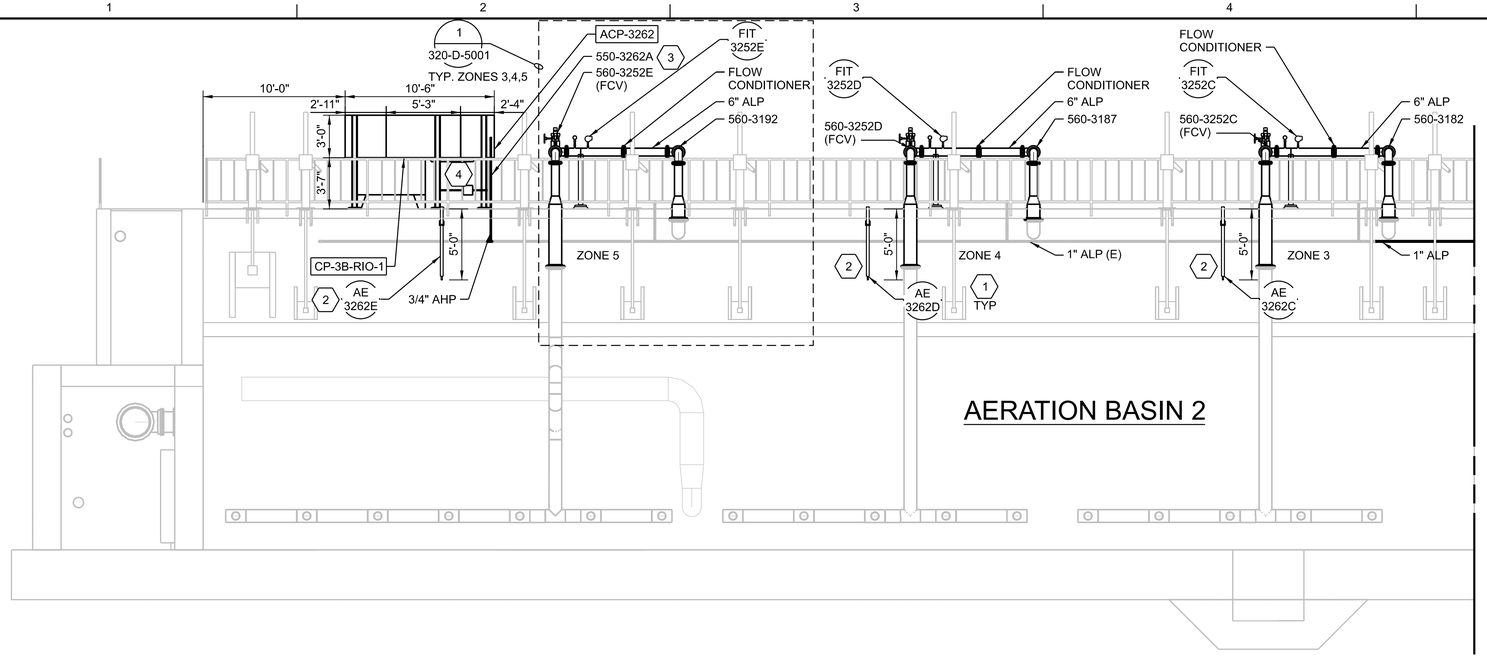
AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

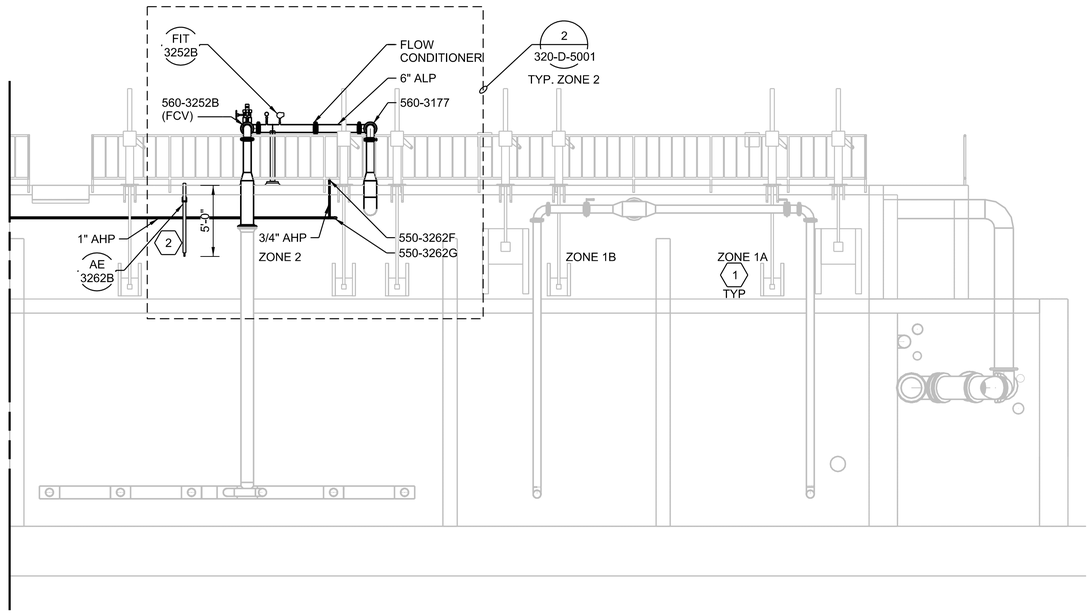
100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-1032
SHEET	51

FILENAME: 320-D-1032_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:49





A SECTION
3/16"=1'-0"

320-D-1010
320-D-1011
320-D-1020
320-D-1021

GENERAL SHEET NOTES

1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.

SHEET KEYNOTES

1. REPLACE INFLUENT SIDE WALL SLIDE GATE SEALS AND RECONDITION GATES AS NEEDED TO PROVIDE SMOOTH SEALING SURFACE. EACH BASIN HAS (4) 24" BY 24" SLIDE GATES AND (12) 10" BY 10" SLIDE GATES ALONG THE ALP MANIFOLD SIDE OF THE BASIN.
2. INSTALL DISSOLVED OXYGEN SENSOR ABOUT 1-FOOT BELOW AERATION BASIN WATER SURFACE, OR ABOUT 5'-0" BELOW CONCRETE WALKING SURFACE. SEE STANDARD DETAIL 4091-159 ON SHEET 900-N-5002.
3. TAP INTO EXISTING 1" AHP PIPE RUNNING ALONG EDGE OF BASIN, WITH A NEW 3/4" AHP PIPE TO FEED ACP PANEL. LOCATE ISOLATION VALVE 550-3262A JUST ABOVE WALKING SURFACE LEVEL TO MAKE ACCESSIBLE FROM WALK WAY BELOW PANEL. CONTINUE UP TO FILTERED PRESSURE REGULATOR (PRV - 560-3262) AND MOUNT PRV TO SIDE OF ACP PANEL. REDUCE TO 1/2" NPT FOR PRV INLET AND PROVIDE 1/2" NPT TO COMPRESSION FITTING FOR CONNECTION TO ACP PANEL. (TYPICAL FOR EACH ACP PANEL).
4. FROM BOTTOM OF ACP PANEL FIELD ROUTE (4) 1/4" STAINLESS STEEL TUBING RUNS FROM THE COMPRESSION FITTINGS UNDER THE ACP PANEL TO JUST ABOVE EACH OF OXYGEN SENSORS BELOW EACH OF THE ALP CONTROL MANIFOLDS. JUST ABOVE THE WATER LINE TRANSITION FROM STAINLESS TUBING TO POLYPROPYLENE TUBING TO CONNECT TO SENSOR, SEE STANDARD DETAIL 4091-159. (TYPICAL FOR EACH ACP PANEL).

REGISTERED PROFESSIONAL ENGINEER
65709PE
Digital Signature
OREGON
JUNE 11, 2006
ERIK JON THOMPSON
EXP: 06/30/28
DIGITALLY SIGNED: 09/17/2026

© JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	BY	APVD
		E THOMPSON	J SETNIK	B YOUKER	T DYE	APVD

REVISION

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS

PROCESS MECHANICAL
SECTION A - TYPICAL SECTION VIEW
ALP MANIFOLD SIDE OF BASIN

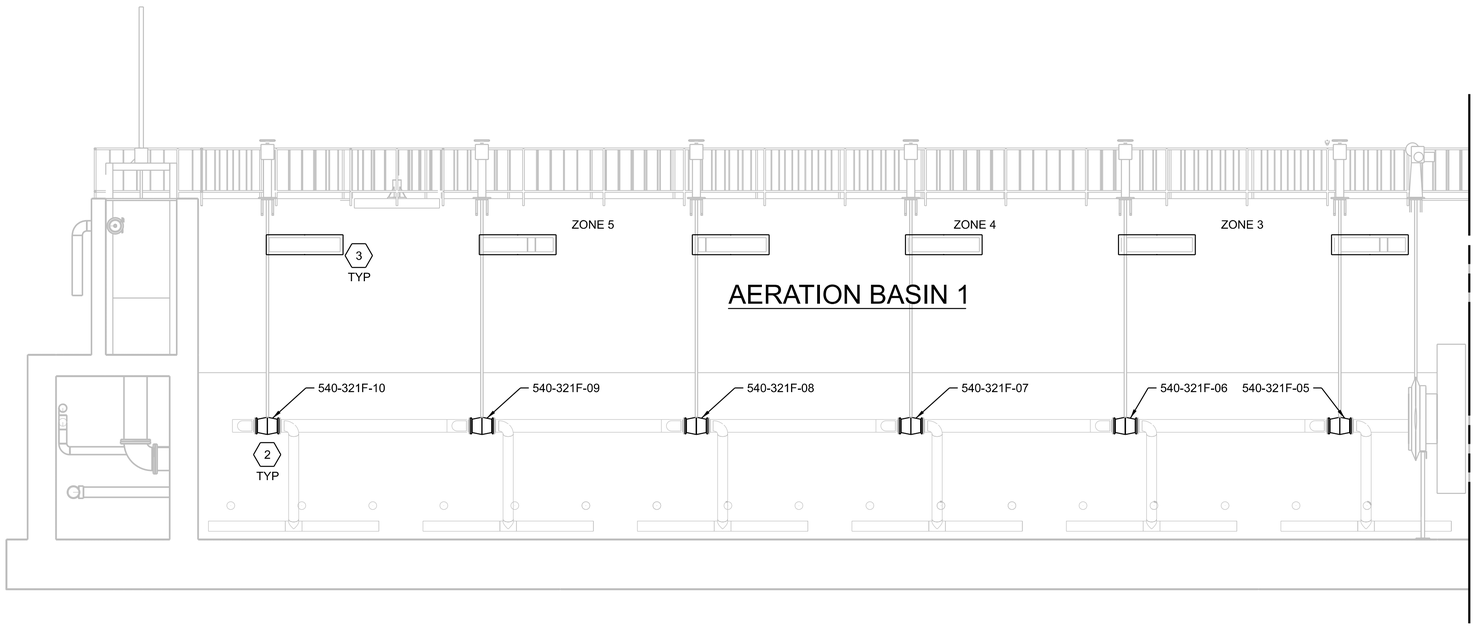
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

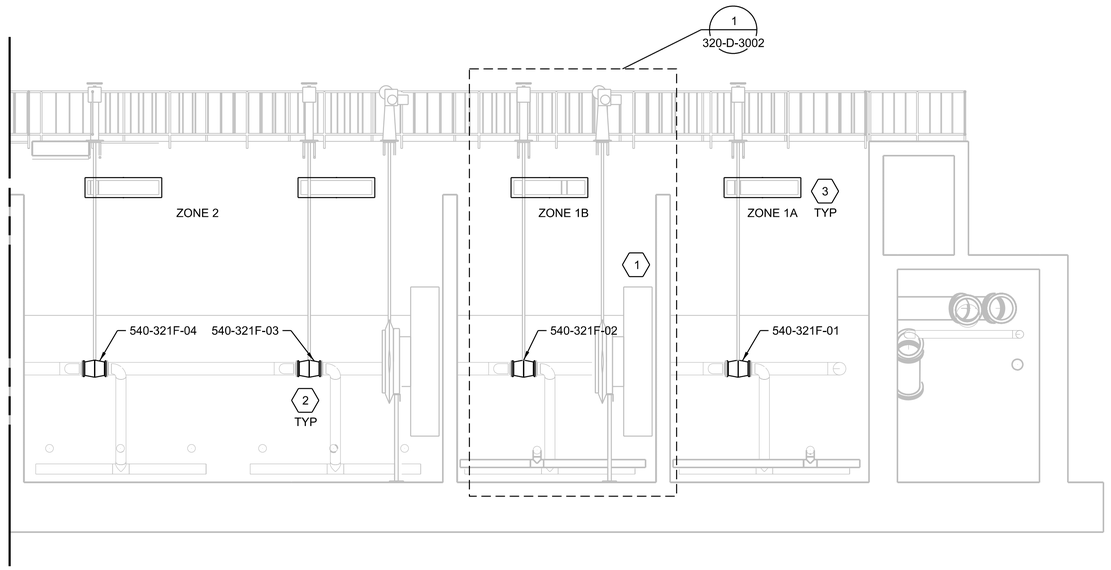
100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-3001
SHEET	52

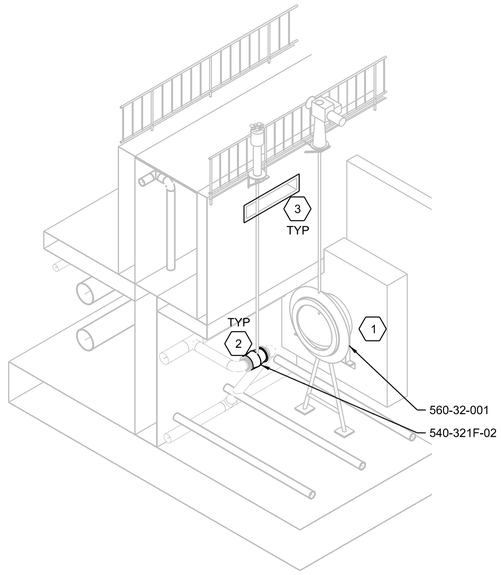
FILENAME: 320-D-3001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:53





B SECTION
3/16"=1'-0"

320-D-1010
320-D-1011
320-D-1020
320-D-1021



1 DETAIL
NTS

320-D-3002

GENERAL SHEET NOTES

1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.

SHEET KEYNOTES

1. REMOVE AND REBUILT EXISTING 36" BUTTERFLY VALVE (560-32-001), REPLACE VALVE SHAFT BEARINGS AND SEALS, INSPECT AND LUBRICATE ALL WEAR PARTS, REPORT CONDITION TO OWNER. INSPECT VALVE SEAT, IF DAMAGE NOTED CONTACT OWNER FOR INSPECTION AND REPLACE VALVE SEAT IF DIRECTED BY OWNER.
2. REPLACE 8" DEWATERING FLANGED PLUG VALVE WITH NEW LOCATED APPROXIMATELY 7-FEET ABOVE BASIN FLOOR. RE-USE REMOTE HAND WHEEL ACTUATOR, TYPICAL (10) PER BASIN. INSULATE NEW-TO-EXISTING CONNECTIONS WITH INSULATING FLANGE, AS PER DETAIL 2642-930. FOR TAPPED FLANGES USE INSULATING BOLTS, AS PER DETAIL 2642-932. WHERE EXISTING FLANGE OR PIPING IN WORK AREA AROUND VALVE BEING REPLACED IS DAMAGED, REPAIR COATING FOLLOWING SPECIFICATION 09 90 00, USING COATING SYSTEM NO. 2.
3. REPLACE ALL AERATION BASIN EFFLUENT WEIR SLOT COVER PLATES WITH NEW COVER PLATES COMPLETELY BLOCKING THE SLOTS BETWEEN THE AERATION BASIN AND EFFLUENT CHANNEL. NEW COVER PLATES TO BE INSTALLED ON THE EFFLUENT SIDE OF THE OPENING. SEE SHEET 320-D-3003 FOR SLOT COVER PLATE FABRICATION AND INSTALLATION REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER — 65709PE — Digital Signature — OREGON — JUNE 11, 2004 — ERIK JON THOMPSON
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.
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.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		E THOMPSON	J SETNIK	B YOUKER	APVD	T DYE	

Water Environment Services

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS

PROCESS MECHANICAL
SECTION B - TYPICAL SECTION VIEW
FLUSH VALVE SIDE OF BASIN

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-3002
SHEET	53

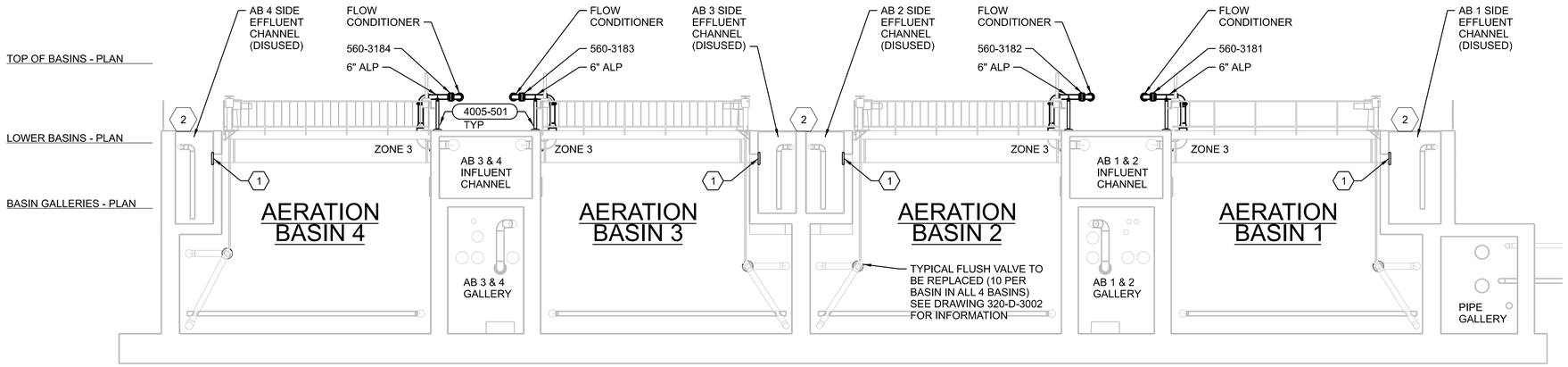
FILENAME: 320-D-3002_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:51

GENERAL SHEET NOTES

1. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.

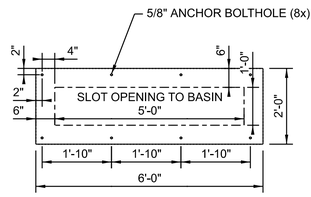
SHEET KEYNOTES

1. NEW AERATION BASIN EFFLUENT WEIR SLOT COVER PLATES (10) PER BASIN. MOUNT ON EFFLUENT CHANNEL SIDE OF OPENING. SEE DETAIL 1 THIS SHEET FOR PANEL FABRICATION AND INSTALLATION REQUIREMENTS.
2. COORDINATE REMOVE\AL OF EFFLUENT CHANNEL COVER GRATING FOR DEMOLITION ACTIVES AND TO GAIN ACCESS FOR INSTALL OF NEW WEIR SLOT COVER PLATES. REINSTALL EFFLUENT GRATING AFTER INSTALL OF SLOT COVER PLATES AND OWNER ACCEPTANCE OF THE INSTALL.



C SECTION
1/8"=1'-0"

320-D-1010
320-D-1011
320-D-1012
320-D-1020
320-D-1021
320-D-1022



NOTES:

1. COVER PLATE TO BE 1/8" THICK 304 STAINLESS STEEL.
2. COVER PLATE TO BE 6-FOOT LONG BY 2-FOOT TALL WITH (8) 5/8" ANCHOR BOLT HOLES DRILLED THROUGH EQUALLY SPACED AROUND THE PARAMETER OF THE PLATE, WITH A MINIMUM EDGE DISTANCE OF 1-1/2".
3. MOUNT COVER PLATE ON EFFLUENT CHANNEL SIDE OF SLOT OPENING WITH 1/2" STAINLESS STEEL ANCHORS, DRILL AND EPOXY, EMBED 4-1/2" MINIMUM, USE MINIMUM 1" EPOXY GROUT BETWEEN COVER PLATE AND WALL TO LEVEL PLATE. CLEAN OFF EXCESS GROUT FROM AROUND PARAMETER AND ON BASIN SIDE OF COVER PLATES THROUGH OPENING.

1 BASIN WEIR SLOT COVER PLATE
1/2"=1'-0"

320-D-3003

REGISTERED PROFESSIONAL ENGINEER — OREGON — JUNE 11, 2004 — ERIK JON THOMPSON
Digital Signature
65709PE
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		E THOMPSON	J SETNIK	B YOUKER		T DYE	

©JACOBS 2026. ALL RIGHTS RESERVED.
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.

Jacobs
WATER ENVIRONMENT SERVICES

AERATION BASINS
PROCESS MECHANICAL
SECTION C - TYPICAL SECTION VIEW
BASINS 1 THRU 4 LOOKING WEST

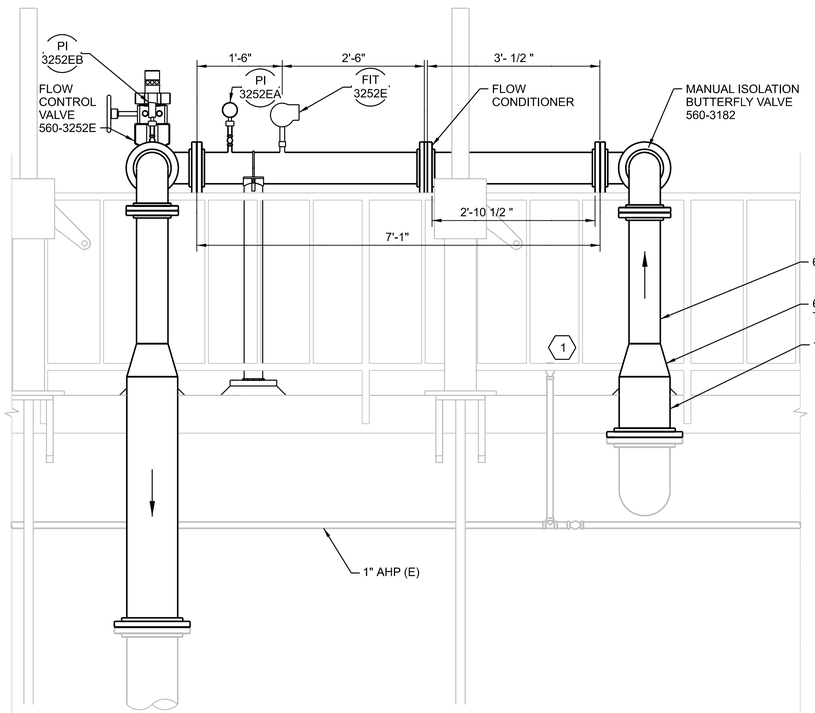
AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

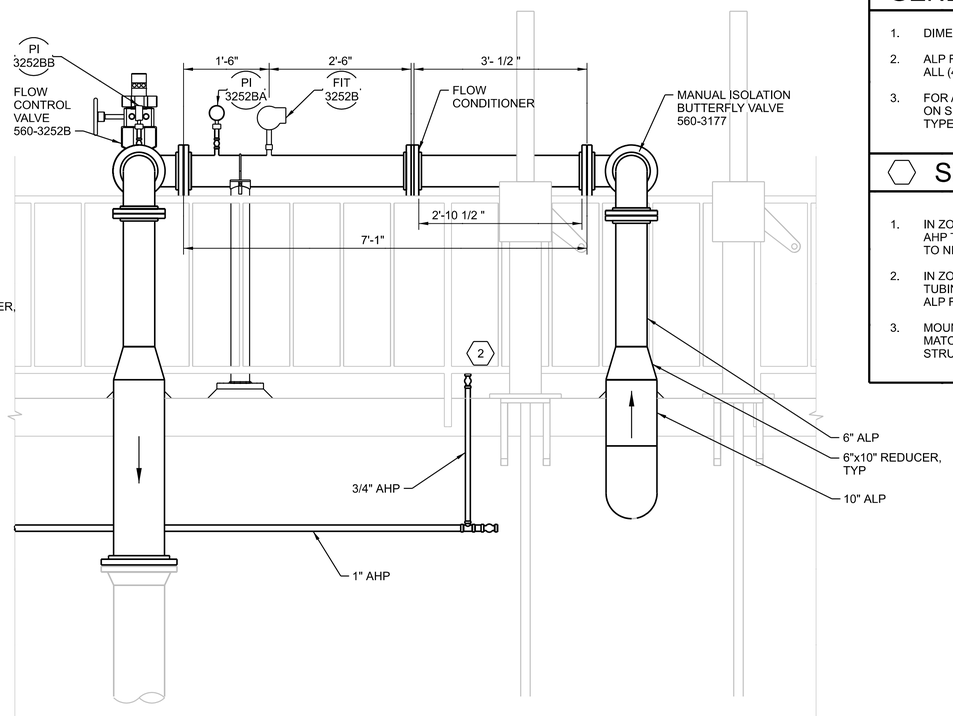
100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-3003
SHEET	54

FILENAME: 320-D-3003_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:53





GENERAL SHEET NOTES

1. DIMENSIONS SHOWN ARE APPROXIMATE.
2. ALP FLOW CONTROL MANIFOLD DETAILS APPLY TO ALL (4) BASINS.
3. FOR ALL TAGGED VALVES, SEE VALVE SCHEDULES ON SHEETS 001-G-0091 AND 001-G-0092 FOR VALVE TYPE AND SPECIFICATION.

SHEET KEYNOTES

1. IN ZONES 3, 4 AND 5 ROUTE NEW STAINLESS STEEL AHP TUBING FROM EXISTING AHP ISOLATION VALVE TO NEW ALP FLOW CONTROL VALVE ACTUATOR.
2. IN ZONES 2 ROUTE NEW STAINLESS STEEL AHP TUBING FROM NEW AHP ISOLATION VALVE TO NEW ALP FLOW CONTROL VALVE ACTUATOR.
3. MOUNT NEW AHP PIPING TO BASIN SIDE WALL MATCHING EXISTING PIPE SUPPORT SYSTEM WITH STRUT AND HANGER.

REGISTERED PROFESSIONAL ENGINEER — 65709PE — OREGON — JUNE 11, 2004 — ERIK JON THOMPSON
Digital Signature
EXP. 06/30/28
DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		E THOMPSON	J SETNIK	B YOUKER	APVD	T DYE	

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.

REUSE OF DOCUMENTS:

100% DESIGN SUBMITTAL

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
PROCESS MECHANICAL
ALP CONTROL MANIFOLDS DETAILS

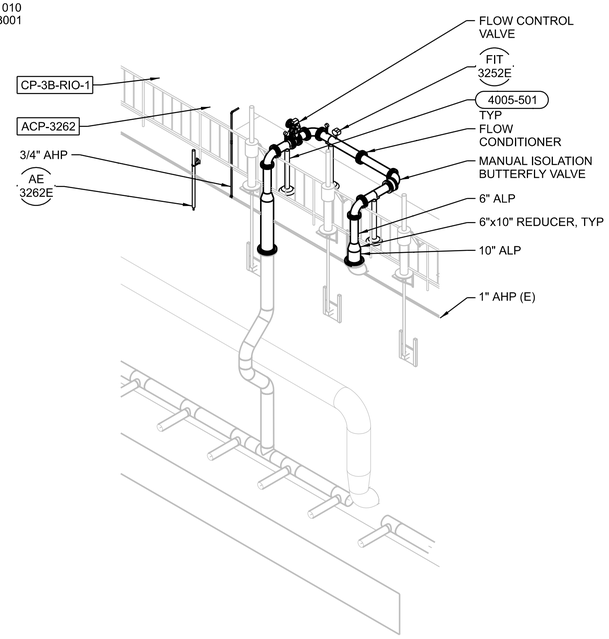
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-D-5001
SHEET	55

1 ALP CONTROL MANIFOLD FOR ZONES 3,4,5

3/4"=1'-0"

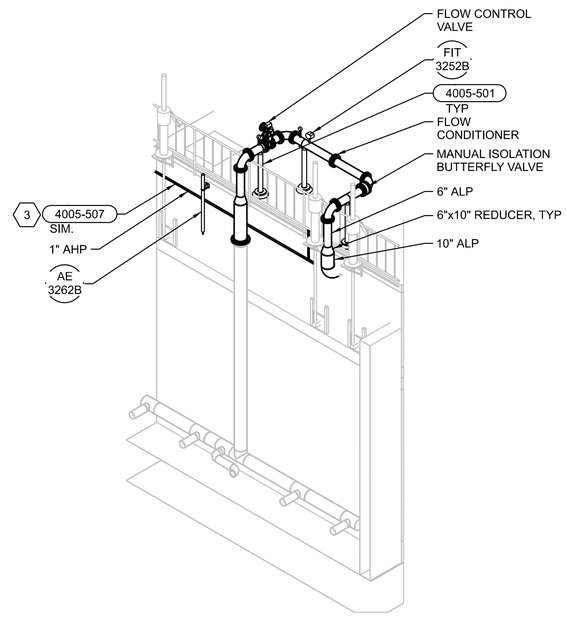
320-D-1010
320-D-3001



2 ALP FLOW METER MANIFOLD DETAIL FOR ZONE 2

3/4"=1'-0"

320-D-1010
320-D-3001



3 DETAIL 1

NTS

320-D-1010

4 DETAIL 2

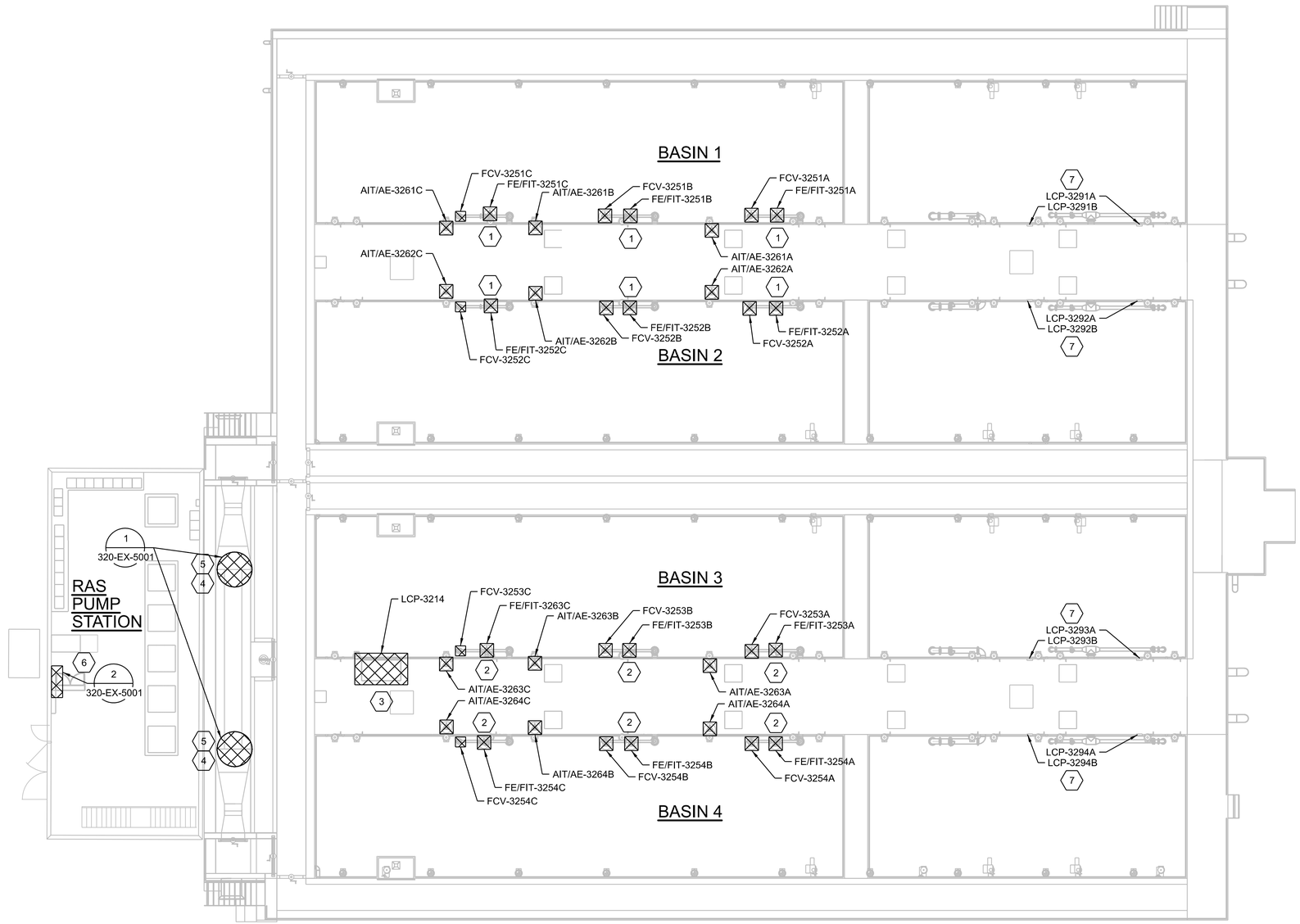
NTS

320-D-1010

FILENAME: 320-D-5001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:52

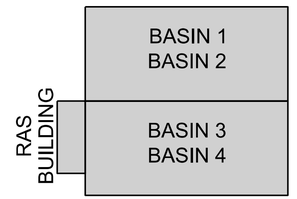
SHEET KEYNOTES

1. DEMOLISH EXISTING INSTRUMENTS IN BASIN 1 AND BASIN 2. REPLACE THEM WITH THE NEW INSTRUMENTS. FOR FURTHER INFORMATION SEE DRAWING 320-E-1031.
2. DEMOLISH EXISTING INSTRUMENTS IN BASIN 3 AND BASIN 4. REPLACE THEM WITH NEW INSTRUMENTS. FOR FURTHER INFORMATION SEE DRAWING 320-E-1032.
3. DEMOLISH EXISTING RIO PANEL, COORDINATE REPLACEMENT WITH THE TWO NEW RIO PANELS. FOR FURTHER INFORMATION SEE DRAWING 320-E-1031 AND 320-E-1032.
4. SALVAGE TWO EXISTING MIXERS TO THE OWNER DURING DEMOLITION OF TWO POLYMER STORAGE TANKS NEXT TO RAS PUMP STATION BUILDING. FOR DETAILED INFORMATION SEE DRAWING 320-DX-1010.
5. PRESERVE THE EXISTING MIXER CONDUIT PENETRATIONS INTO THE RAS BUILDING FOR ROUTING OF THE NEW PARSHALL FLUME FLOW METERS.
6. DEMOLISH THE ABANDONED SPRINKLER SYSTEM CONTROLLER, THE TELEPHONE AND SIREN AND RECEPTACLE TO MAKE ROOM FOR THE NEW CONTROL PANEL. CUT CONDUCTORS AND CONDUIT FLUSH WITH GRADE, ABANDONING IN PLACE, AND REMOVE ALL ABOVE GROUND COMPONENTS.
7. REMOVE CONNECTIONS FROM RIO PANEL TO MIXER CONTROL PANELS AS PART OF CUT OVER TO NEW RIO PANEL.



N

PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
104629PE
Digitally Signed
OREGON
JACOB HELLEN
EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		J HELLEN	A CZAPLA	B BEADERSTADT	APVD	T DYE	

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.

REUSE OF DOCUMENTS:

WATER ENVIRONMENT SERVICES

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL DEMOLITION
TOP OF BASINS - OVERALL

100% DESIGN SUBMITTAL

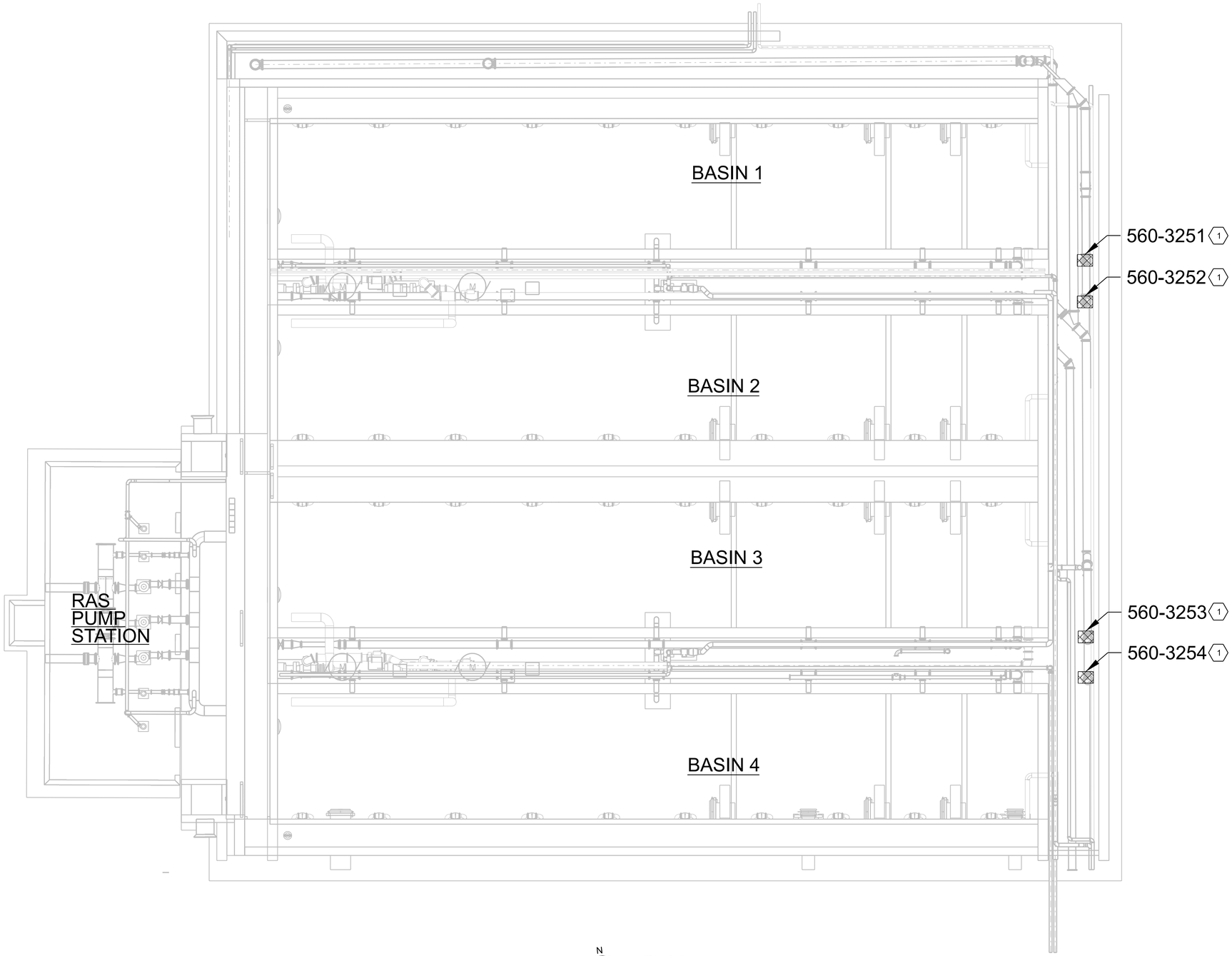
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-EX-1010
SHEET	56

FILENAME: 320-EX-1010_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:01

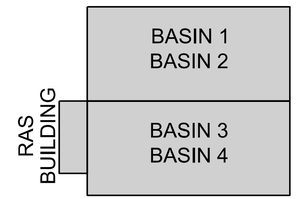
SHEET KEYNOTES

1. DEMOLISH EXISTING FLOW CONTROL VALVE INCLUDING ALL CONDUIT AND CONDUCTORS TO AND FROM DEVICE, NOTHING WILL BE RE-USED FOR NEW INSTALLATION.



N

PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
104225PE
Digitally Signed
OREGON
JACOB HELLEN
EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	REVISION	BY	APVD
DSGN	J HELLEN	DR A.CZAPLA CHK B.BEADERSTADT	APVD	T DYE

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL DEMOLITION
BASIN GALLERIES - OVERALL

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-EX-1030
SHEET	57

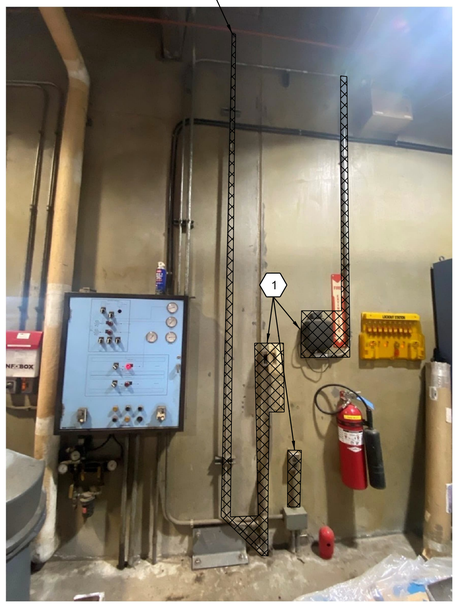
FILENAME: 320-EX-1030_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:01

SHEET KEYNOTES

1. DEMOLISH THE ABANDONED SPRINKLER SYSTEM CONTROLLER, THE TELEPHONE AND SIREN (NOT SHOWN) AND RECEPTACLE TO MAKE ROOM FOR THE NEW CONTROL PANEL. CUT CONDUCTORS AND CONDUIT FLUSH WITH GRADE, ABANDONING IN PLACE, AND REMOVE ALL ABOVE GROUND COMPONENTS.
2. SALVAGE TWO EXISTING MIXERS TO THE OWNER DURING DEMOLITION OF TWO POLYMER STORAGE TANKS NEXT TO RAS PUMP STATION BUILDING. FOR DETAILED INFORMATION SEE DRAWING 320-DX-1010.
3. PRESERVE THE EXISTING MIXER CONDUIT PENETRATIONS INTO THE RAS BUILDING FOR ROUTING OF THE NEW PARSHALL FLUME FLOW METERS.



1 TANK MIXER DEMO
NTS



2 CP-3B DEMO PREPARATION
NTS

REGISTERED PROFESSIONAL ENGINEER
Digitally Signed
OREGON
JACOB HELLEN
EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
		J HELLEN	A.CZAPLA	B BEADERSTADT			T DYE

REVISION

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL DEMOLITION DETAILS

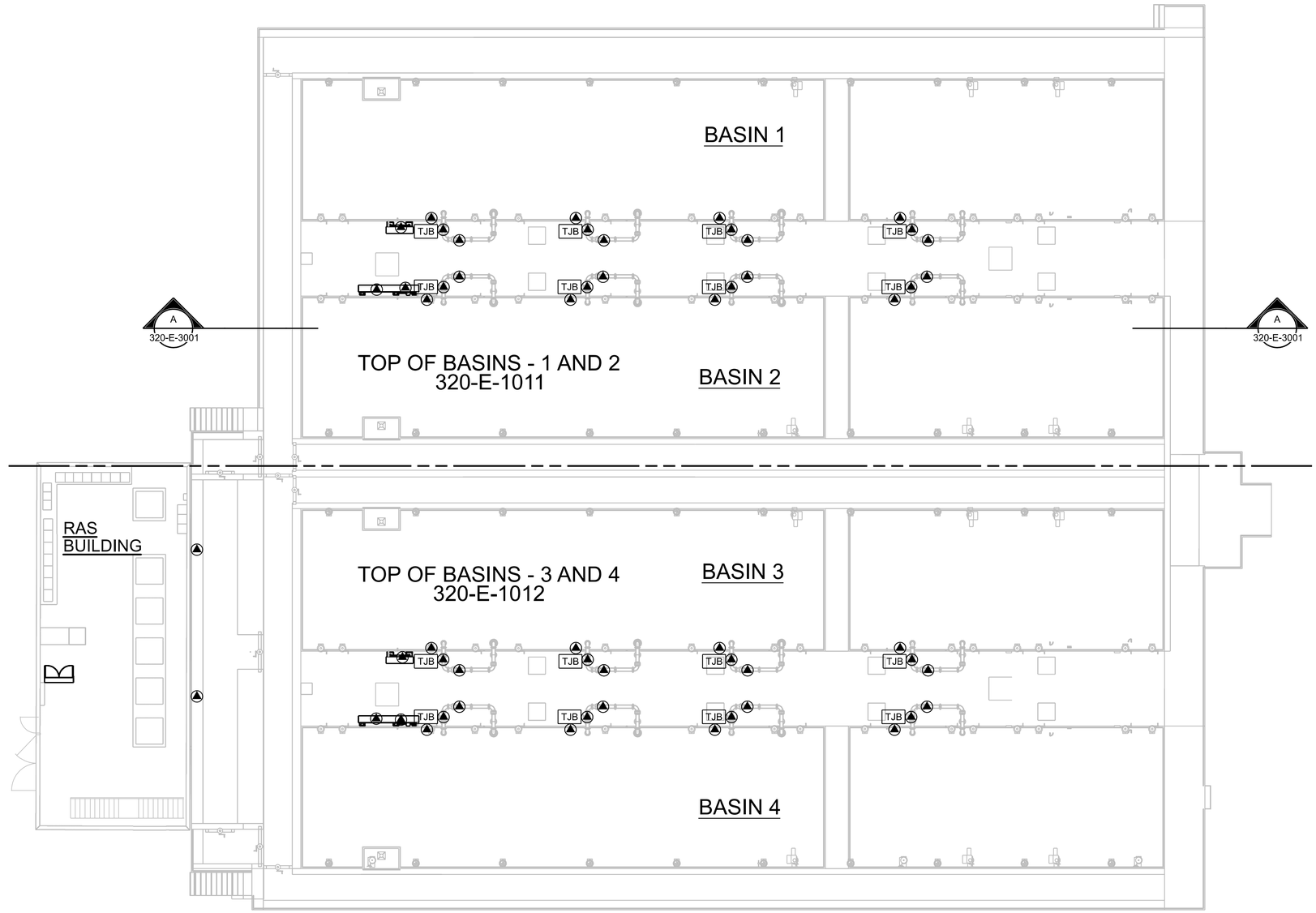
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

100% DESIGN SUBMITTAL

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

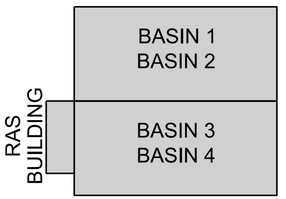
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-EX-5001
SHEET	58

FILENAME: 320-EX-5001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:00



N

PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
JACOB HELLEN
104229PE
OREGON
Digitally Signed
06/14/2026
EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	REVISION	CHK	APVD	BY
		J HELLEN	A CZAPLA		B BEADERSTADT	APVD	T DYE

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL
TOP OF BASINS
OVERALL

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.

100% DESIGN SUBMITTAL

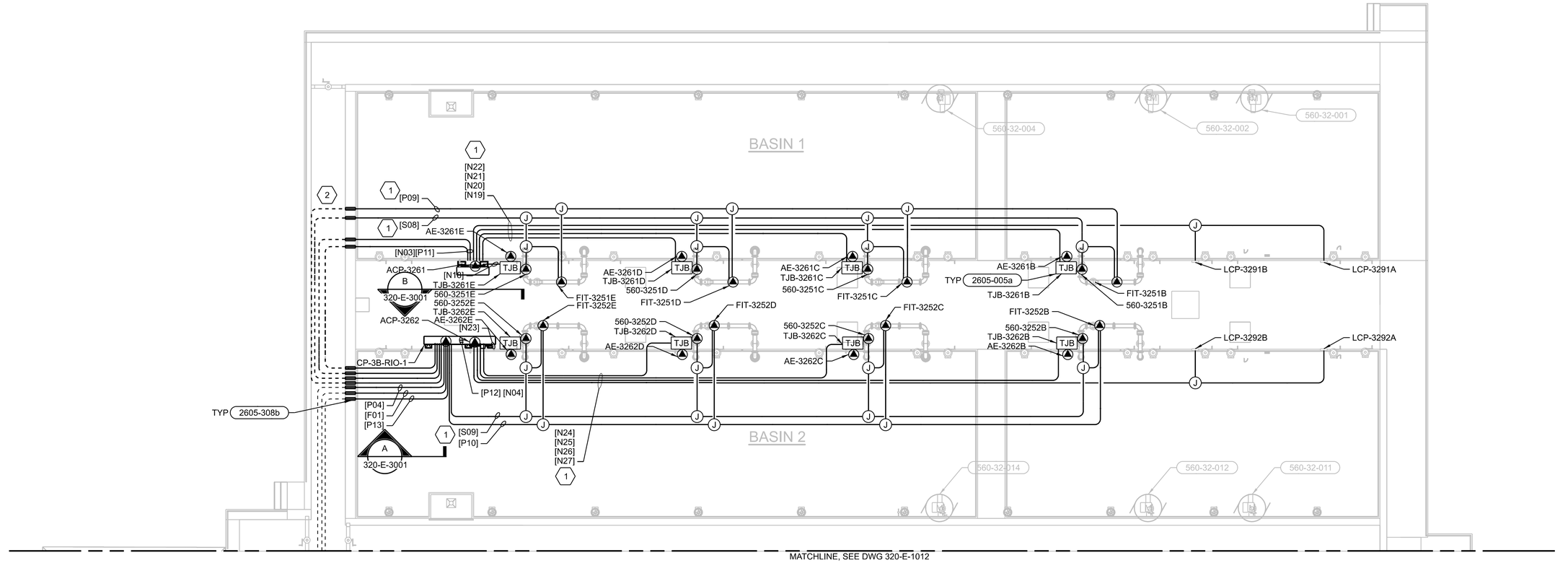
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-1010
SHEET	59

FILENAME: 320-E-1010_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:01

SHEET KEYNOTES

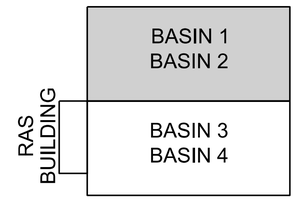
1. FOR DRAWING CLARITY SOME CABLE TAGS HAVE BEEN OMMITED. SEE CABLE RISER DIAGRAMS.
2. ROUTE CONDUITS WITHIN THE END EFFLUENT CHANNEL TO TRANSITION BETWEEN AERATION BASINS. ROUTING WITHIN THE CHANNEL SHALL FOLLOW THE EXISTING CONDUITS PATHWAY.



MATCHLINE, SEE DWG 320-E-1012

N

PLAN
1/8"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
JACOB HELLEN
104529PE
OREGON
Digitally Signed
EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	REVISION	DR	CHK	APVD	BY	APVD
		J HELLEN	A CZAPLA		B BEADERSTADT			T DYE

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL
TOP OF BASINS
1 AND 2

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.

100% DESIGN SUBMITTAL

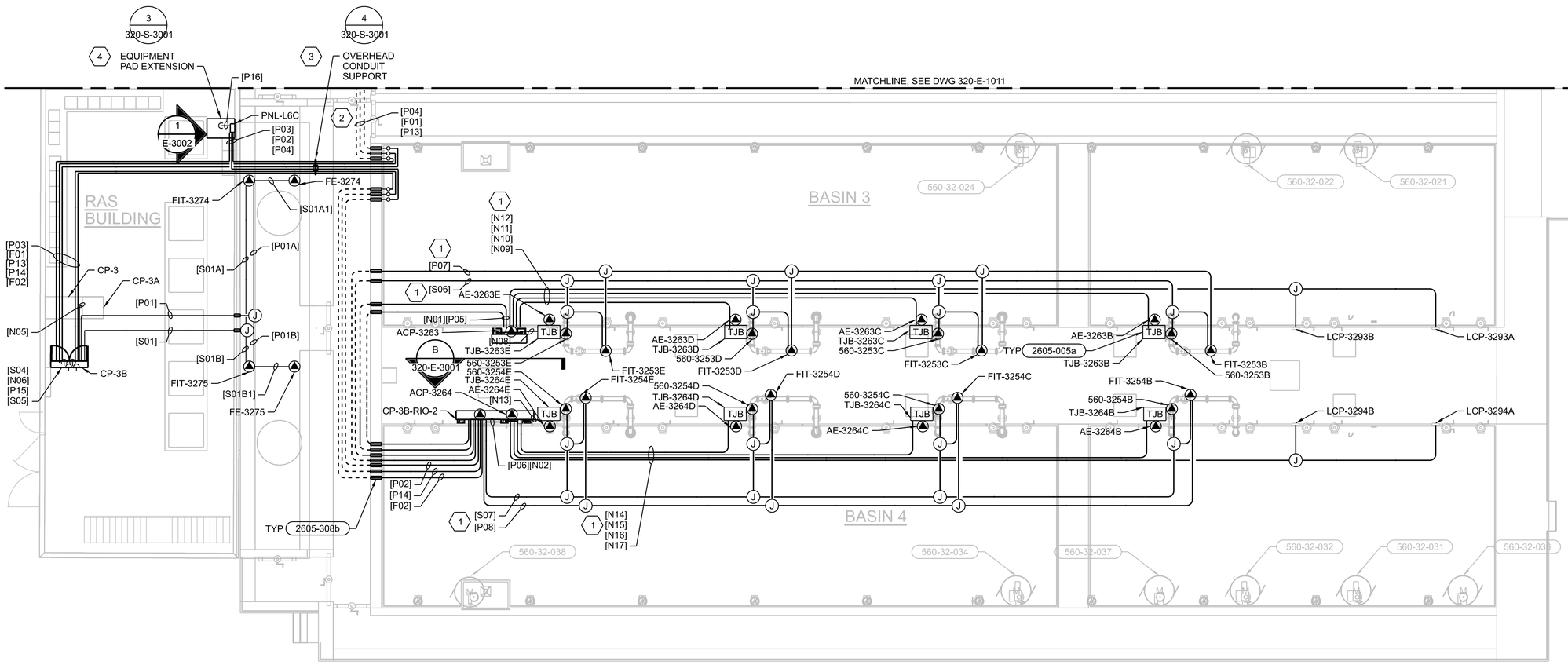
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-1011
SHEET	60

FILENAME: 320-E-1011_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:00

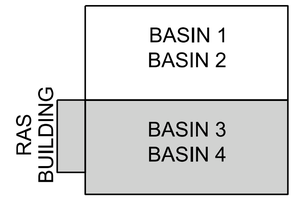
SHEET KEYNOTES

1. FOR DRAWING CLARITY SOME CABLE TAGS HAVE BEEN OMMITED. SEE CABLE RISER DIAGRAMS.
2. ROUTE CONDUITS WITHIN THE END EFFLUENT CHANNEL TO TRANSITION BETWEEN AERATION BASINS. ROUTING WITHIN THE CHANNEL SHALL FOLLOW THE EXISTING CONDUITS PATHWAY.
3. PROVIDE STRUCTURAL SUPPORT AS NEEDED TO TRANSITION FROM THE BUILDING TO THE AERATION BASINS.
4. PROVIDE CONCRETE INFILL BELOW THE NEW PANELBOARD TO CREATE A NON-TRIP HAZARD AND WORKING CLEARANCE AS REQUIRED PER NEC. MAINTAIN THE SAME LEVEL AS THE EXISTING MCC PAD AND THE ACCESS HATCH.



N

PLAN
1/8"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER — JACOB HELLEN — 104255PE — OREGON — Digitally Signed — 06/14/2026 — EXPIRES: 06/30/2027

NO.	DATE	DSGN	DR	REVISION	CHK	APVD	BY
	J HELLEN		A.CZAPLA		B BEADERSTADT	APVD	T DYE

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

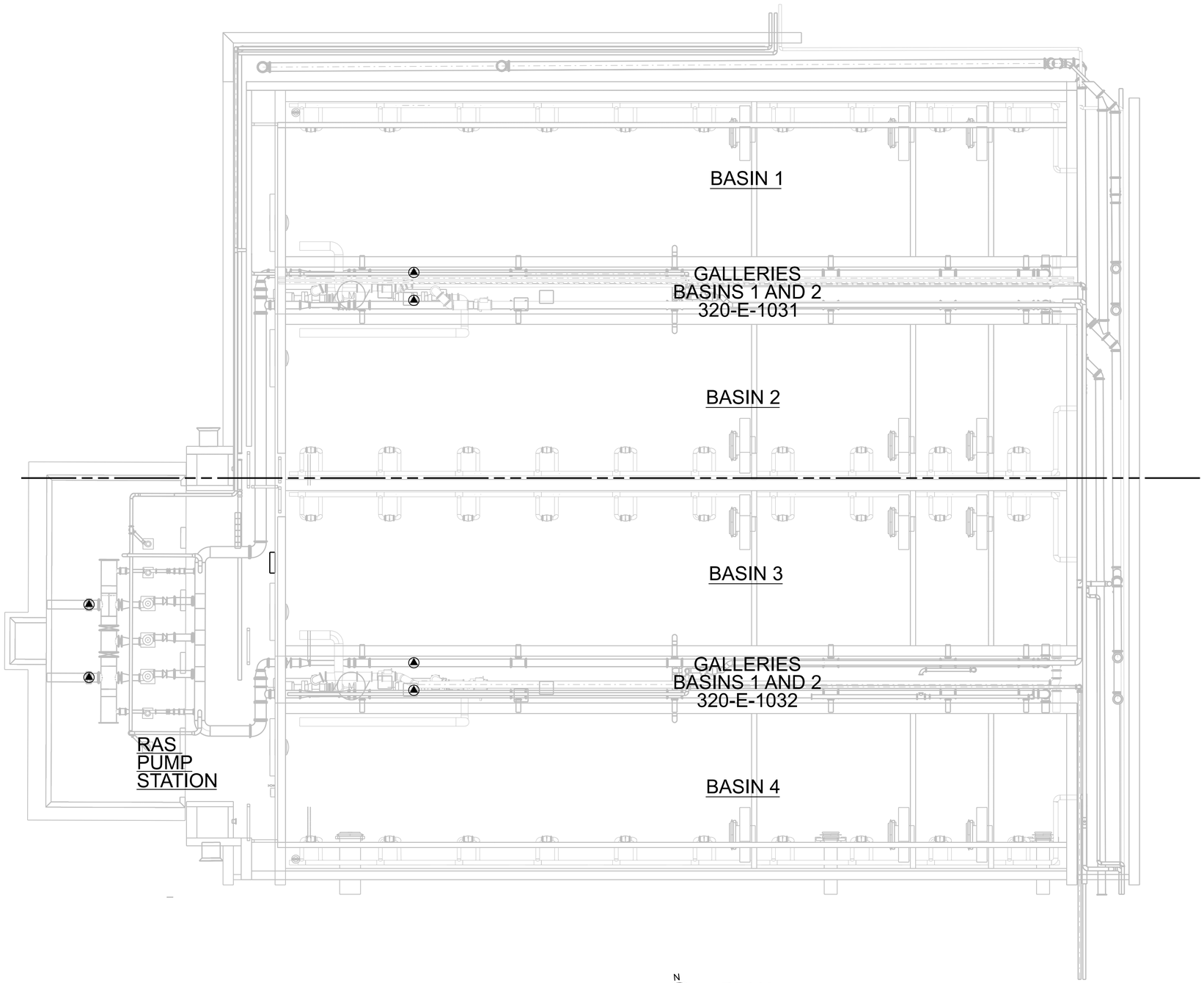
AERATION BASINS
ELECTRICAL
TOP OF BASINS 3 AND 4

100% DESIGN SUBMITTAL

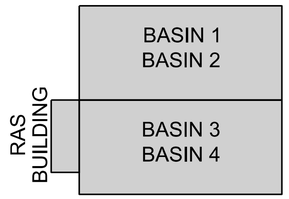
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-1012
SHEET	61

FILENAME: 320-E-1012_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 12:32



PLAN
3/32"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
JACOB HELLEN
104825PE
OREGON
Digitally Signed
EXPIRES: 06/30/2027

NO.	DATE	REVISION	BY	APVD
DSGN	J HELLEN	DR A.CZAPLA CHK B BEADERSTADT	APVD	T DYE

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

WATER ENVIRONMENT SERVICES

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL BASIN GALLERIES OVERALL

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-1030
SHEET	62

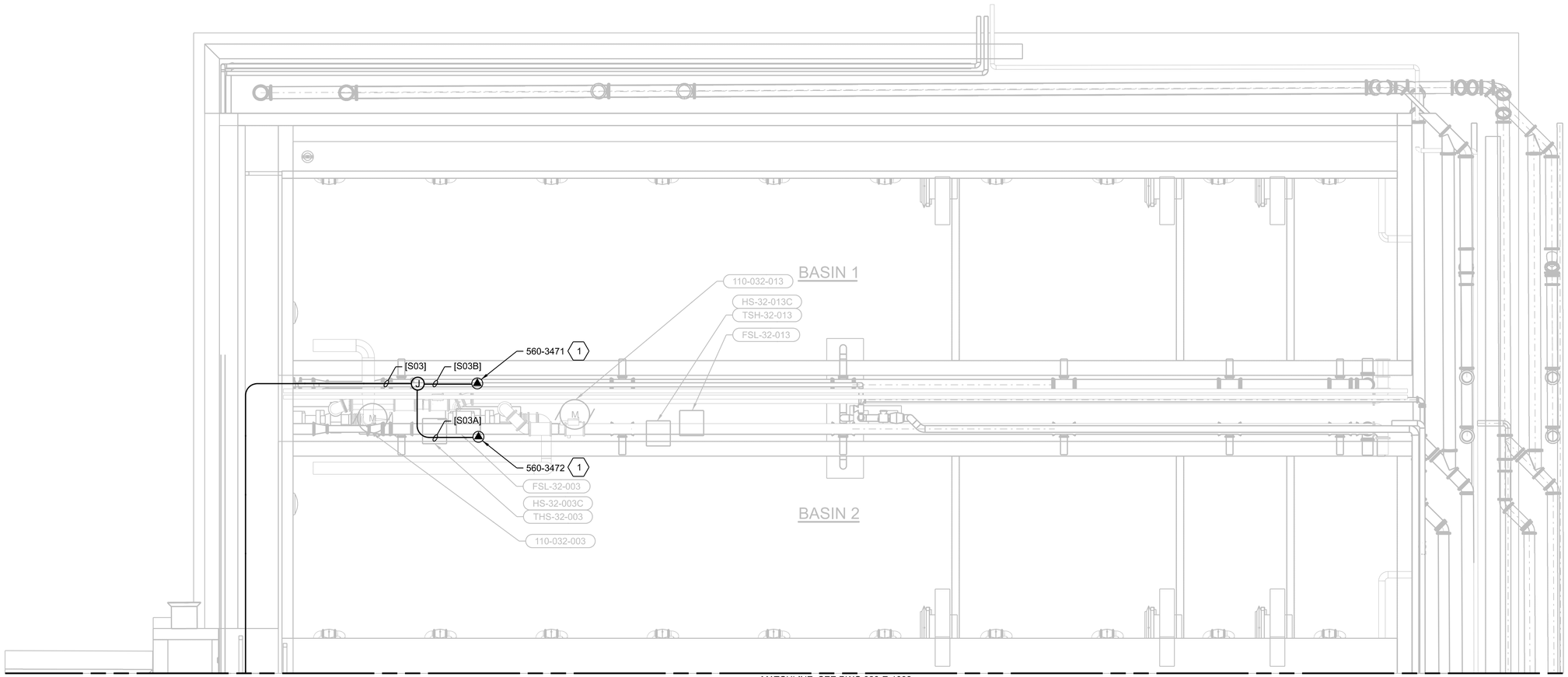
FILENAME: 320-E-1030_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:00

GENERAL SHEET NOTES

1. DURING CONSTRUCTION WORK, THE ELECTRICAL EQUIPMENT, PUMPS AND INSTRUMENTS, IN THE GALLERY MUST BE KEPT INTACT, EXCEPT AS INDICATED ON THIS DRAWING.

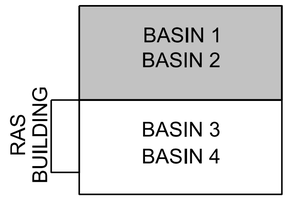
SHEET KEYNOTES

1. REPLACE RAS ACTUATOR VALVES, FOR FURTHER INFORMATION SEE DRAWING 320-D-1021.



N

PLAN
1/8"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
Digitally Signed
19452PE
OREGON
JACOB HELLEN
EXPIRES: 06/30/2027

NO.	DATE	REVISION	BY	APVD
DSGN	J HELLEN	DR	A.CZAPLA	CHK	B BEADERSTADT	APVD	T DYE

© JACOBS 2026. ALL RIGHTS RESERVED.
THESE DRAWINGS 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.
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.

WATER ENVIRONMENT SERVICES

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL GALLERIES BASINS 1 AND 2

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-1031
SHEET	63

FILENAME: 320-E-1031_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:01

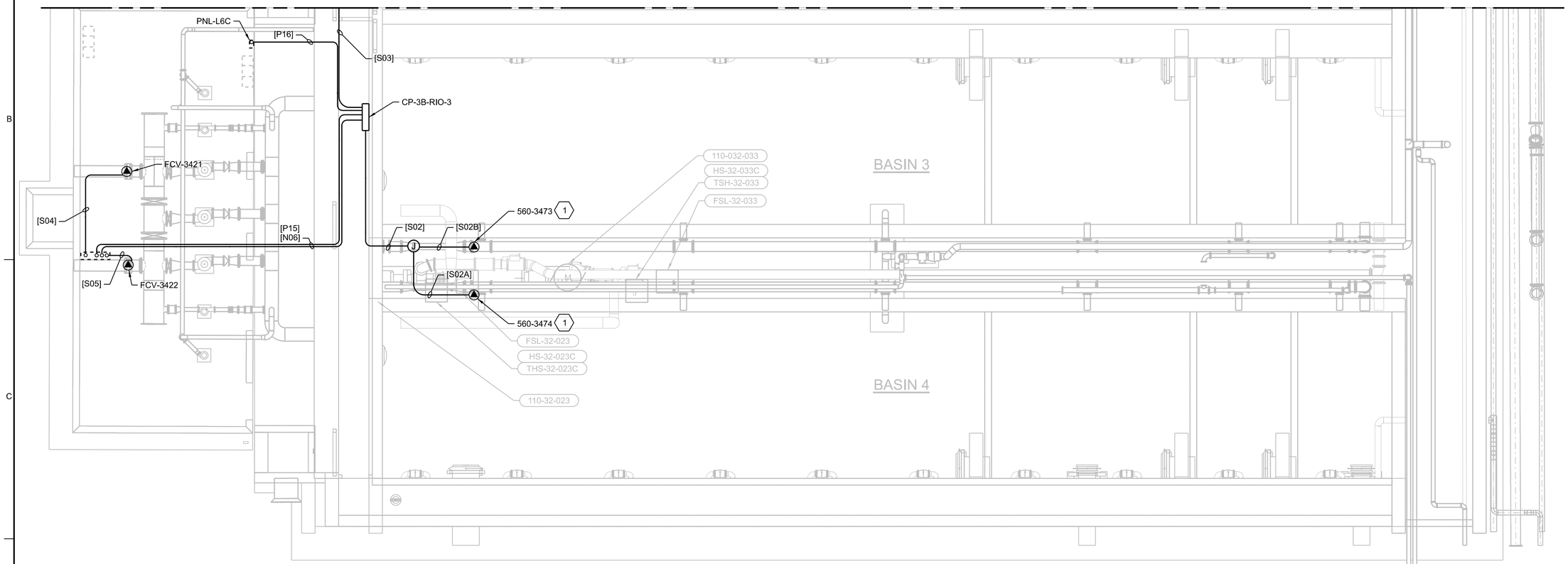
GENERAL SHEET NOTES

1. DURING CONSTRUCTION WORK, THE ELECTRICAL EQUIPMENT, PUMPS AND INSTRUMENTS, IN THE GALLERY MUST BE KEPT INTACT, EXCEPT AS INDICATED ON THIS DRAWING.

SHEET KEYNOTES

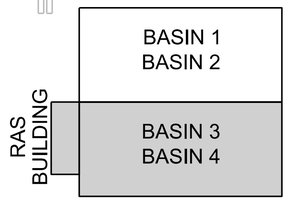
1. REPLACE RAS ACTUATOR VALVES, FOR FURTHER INFORMATION SEE DRAWING 320-D-1022.

MATCHLINE, SEE DWG 320-E-1031



N

PLAN
1/8"=1'-0"



KEY PLAN

REGISTERED PROFESSIONAL ENGINEER
JACOB HELLEN
104229PE
OREGON
Digitally Signed
EXPIRES: 06/30/2027

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION		J HELLEN	A.CZAPLA	B BEADERSTADT	APVD		T DYE

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
ELECTRICAL GALLERIES BASINS 3 AND 4

100% DESIGN SUBMITTAL

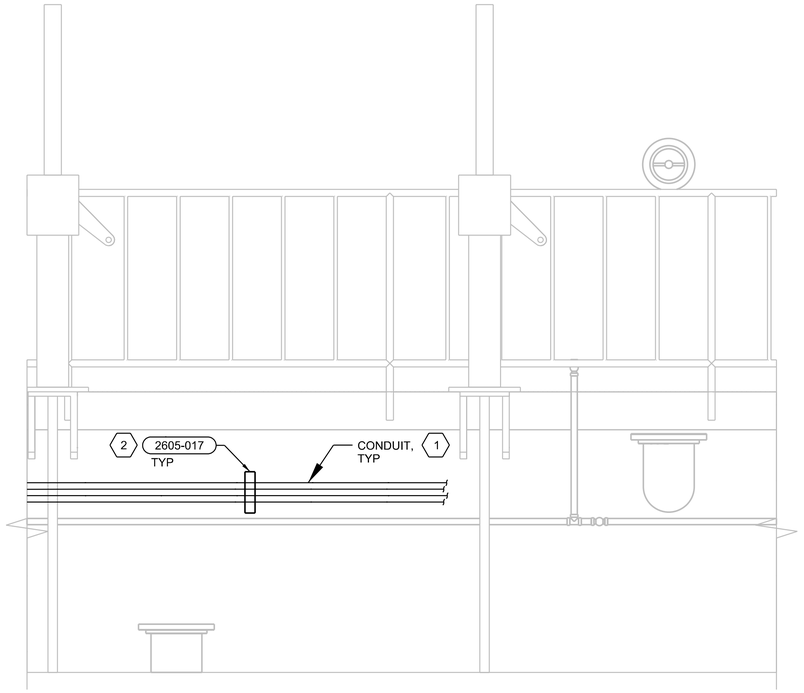
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING,
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-1032
SHEET	64

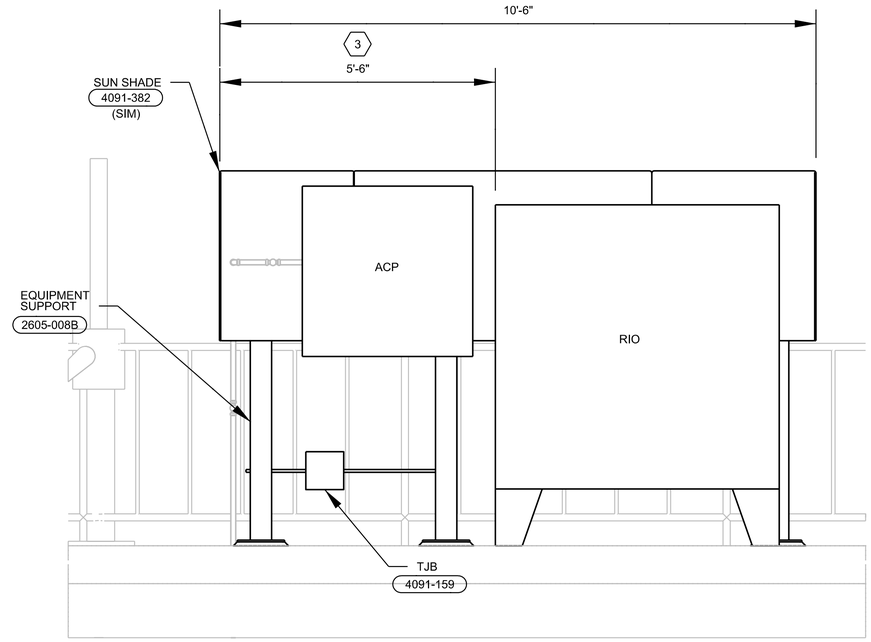
FILENAME: 320-E-1032_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:00

SHEET KEYNOTES

1. REFERENCE CONDUIT SCHEDULE, ON DRAWINGS 320-E-6020 & 6021 FOR SPECIFIC DETAILS.
2. ROUTE CONDUITS ALONG THE INTERIOR WALL OF THE BASINS ABOVE THE MAXIMUM WATER LINE.
3. PROVIDE A SHORTER EQUIPMENT RACK, AS SHOWN, FOR AERATION BASIN 1 AND 3, WHERE THE RIO PANEL IS NOT INSTALLED.



A SECTION
3/4"=1'-0"
320-E-1010



B SECTION
3/4"=1'-0"
320-E-1010

REGISTERED PROFESSIONAL ENGINEER
OREGON
JANUARY 28, 2005
JACOB HELLEN
104525PE
Digitally Signed
EXPIRES: 06/30/2027

NO.	DATE	DSGN	DR	CHK	APVD	BY
REVISION		J HELLEN	A CZAPLA	B BEADERSTADT	APVD	T DYE

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
ELECTRICAL BASIN GALLERIES SECTION

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

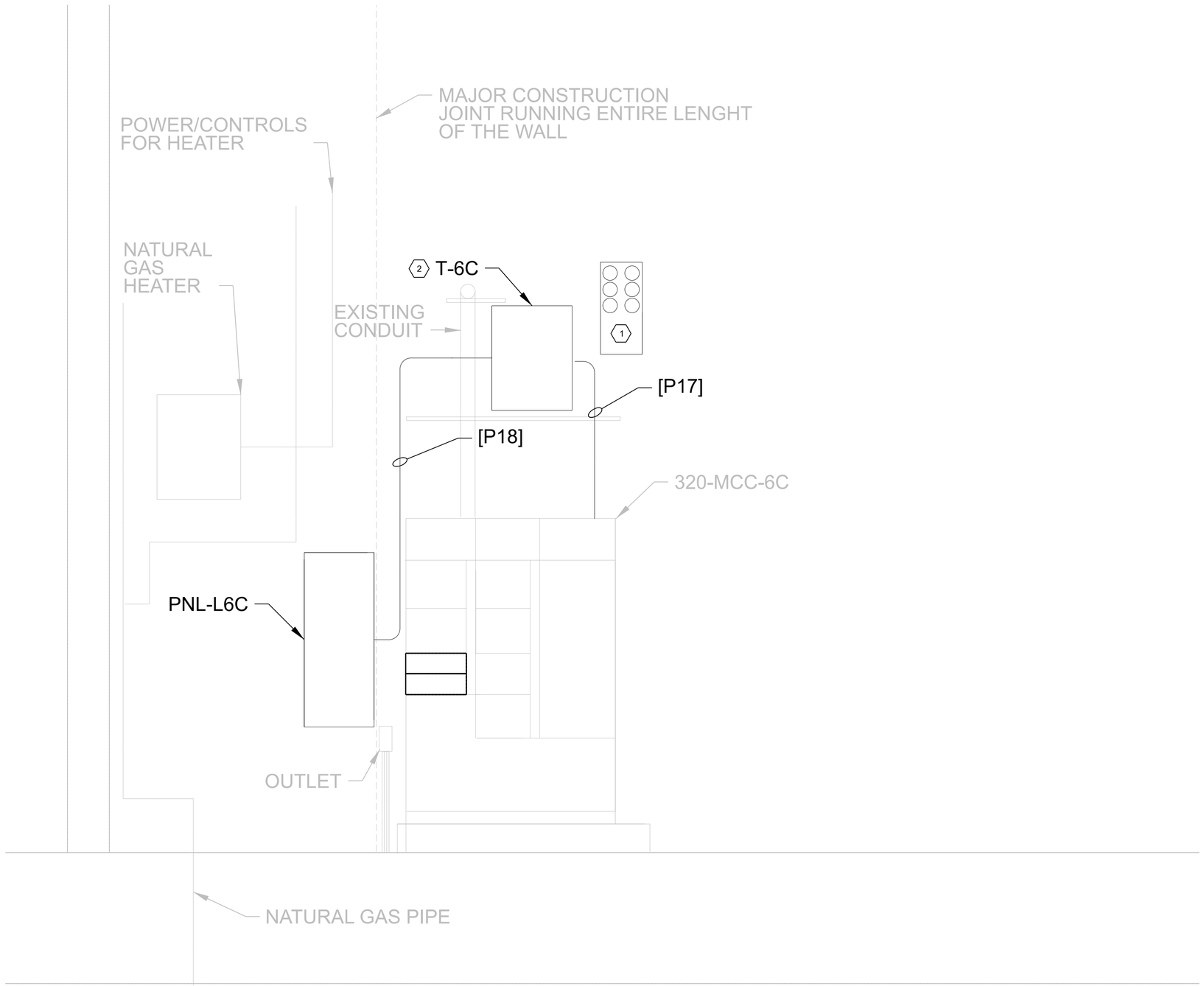
DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-3001
SHEET	65

100% DESIGN SUBMITTAL

FILENAME: 320-E-3001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:03

SHEET KEYNOTES

1. PROVIDE A WALL PENETRATION SUFFICIENTLY SIZED TO FIT TEN 4INCH CONDUITS THROUGH. COVER OPENING WITH A PLATE ALLOWING FOR FUTURE EXPANSION.
2. PROVIDE TRANSFORMER WITH MANUFACTURER'S ASSOCIATED WALL MOUNTING BRACKET. BOND THE TRANSFORMER GROUND BUS TO THE SECONDARY NEUTRAL BUS AND THEN TO THE NEAREST GROUNDED BUILDING STEEL THAT IS PART OF THE OVERALL GROUNDING ELECTRODE SYSTEM.



A SECTION
3/4"=1'-0"
320-E-1012

REGISTERED PROFESSIONAL ENGINEER — Digitally Signed — OREGON — JACOB HELLEN — 104825PE — EXPIRES: 06/30/2027

© JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		J HELLEN	A CZAPLA	B BEADERSTADT	APVD	T DYE	

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL BASIN GALLERIES SECTION

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.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-3002
SHEET	66

FILENAME: 320-E-3002_D3900000.dgn PLOT DATE: 4-SEP-2026 PLOT TIME: 09:50

SHEET KEYNOTES

1. TERMINAL JUNCTION BOX FOR AE DEVICES TO BE MANUFACTURER'S STANDARD AND PURCHASED WITH THE AE DEVICE.

CP-3B
CP-3A
MCC-6C
PNL-L6C
T-L6C
[N05]
[P03]
[P17]
[P18]
[P15]
[N06]
[P16]
RAS BLDG
LOWER GALLERY
CP-3B-RIO-3
[S02]
[S02B]
[S02A]
[S04]
[S05]
560-3473
560-3474
FVC-3421
FCV-3422
[P14]
[F01]
[P02]
LOWER GALLERY
AERATION BASIN 3 AND 4
CP-3B-RIO-2
[S01]
[P01]
[P01B]
[S01B]
[P01A]
[S01A]
FIT-3274
FIT-3275
S01A1]
[S01B1]
FE-3274
FE-3275
[S06]
[P07]
[P07B]
[P07D]
[S06D]
[S06H]
[S06M]
[S06A]
[P07A]
[S06C]
[S06E]
[P07C]
[S06G]
[S06J]
[P07E]
[S06L]
[P07F]
[S06P]
[S06B]
[S06F]
[S06K]
[S06N]
FIT-3253E
FIT-3253D
FIT-3253C
FIT-3253B
[S06C1]
[S06G1]
[S06L1]
[S08P1]
560-3253E
560-3253D
560-3253C
560-3253B
FE-3253E
FE-3253D
FE-3253C
FE-3253B
[P05]
[N01]
[P06]
[N02]
ACP-3263
[N08]
[N09]
[N10]
[N11]
[N12]
TJB-3263E
TJB-3263D
TJB-3263C
TJB-3263B
[MSC]
[N12A]
[N12B]
AE-3263E
AE-3263D
AE-3263C
AE-3263B
LCP-3293A
LCP-3293B
[S07]
[P08]
[P08B]
[P08D]
[S07D]
[S07H]
[S07M]
[S07A]
[P08A]
[S07C]
[S07E]
[P08C]
[S07G]
[S07J]
[P08E]
[S07L]
[P08F]
[S07P]
[S07B]
[S07F]
[S07K]
[S07N]
FIT-3254E
FIT-3254D
FIT-3254C
FIT-3254B
[S07C1]
[S07G1]
[S07L1]
[S07P1]
560-3254E
560-3254D
560-3254C
560-3254B
FE-3254E
FE-3254D
FE-3254C
FE-3254B
ACP-3264
[N13]
[N14]
[N15]
[N16]
[N17]
TJB-3264E
TJB-3264D
TJB-3264C
TJB-3264B
[N17A]
[N17B]
AE-3264E
AE-3264D
AE-3264C
AE-3264B
LCP-3294A
LCP-3294B

REGISTERED PROFESSIONAL ENGINEER
STATE OF OREGON
104525PE
Digitally Signed
OREGON
MAY 31, 2025
JACOB HELLEN

EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
REVISION	J HELLEN	A CZAPLA	B BEADERSTADT				T DYE

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

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.

Jacobs

AERATION BASINS
ELECTRICAL
RISER DIAGRAM

100% DESIGN SUBMITTAL

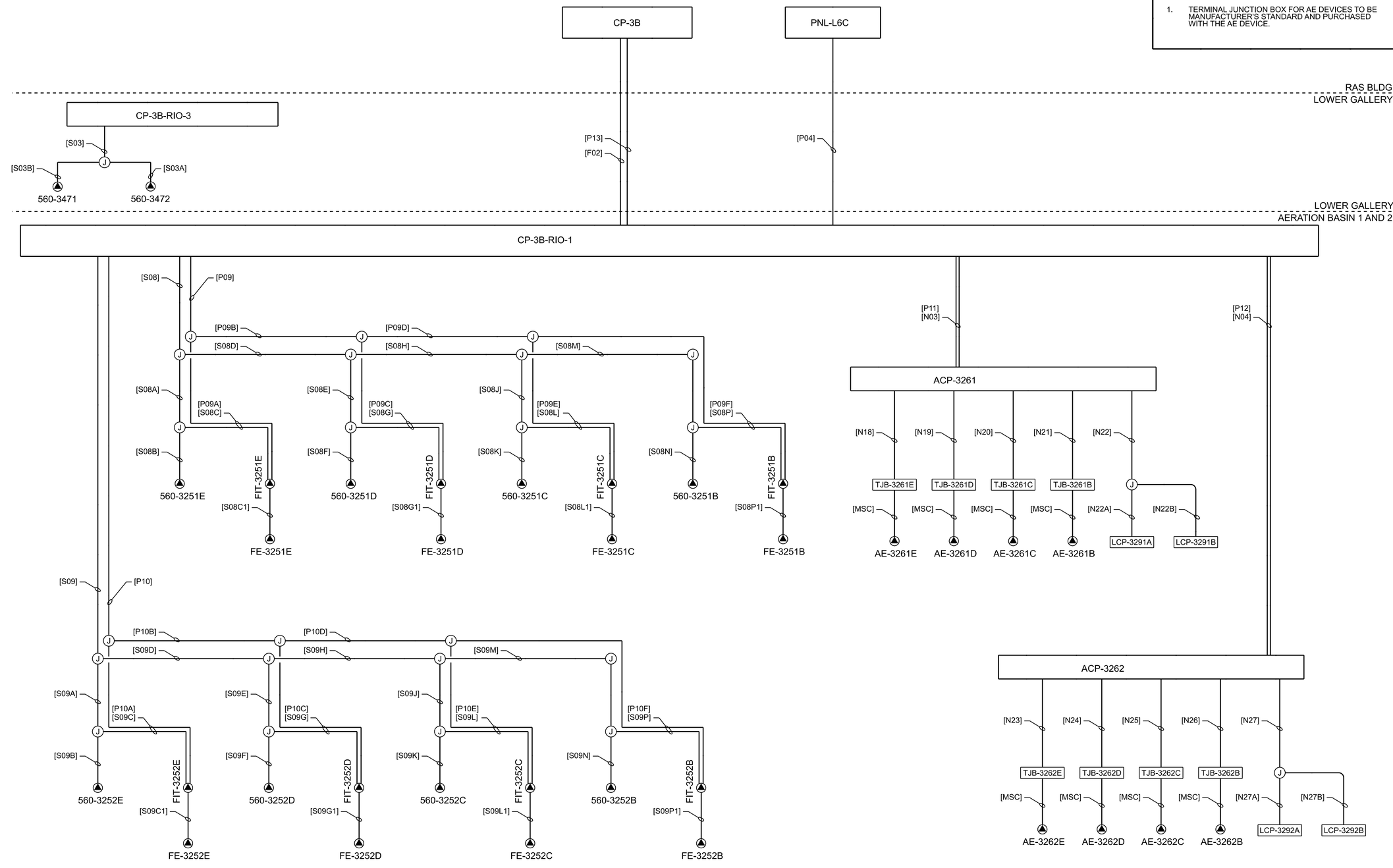
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-6001
SHEET	67

FILENAME: 320-E-6001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:00

SHEET KEYNOTES

1. TERMINAL JUNCTION BOX FOR AE DEVICES TO BE MANUFACTURER'S STANDARD AND PURCHASED WITH THE AE DEVICE.



REGISTERED PROFESSIONAL ENGINEER — JACOB HELLEN — 104925PE — OREGON — Digitally Signed — May 11, 2026

EXPIRES: 06/30/2027

© JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		J HELLEN	A CZAPLA	B BEADERSTADT	APVD	T DYE	

Water Environment Services

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL
RISER DIAGRAM

100% DESIGN SUBMITTAL

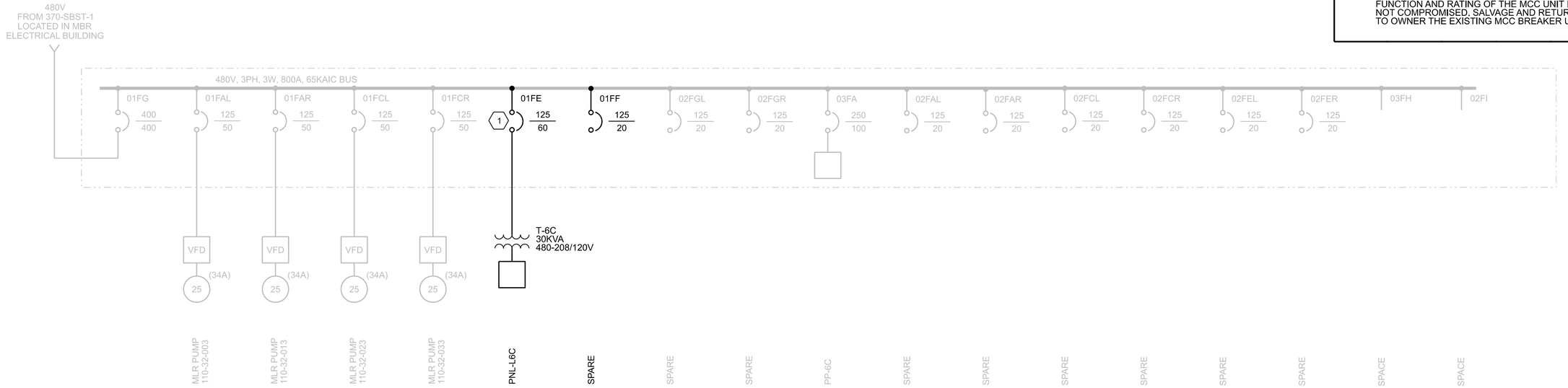
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-6002
SHEET	68

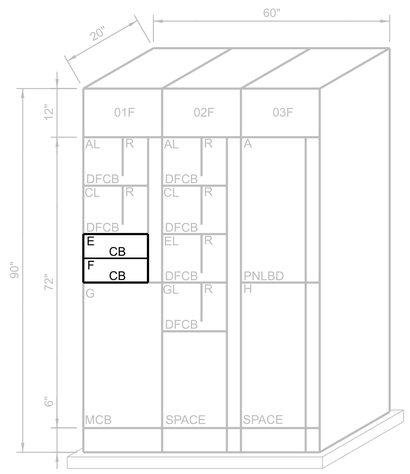
FILENAME: 320-E-6002_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:02

SHEET KEYNOTES

1. FURNISH AND INSTALL NEW MCC FEEDER BREAKER UNITS AS SHOWN. FIELD VERIFY EXISTING MCC NAMEPLATE RATINGS AND REPLACE WITH COMPATIBLE COMPONENTS SO THAT THE OVERALL FUNCTION AND RATING OF THE MCC UNIT IS NOT COMPROMISED. SALVAGE AND RETURN TO OWNER THE EXISTING MCC BREAKER UNIT.



MCC-6C SINGLE LINE



MCC-6C ELEVATION

NO.	DATE	REVISION	BY	APVD
DSGN	J HELLEN	DR A.CZAPLA CHK B.BEADERSTADT	APVD	T.DYE

REGISTERED PROFESSIONAL ENGINEER — JACOB HELLEN — 104839PE — OREGON — Digitally Signed — May 11, 2026

EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
ELECTRICAL
MCC-6C ONE-LINE AND ELEVATION

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-6003
SHEET	69

FILENAME: 320-E-6003_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:01

PANEL: L6				LOCATION: RAS PUMP STATION MOUNTING: INTEGRAL TO MCC 6E FED FROM: MCC 6E			
VOLTAGE: 120/208V, 1 PHASE, 3 WIRE							
SIZE: 100A							
CIRCUIT TITLE	BREAKER			BREAKER			CIRCUIT TITLE
	CKT NO.	AMP	POLE	POLE	AMP	CKT NO.	
UPPER LEVEL LTG	1	20	1	1	20	2	UPPER LEVEL RECEPT
LOWER LEVEL LTG	3	20	1	1	20	4	LOWER LEVEL RECEPT
GALLERY EXIT SIGN	5	20	1	1	20	6	SPARE
SECONDARY CLAR LTG & RECEPT	7	20	1	1	20	8	UH-630-3403, 3404
BUILDING EXTERIOR LTG	9	20	1	1	20	10	UH-630-3403, 3404
EMERG LTG	11	20	1	1	20	12	SPARE
COMMUNICATIONS SYSTEM	13	20	1	1	20	14	GALLERY LTG
FT 3421	15	20	1	1	20	16	GALLERY LTG
FT 3422	17	20	1	1	20	18	GALLERY LTG
AIT 3201, 3261	19	20	1	1	20	20	GALLERY RECEPT
AIT 3202, 3262	21	20	1	1	20	22	SPARE
AIT 3203, 3263	23	20	1	1	20	24	FIT 3491, 3492
AIT 3204, 3264	25	20	1	1	20	26	FIT 3493, 3494
SSM PIPE 340-3311 (CI 596)	27	20	1	1	20	28	SF620-3202 VIA MMP 650-3401
SSM PIPE 340-3312 (CI 596)	29	20	1	1	20	30	SF620-3202 VIA MMP 650-3402
SPARE	31	20	1	1	20	32	AERATION BASIN LTG
SPARE	33	20	1	1	20	34	AERATION BASIN LTG
WH -I, I KW	35	20	1	1	20	36	AERATION BASIN RECEPT
CONTROL PANEL CP-3	37	20	1	1	20	38	ROWY LTS
CONTROL PANEL CP-3	39	20	1	1	20	40	SPARE
MMP PANEL 650-3401	41	40	1	1	20	42	SPARE
TOTAL LOAD							
PHASE A LOAD (VA)=							
PHASE B LOAD (VA)=							
PHASE B LOAD (VA)=							
TOTAL LOAD (VA)=							

DEMOLITION PANEL SCHEDULE

PANEL: L6				LOCATION: RAS PUMP STATION MOUNTING: SURFACE FED FROM: MCC 6E			
VOLTAGE: 120/208V, 1 PHASE, 3 WIRE							
SIZE: 100A				NOTES: BOLD INDICATES NEW WORK, * = EFCI TYPE			
CIRCUIT TITLE	BREAKER			BREAKER			CIRCUIT TITLE
	CKT NO.	AMP	POLE	POLE	AMP	CKT NO.	
UPPER LEVEL LTG	1	20	1	1	20	2	UPPER LEVEL RECEPT
LOWER LEVEL LTG	3	20	1	1	20	4	LOWER LEVEL RECEPT
GALLERY EXIT SIGN	5	20	1	1	20	6	SPARE
SECONDARY CLAR LTG & RECEPT	7	20	1	1	20	8	UH-630-3403, 3404
BUILDING EXTERIOR LTG	9	20	1	1	20	10	UH-630-3403, 3404
EMERG LTG	11	20	1	1	20	12	SPARE
COMMUNICATIONS SYSTEM	13	20	1	1	20	14	GALLERY LTG
FT 3421	15	20	1	1	20	16	GALLERY LTG
FT 3422	17	20	1	1	20	18	GALLERY LTG
SPARE	19	20	1	1	20	20	GALLERY RECEPT
SPARE	21	20	1	1	20	22	SPARE
SPARE	23	20	1	1	20	24	FIT 3491, 3492
SPARE	25	20	1	1	20	26	FIT 3493, 3494
SSM PIPE 340-3311 (CI 596)	27	20	1	1	20	28	SF620-3202 VIA MMP 650-3401
SSM PIPE 340-3312 (CI 596)	29	20	1	1	20	30	SF620-3202 VIA MMP 650-3402
SPARE	31	20	1	1	20	32	AERATION BASIN LTG
SPARE	33	20	1	1	20	34	AERATION BASIN LTG
WH -I, I KW	35	20	1	1	20	36	AERATION BASIN RECEPT
CONTROL PANEL CP-3	37	20	1	1	20	38	ROWY LTS
CONTROL PANEL CP-3	39	20	1	1	20	40	SPARE
MMP PANEL 650-3401	41	40	1	1	20	42	SPARE
TOTAL LOAD							
PHASE A LOAD (VA)=							
PHASE B LOAD (VA)=							
PHASE B LOAD (VA)=							
TOTAL LOAD (VA)=							

PANEL SCHEDULE

PANEL: PNL-L6C				LOCATION: RAS PUMP STATION MOUNTING: SURFACE FED FROM: MCC 6C			
VOLTAGE: 120/208V, 3 PHASE, 4 WIRE							
SIZE: 100A							
CIRCUIT TITLE	BREAKER			BREAKER			CIRCUIT TITLE
	CKT NO.	AMP	POLE	POLE	AMP	CKT NO.	
CP-3B	1	30	1	1	20	2	CP-3B-RIO-1 SEC. SOURCE
CP-3B-RIO-3 SEC. SOURCE	3	20	1	1	20	4	CP-3B-RIO-2 SEC. SOURCE
SPARE	5	20	1	1	20	6	SPARE
SPARE	7	20	1	1	20	8	SPARE
SPARE	9	20	1	1	20	10	SPARE
SPARE	11	20	1	1	20	12	SPARE
SPARE	13	20	1	1	20	14	SPARE
SPARE	15	20	1	1	20	16	SPARE
SPARE	17	20	1	1	20	18	SPARE
SPARE	19	20	1	1	20	20	SPARE
SPACE	21					22	SPACE
SPACE	23					24	SPACE
SPACE	25					26	SPACE
SPACE	27					28	SPACE
SPACE	29					30	SPACE
SPACE	31					32	SPACE
SPACE	33					34	SPACE
SPACE	35					36	SPACE
SPACE	37					38	SPACE
SPACE	39					40	SPACE
SPACE	41					42	SPACE
TOTAL LOAD							
PHASE A LOAD (VA)=							
PHASE B LOAD (VA)=							
PHASE B LOAD (VA)=							
TOTAL LOAD (VA)=							

PANEL SCHEDULE

REGISTERED PROFESSIONAL ENGINEER — JACOB HELLEN — 104625PE — OREGON — Digitally Signed — 06/30/2027

EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		J HELLEN	A CZAPLA	B BEADERSTADT	APVD	T DYE	

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.

REUSE OF DOCUMENTS:

100% DESIGN SUBMITTAL

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL
PANEL SCHEDULES

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-6010
SHEET	70

FILENAME: 320-E-6010_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:00

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
P01	CP-3B	JUNCTION BOX	P01A &P01B	3/4"	COMBINED ROUTING
P01A	JUNCTION BOX	FIT-3274	2#12, 1#12G	3/4"	
P01B	JUNCTION BOX	FIT-3275	2#12, 1#12G	3/4"	
P02	PNL-L6C	CP-3B-RIO-2	2#10, 1#10G	3/4"	SECONDARY POWER
P03	PNL-L6C	CB-3B	2#12, 1#12G	3/4"	
P04	PNL-L6C	CP-3B-RIO-1	2#12, 1#12G	3/4"	SECONDARY POWER
P05	CP-3B-RIO-2	ACP-3263	4#12, 1#12G	3/4"	PRI & SEC POWER
P06	CP-3B-RIO-2	ACP-3264	4#12, 1#12G	3/4"	PRI & SEC POWER
P07	CP-3B-RIO-2	JUNCTION BOX	P07A &P07B	3/4"	COMBINED ROUTING
P07A	JUNCTION BOX	FIT-3253E	2#12, 1#12G	3/4"	
P07B	JUNCTION BOX	JUNCTION BOX	P07C &P07D	3/4"	COMBINED ROUTING
P07C	JUNCTION BOX	FIT-3253D	2#12, 1#12G	3/4"	
P07D	JUNCTION BOX	JUNCTION BOX	P07E &P07F	3/4"	COMBINED ROUTING
P07E	JUNCTION BOX	FIT-3253C	2#12, 1#12G	3/4"	
P07F	JUNCTION BOX	FIT-3253B	2#12, 1#12G	3/4"	
P08	CP-3B-RIO-2	JUNCTION BOX	P08A &P08B	3/4"	COMBINED ROUTING
P08A	JUNCTION BOX	FIT-3254E	2#12, 1#12G	3/4"	
P08B	JUNCTION BOX	JUNCTION BOX	P08C &P08D	3/4"	COMBINED ROUTING
P08C	JUNCTION BOX	FIT-3254D	2#12, 1#12G	3/4"	
P08D	JUNCTION BOX	JUNCTION BOX	P08E &P08F	3/4"	COMBINED ROUTING
P08E	JUNCTION BOX	FIT-3254C	2#12, 1#12G	3/4"	
P08F	JUNCTION BOX	FIT-3254B	2#12, 1#12G	3/4"	
P09	CP-3B-RIO-1	JUNCTION BOX	P09A &P09B	3/4"	COMBINED ROUTING
P09A	JUNCTION BOX	FIT-3251E	2#12, 1#12G	3/4"	
P09B	JUNCTION BOX	JUNCTION BOX	P09C &P09D	3/4"	COMBINED ROUTING
P09C	JUNCTION BOX	FIT-3251D	2#12, 1#12G	3/4"	
P09D	JUNCTION BOX	JUNCTION BOX	P09E &P09F	3/4"	COMBINED ROUTING
P09E	JUNCTION BOX	FIT-3251C	2#12, 1#12G	3/4"	
P09F	JUNCTION BOX	FIT-3251B	2#12, 1#12G	3/4"	
P10	CP-3B-RIO-1	JUNCTION BOX	P10A &P10B	3/4"	COMBINED ROUTING
P10A	JUNCTION BOX	FIT-3252E	2#12, 1#12G	3/4"	
P10B	JUNCTION BOX	JUNCTION BOX	2#12, 1#12G	3/4"	COMBINED ROUTING
P10C	JUNCTION BOX	FIT-3252D	P10C &P10D	3/4"	
P10D	JUNCTION BOX	JUNCTION BOX	P10E &P10F	3/4"	COMBINED ROUTING
P10E	JUNCTION BOX	FIT-3252C	2#12, 1#12G	3/4"	
P10F	JUNCTION BOX	FIT-3252B	2#12, 1#12G	3/4"	
P11	CP-3B-RIO-1	ACP-3261	4#12, 1#12G	3/4"	PRI & SEC POWER
P12	CP-3B-RIO-1	ACP-3262	4#12, 1#12G	3/4"	PRI & SEC POWER
P13	CP-3B	CP-3B-RIO-1	2#12, 1#12G	3/4"	PRIMARY POWER(UPS)
P14	CP-3B	CP-3B-RIO-2	2#12, 1#12G	3/4"	PRIMARY POWER(UPS)
P15	CP-3B	CP-3B-RIO-3	2#12, 1#12G	3/4"	PRIMARY POWER(UPS)
P16	PNL-L6C	CP-3B-RIO-3	2#12, 1#12G	3/4"	SECONDARY POWER
P17	MCC-6C	T-6C	3#4, 1#8G	1"	
P18	T-6C	PNL-L6C	4#1, 1#6G	1-1/2"	

CIRCUIT NUMBE	FROM	TO	CONDUCTORS	RACEWAY	NOTES
C02	CP-3B-RIO-3	JUNCTION BOX	C02A & C02B	3/4"C	COMBINED ROUTING
C02A	JUNCTION BOX	560-3474	2#14, 1#14G	3/4"C	
C02B	JUNCTION BOX	560-3473	2#14, 1#14G	3/4"C	
C03	CP-3B-RIO-3	JUNCTION BOX	C03A & C03B	3/4"C	COMBINED ROUTING
C03A	JUNCTION BOX	560-3472	2#14, 1#14G	3/4"C	
C03B	JUNCTION BOX	560-3471	2#14, 1#14G	3/4"C	
C04	CP-3B	FCV-3421	2#14, 1#14G	3/4"C	
C05	CP-3B	FCV-3422	2#14, 1#14G	3/4"C	
F01	CP-3B	CP-3B-RIO-2	12-STRAND OM4 CABLE	2"	
F02	CP-3B	CP-3B-RIO-1	12-STRAND OM4 CABLE	2"	
N01	CP-3B-RIO-2	ACP-3263	1 TYPE31	3/4"C	
N02	CP-3B-RIO-2	ACP-3264	1 TYPE31	3/4"C	
N03	CP-3B-RIO-1	ACP-3262	1 TYPE31	3/4"C	
N04	CP-3B-RIO-1	ACP-3261	1 TYPE31	3/4"C	
N05	CP-3B	CP-3A	1 TYPE31	3/4"C	
N06	CP-3B	CP-3B-RIO-3	1 TYPE31	3/4"C	
N07	-	-	-	-	NOTUSED
N08	ACP-3263	TJB-3263E	1 TYPE31	3/4"C	
N09	ACP-3263	TJB-3263D	1 TYPE31	3/4"C	
N10	ACP-3263	TJB-3263C	1 TYPE31	3/4"C	
N11	ACP-3263	TJB-3263B	1 TYPE31	3/4"C	
N12	ACP-3263	JUNCTION BOX	N12A & N12B	3/4"C	
N12A	JUNCTION BOX	LCP-3293A	1 TYPE31	3/4"C	
N12B	JUNCTION BOX	LCP-3293B	1 TYPE31	3/4"C	
N13	ACP-3264	TJB-3264E	1 TYPE31	3/4"C	
N14	ACP-3264	TJB-3264D	1 TYPE31	3/4"C	
N15	ACP-3264	TJB-3264C	1 TYPE31	3/4"C	
N16	ACP-3264	TJB-3264B	1 TYPE31	3/4"C	
N17	ACP-3264	JUNCTION BOX	N17A & N17B	3/4"C	
N17A	JUNCTION BOX	LCP-3294A	1 TYPE31	3/4"C	
N17B	JUNCTION BOX	LCP-3294B	1 TYPE31	3/4"C	
N18	ACP-3261	TJB--3261E	1 TYPE31	3/4"C	
N19	ACP-3261	TJB-3261D	1 TYPE31	3/4"C	
N20	ACP-3261	TJB-3261C	1 TYPE31	3/4"C	
N21	ACP-3261	TJB--3261B	1 TYPE31	3/4"C	
N22	ACP-3261	JUNCTION BOX	N22A & N22B	3/4"C	
N22A	JUNCTION BOX	LCP-3291A	1 TYPE31	3/4"C	
N22B	JUNCTION BOX	LCP-3291B	1 TYPE31	3/4"C	
N23	ACP-3262	TJB-3262E	1 TYPE31	3/4"C	
N24	ACP-3262	TJB-3262D	1 TYPE31	3/4"C	
N25	ACP-3262	TJB-3262C	1 TYPE31	3/4"C	
N26	ACP-3262	TJB-3262B	1 TYPE31	3/4"C	
N27	ACP-3262	JUNCTION BOX	N27A & N27B	3/4"C	
N27A	JUNCTION BOX	LCP-3292A	1 TYPE31	3/4"C	
N27B	JUNCTION BOX	LCP-3292B	1 TYPE31	3/4"C	
S01	CP-3B	JUNCTION BOX	C01A &C01B	3/4"C	COMBINED ROUTING
S01A	JUNCTION BOX	FIT-3274	1 TYPE3	3/4"C	
S01A1	FIT-3274	FE-3274	MSC	3/4"C	

CIRCUIT NUMBE	FROM	TO	CONDUCTORS	RACEWAY	NOTES
S01B	JUNCTION BOX	FIT-3275	1 TYPE3	3/4"C	
S01B1	FIT-3275	FE-3275	MSC	3/4"C	
S02	CP-3B-RIO-3	JUNCTION BOX	S02A & S02B	1"C	COMBINED ROUTING
S02A	JUNCTION BOX	560-3474	2 TYPE3	3/4"C	
S02B	JUNCTION BOX	560-3473	2 TYPE3	3/4"C	
S03	CP-3B-RIO-3	JUNCTION BOX	S03A & S03B	1"C	COMBINED ROUTING
S03A	JUNCTION BOX	560-3472	2 TYPE3	3/4"C	
S03B	JUNCTION BOX	560-3471	2 TYPE3	3/4"C	
S04	CP-3B	FCV-3421	2 TYPE3	3/4"C	
S05	CP-3B	FCV-3422	2 TYPE3	3/4"C	
S06	CP-3B-RIO-1	JUNCTION BOX	S06A & S06D	1-1/2" C	COMBINED ROUTING
S06A	JUNCTION BOX	JUNCTION BOX	S06B & S06C	3/4" C	COMBINED ROUTING
S06B	JUNCTION BOX	560-3253E	2 TYPE3	3/4" C	
S06C	JUNCTION BOX	FIT-3253E	1 TYPE3	3/4" C	
S06C1	FIT-3253E	FE-3253E	MSC	3/4" C	
S06D	JUNCTION BOX	JUNCTION BOX	S06E & S06H	1-1/2" C	COMBINED ROUTING
S06E	JUNCTION BOX	JUNCTION BOX	S06F & S06G	3/4" C	COMBINED ROUTING
S06F	JUNCTION BOX	560-3253D	2 TYPE3	3/4" C	
S06G	JUNCTION BOX	FIT-3253D	1 TYPE3	3/4" C	
S06G1	FIT-3253D	FE-3253D	MSC	3/4" C	
S06H	JUNCTION BOX	JUNCTION BOX	S06J& S06M	1" C	COMBINED ROUTING
S06J	JUNCTION BOX	JUNCTION BOX	S06K& S06L	3/4" C	COMBINED ROUTING
S06K	JUNCTION BOX	560-3253C	2 TYPE3	3/4" C	
S06L	JUNCTION BOX	FIT-3253C	1 TYPE3	3/4" C	
S06L1	FIT-3253C	FE-3253C	MSC	3/4" C	
S06M	JUNCTION BOX	JUNCTION BOX	S06N & S06P	3/4" C	COMBINED ROUTING
S06N	JUNCTION BOX	560-3253B	2 TYPE3	3/4" C	
S06P	JUNCTION BOX	FIT-3253B	1 TYPE3	3/4" C	
S06P1	FIT-3253B	FE-3253B	MSC	3/4" C	
S07	CP-3B-RIO-1	JUNCTION BOX	S07A & S07D	1-1/2" C	COMBINED ROUTING
S07A	JUNCTION BOX	JUNCTION BOX	S07B & S07C	3/4" C	COMBINED ROUTING
S07B	JUNCTION BOX	560-3254E	2 TYPE3	3/4" C	
S07C	JUNCTION BOX	FIT-3254E	1 TYPE3	3/4" C	
S07C1	FIT-3254E	FE-3254E	MSC	3/4" C	
S07D	JUNCTION BOX	JUNCTION BOX	S07E & S07H	1-1/2" C	COMBINED ROUTING
S07E	JUNCTION BOX	JUNCTION BOX	S07F & S07G	3/4" C	COMBINED ROUTING
S07F	JUNCTION BOX	560-3254D	2 TYPE3	3/4" C	
S07G	JUNCTION BOX	FIT-3254D	1 TYPE3	3/4" C	
S07G1	FIT-3254D	FE-3254D	MSC	3/4" C	
S07H	JUNCTION BOX	JUNCTION BOX	S07J& S07M	1" C	COMBINED ROUTING
S07J	JUNCTION BOX	JUNCTION BOX	S07K& S07L	3/4" C	COMBINED ROUTING
S07K	JUNCTION BOX	560-3254C	2 TYPE3	3/4" C	
S07L	JUNCTION BOX	FIT-3254C	1 TYPE3	3/4" C	
S07L1	FIT-3254C	FE-3254C	MSC	3/4" C	
S07M	JUNCTION BOX	JUNCTION BOX	S07N & S07P	3/4" C	COMBINED ROUTING
S07N	JUNCTION BOX	560-3254B	2 TYPE3	3/4" C	
S07P	JUNCTION BOX	FIT-3254B	1 TYPE3	3/4" C	
S07P1	FIT-3254B	FE-3254B	MSC	3/4" C	
S08	CP-3B-RIO-1	JUNCTION BOX	S08A & S08D	1-1/2" C	COMBINED ROUTING
S08A	JUNCTION BOX	JUNCTION BOX	S08B & S08C	3/4" C	COMBINED ROUTING

CONDUIT SCHEDULES

REGISTERED PROFESSIONAL ENGINEER
104025PE
Digitally Signed
OREGON
JACOB HELLEN
EXPIRES: 06/30/2027

NO.	DATE	REVISION	DR	CHK	APVD	BY
DSGN	J HELLEN	A CZAPLA		B BEADERSTADT	APVD	T DYE

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

100% DESIGN SUBMITTAL

Jacobs

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

AERATION BASINS
ELECTRICAL
CONDUIT SCHEDULES

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-6020
SHEET	71

FILENAME: 320-E-6020_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:01

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
S08B	JUNCTION BOX	560-3251E	2 TYPE 3	3/4" C	
S08C	JUNCTION BOX	FIT-3251E	1 TYPE 3	3/4" C	
S08C1	FIT-3251E	FE-3251E	MSC	3/4" C	
S08D	JUNCTION BOX	JUNCTION BOX	S08E & S08H	1-1/2" C	COMBINED ROUTING
S08E	JUNCTION BOX	JUNCTION BOX	S08F & S08G	3/4" C	COMBINED ROUTING
S08F	JUNCTION BOX	560-3251D	2 TYPE 3	3/4" C	
S08G	JUNCTION BOX	FIT-3251D	1 TYPE 3	3/4" C	
S08G1	FIT-3251D	FE-3251D	MSC	3/4" C	
S08H	JUNCTION BOX	JUNCTION BOX	S08J & S08M	1" C	COMBINED ROUTING
S08J	JUNCTION BOX	JUNCTION BOX	S08K & S08L	3/4" C	COMBINED ROUTING
S08K	JUNCTION BOX	560-3251C	2 TYPE 3	3/4" C	
S08L	JUNCTION BOX	FIT-3251C	1 TYPE 3	3/4" C	
S08L1	FIT-3251C	FE-3251C	MSC	3/4" C	
S08M	JUNCTION BOX	JUNCTION BOX	S08N & S08P	3/4" C	COMBINED ROUTING
S08N	JUNCTION BOX	560-3251B	2 TYPE 3	3/4" C	
S08P	JUNCTION BOX	FIT-3251B	1 TYPE 3	3/4" C	
S08P1	FIT-3251B	FE-3251B	MSC	3/4" C	
S09	CP-3B-RIO-1	JUNCTION BOX	S09A & S09D	1-1/2" C	COMBINED ROUTING
S09A	JUNCTION BOX	JUNCTION BOX	S09B & S09C	3/4" C	COMBINED ROUTING
S09B	JUNCTION BOX	560-3252E	2 TYPE 3	3/4" C	
S09C	JUNCTION BOX	FIT-3252E	1 TYPE 3	3/4" C	
S09C1	FIT-3252E	FE-3252E	MSC	3/4" C	
S09D	JUNCTION BOX	JUNCTION BOX	S09E & S09H	1-1/2" C	COMBINED ROUTING
S09E	JUNCTION BOX	JUNCTION BOX	S09F & S09G	3/4" C	COMBINED ROUTING
S09F	JUNCTION BOX	560-3252D	2 TYPE 3	3/4" C	
S09G	JUNCTION BOX	FIT-3252D	1 TYPE 3	3/4" C	
S09G1	FIT-3252D	FE-3252D	MSC	3/4" C	
S09H	JUNCTION BOX	JUNCTION BOX	S09J & S09M	1" C	COMBINED ROUTING
S09J	JUNCTION BOX	JUNCTION BOX	S09K & S09L	3/4" C	COMBINED ROUTING
S09K	JUNCTION BOX	560-3252C	2 TYPE 3	3/4" C	
S09L	JUNCTION BOX	FIT-3252C	1 TYPE 3	3/4" C	
S09L1	FIT-3252C	FE-3252C	MSC	3/4" C	
S09M	JUNCTION BOX	JUNCTION BOX	S09N & S09P	3/4" C	COMBINED ROUTING
S09N	JUNCTION BOX	560-3252B	2 TYPE 3	3/4" C	
S09P	JUNCTION BOX	FIT-3252B	1 TYPE 3	3/4" C	
S09P1	FIT-3252B	FE-3252B	MSC	3/4" C	

CONDUIT SCHEDULES

REGISTERED PROFESSIONAL ENGINEER
Digitally Signed
JACOB HELLEN
104329PE
OREGON
EXPIRES: 06/30/2027

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		J HELLEN	A.CZAPLA	B BEADERSTADT	APVD	T DYE	

Water Environment Services

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

AERATION BASINS
ELECTRICAL
CONDUIT SCHEDULES

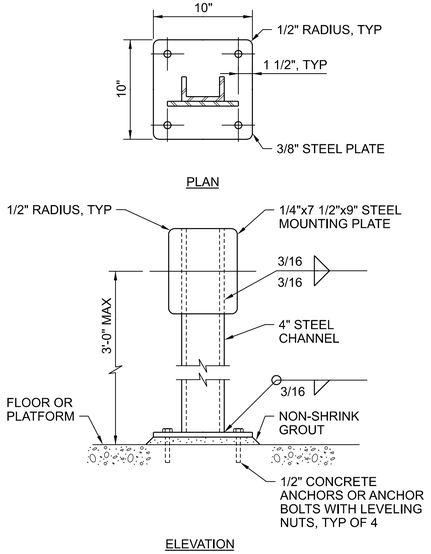
REUSE OF DOCUMENTS: THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF JACOBS AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF JACOBS.

100% DESIGN SUBMITTAL

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	320-E-6021
SHEET	72

FILENAME: 320-E-6021_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 15:03

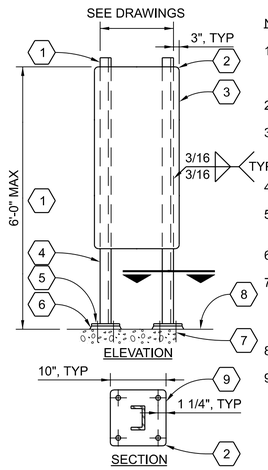


NOTES:
1. HOT-DIP GALVANIZE ASSEMBLY AFTER FABRICATION.
2. USE GALVANIZED MOUNTING HARDWARE. USE WASHERS AND SPLIT-LOCK WASHERS UNDER ALL NUTS AND BOLTS.

DEVICE MOUNTING, CONTROL STATION PEDESTAL

NTS

2605-005A

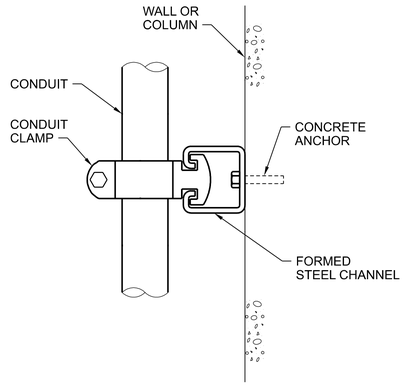


NOTES:
1. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.
2. 1/2" RADIUS, TYP.
3. 1/4" ALUMINUM MOUNTING PLATE, ROUND EDGES; SIZE PER EQUIPMENT REQUIREMENTS.
4. C 6 X 3.00 ALUMINUM CHANNEL
5. HDPE SPACER MINIMUM THICKNESS 1/16", BETWEEN ALUMINUM AND CONCRETE.
6. NON-SHRINK GROUT.
7. 1/2" STAINLESS STEEL CONCRETE ANCHORS WITH LEVELING NUTS, DRILL AND EPOXY 4 1/2" MIN (TYP OF 4 EACH BASE). ALL HARDWARE SHALL BE SST.
8. FLOOR OR PLATFORM.
9. 1/2" ALUMINUM PLATE.

ELECTRICAL EQUIPMENT SUPPORT

NTS

2605-008B

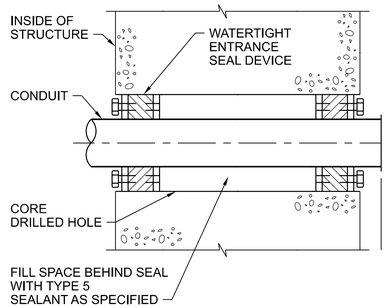


NOTES:
1. SUPPORT ALL EXPOSED CONDUITS ON FORMED STEEL CHANNELS.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

CONDUIT SUPPORT ON STRUCTURE

NTS

2605-017



NOTES:
1. USE WATERTIGHT CONDUIT SEAL WHERE CONDUIT PENETRATIONS OF EXISTING BUILDING EXTERIOR WALLS ARE BELOW GRADE.

WATERTIGHT WALL CONDUIT SEAL

NTS

2605-308B

REGISTERED PROFESSIONAL ENGINEER — JACOB HELLEN — 104835PE — OREGON — Digitally Signed — APRIL 2026
EXPIRES: 06/30/2027

NO.	DATE	REVISION	CHK	BY	APVD
DSGN	J HELLEN	A CZAPLA	B BEADERSTADT	T DYE	
DR			APVD		

©JACOBS 2026. ALL RIGHTS RESERVED.
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.
REUSE OF DOCUMENTS:

100% DESIGN SUBMITTAL

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

STANDARD DETAILS

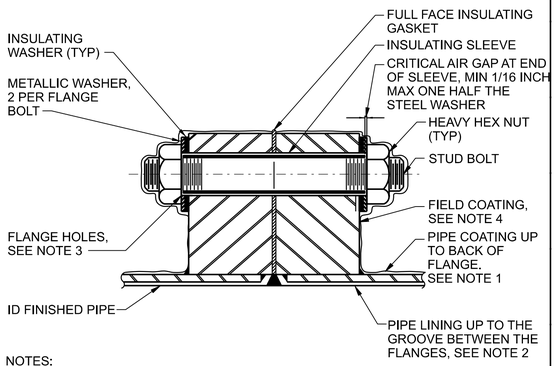
ELECTRICAL

Jacobs

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

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	900-E-5001
SHEET	73

FILENAME: 900-E-5001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:51



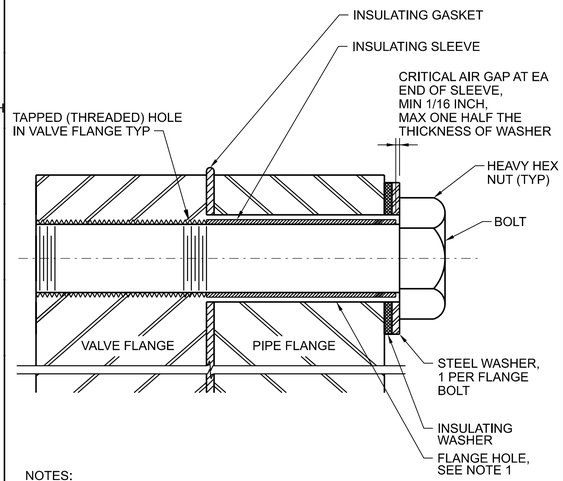
NOTES:

1. THE PIPE COATING ON EACH SIDE OF THE INSULATED FLANGE SHALL BE THE SAME IN TYPE, THICKNESS, AND QUALITY UP TO THE BACK SIDE OF THE RESPECTIVE FLANGE.
2. THE LINING ON THE PIPE SHALL BE THE SAME IN TYPE, THICKNESS, AND QUALITY UP TO THE INSULATED FLANGE JOINT.
3. OVERSIZE FLANGE HOLES BY UP TO 1/8 INCH IF NECESSARY TO ACCOMODATE INSULATING SLEEVES.
4. COAT JOINTS AS SPECIFIED AFTER INSTALLATION.
5. SEE (2642-932) FOR INSULATED BOLTS AT TAPPED VALVE FLANGES.

INSULATED FLANGES

NTS

2642-930



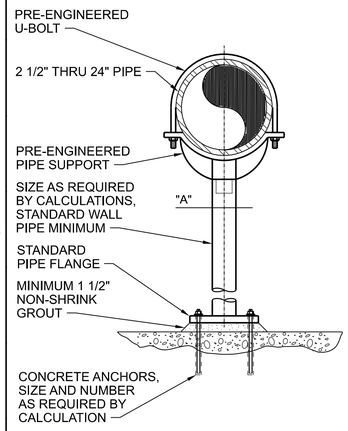
NOTES:

1. OVERSIZE FLANGE HOLE BY UP TO 1/8 INCH IF NECESSARY TO ACCOMODATE INSULATING SLEEVES.

INSULATED BOLTS AT TAPPED CONNECTIONS

NTS

2642-932



DIMENSION TABLE

PIPE SIZE	"A" MINIMUM NOMINAL PIPE SIZE
2-1/2"	2-1/2"
3"	2-1/2"
4"	3"
6"	3"
8"	3"
10"	3"
12"	3"
14"	3"
16"	3"
20"	4"
24"	4"

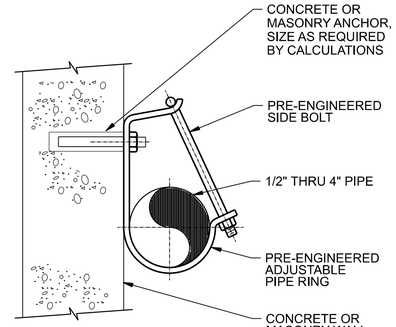
NOTES:

1. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT SADDLE SUPPORT PEDESTAL TYPE - NON-ADJUSTABLE

NTS

4005-501



NOTES:

1. PROVIDE PIPE PROTECTION BARRIER AS SPECIFIED.
2. SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

PIPE SUPPORT - WALL MOUNTED

NTS

4005-507

REGISTERED PROFESSIONAL ENGINEER — ERIK JON THOMPSON — 65709PE — OREGON — JUNE 11, 2004 — Digital Signature — EXP. 06/30/28 — DIGITALLY SIGNED 09/17/2026

©JACOBS 2026. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		E THOMPSON	J SETNIK	B YOUKER	APVD	T DYE	

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.

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.

100% DESIGN SUBMITTAL

WATER ENVIRONMENT SERVICES

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

Jacobs

STANDARD DETAILS

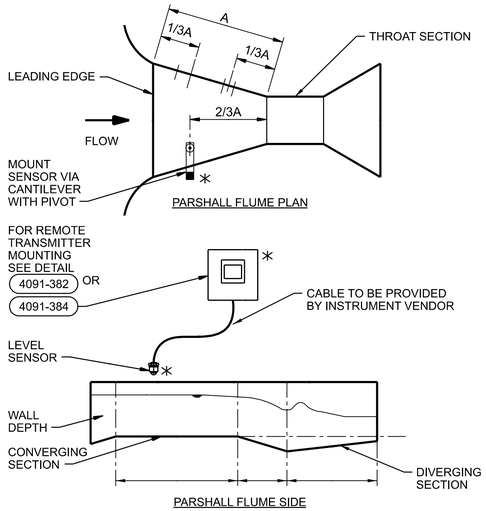
PROCESS MECHANICAL

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	900-D-5001
SHEET	74

FILENAME: 900-D-5001_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:51



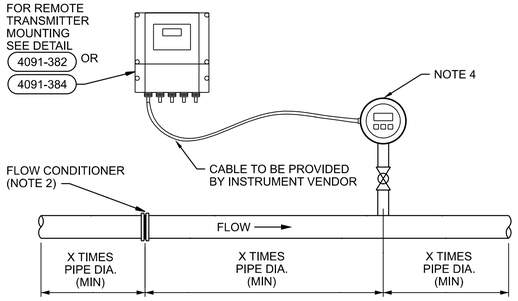
NOTES:

1. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY THE INSTRUMENT MANUFACTURER.
2. MOUNT THE LEVEL SENSOR IN THE CONVERGING SECTION OF THE FLUME 1/3RD FROM THE LEADING EDGE 2/3RD FROM THE THROAT SECTION USING SPECIFIED INSTRUMENT MANUFACTURER BRACKET. SECURE TO SLAB WITH 1/2" CONCRETE ANCHORS.

FLUME FLOW ELEMENT INSTALLATION

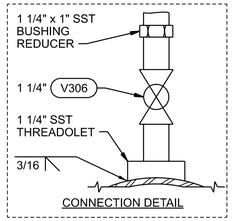
NTS

4091-203



NOTES:

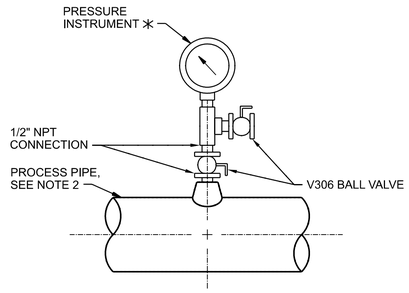
1. X = MANUFACTURER RECOMMENDED DISTANCE.
2. WHEN PROCESS PIPING DOES NOT HAVE THE REQUIRED LENGTH.
   A. SPLIT THE PIPE DIAMETER UP, .75% UPSTREAM 25% DOWNSTREAM OF THE METER.
   B. USE FLOW CONDITIONER TO INCREASE METER ACCURACY.
3. PROVIDE POWER AND SIGNAL CABLES WITH SUFFICIENT SLACK TO ALLOW FULL REMOVAL OF THE INSERTION FLOW SENSOR FROM THE PROCESS CONNECTION WITHOUT DISCONNECTING OR DE-TERMINATING ANY SENSOR WIRING. PROVIDE INDEPENDENT CABLE SUPPORTS SO THAT THE CABLE WEIGHT OR FLEXIBLE CONDUIT IS NOT SUPPORTED BY THE METER BODY OR PROBE ASSEMBLY. FLEXIBLE CONDUIT AND CABLING SHALL NOT IMPOSE ANY BENDING OR PULLING LOADS ON THE INSTRUMENT.



THERMAL MASS FLOW TRANSMITTER INSTALLATION

NTS

4091-217



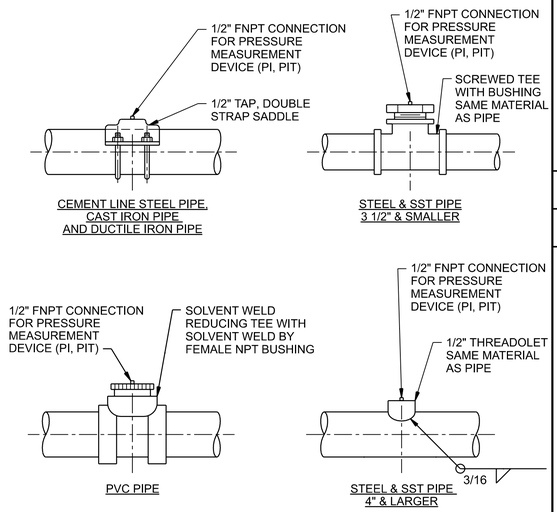
NOTES:

1. LOCATE PROCESS TAP ON TOP OF PIPE FOR AIR/GAS SERVICE. LOCATE PROCESS TAP ON SIDE OF PIPE FOR LIQUIDS SERVICE.
2. FOR PROCESS PIPE MOUNTING, SEE DETAIL 4091-305.
3. SUPPORT INSTRUMENT AS NECESSARY, IF FLOOR STAND, SEE DETAIL 4091-382, IF WALL MOUNT, SEE DETAIL 4091-384.
4. COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

PRESSURE INSTRUMENT - DIRECT MOUNTING

NTS

4091-301



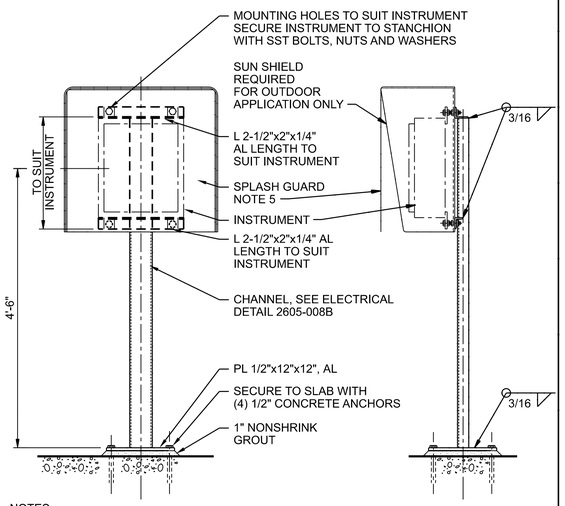
NOTES:

1. REFER TO PIPING SCHEDULE FOR SPECIFIC PIPING MATERIALS.

PRESSURE CONNECTION INSTALLATION

NTS

4091-305



NOTES:

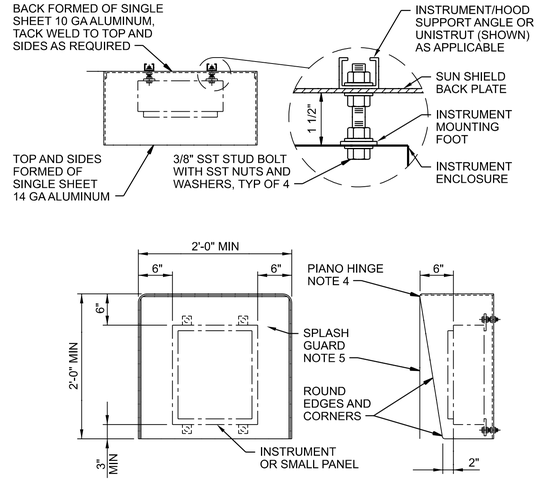
1. ROUND OFF ALL EXPOSED EDGES AND CORNERS.
2. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS 09 90 00 FOR PAINTING.
3. REFER TO DRAWING 001-G-0071 AREA CLASSIFICATION TABLES FOR ANCHOR MATERIAL REQUIREMENTS.
4. 2" 304 SST HEAVY DUTY PIANO HINGE, LENGTH TO MATCH WIDTH OF WEATHERHOOD.
5. 0.25" NYRACORD RUBBER SPLASH GUARD, SIZE TO MATCH HEIGHT AND WIDTH OF WEATHERHOOD.

CASE MOUNTED INSTRUMENT - STANCHION

NTS

DETAIL 1 OF 2

4091-382



NOTES:

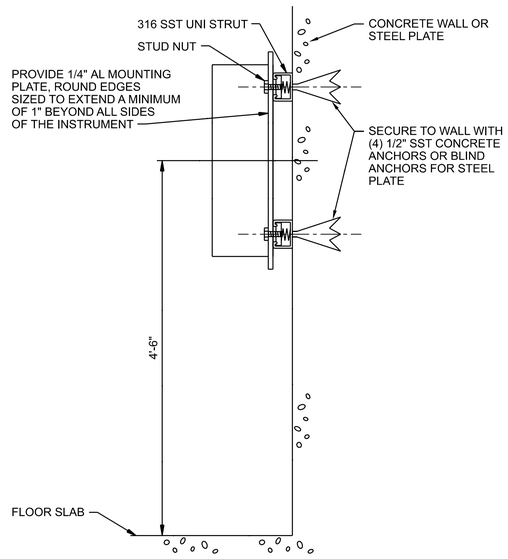
1. ROUND OFF ALL EXPOSED EDGES AND CORNERS.
2. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS 09 90 00 FOR PAINTING.
3. REFER TO DRAWING 001-G-0071 AREA CLASSIFICATION TABLES FOR ANCHOR MATERIAL REQUIREMENTS.
4. 2" 304 SST HEAVY DUTY PIANO HINGE, LENGTH TO MATCH WIDTH OF WEATHERHOOD.
5. 0.25" NYRACORD RUBBER SPLASH GUARD, SIZE TO MATCH HEIGHT AND WIDTH OF WEATHERHOOD.

CASE MOUNTED INSTRUMENT - STANCHION

NTS

DETAIL 2 OF 2

4091-382



NOTES:

1. ALL INSTRUMENTS AND PANELS LOCATED OUTDOORS SHALL HAVE A SUN SHIELD, SEE 4091-382.

CASE MOUNTED INSTRUMENTS - WALL

NTS

4091-384

REGISTERED PROFESSIONAL ENGINEER — OREGON — 66593PE — JANUARY 14, 1980 — DONALD PAUL MATSON — Digitally Signed

EXPIRES: 06/30/2028

© JACOBS 2025. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION
		S SUNDAHL	J BOSS	S BAKKEN	T DYE		

Water Environment Services

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

STANDARD DETAILS

INSTRUMENTATION AND CONTROL

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.

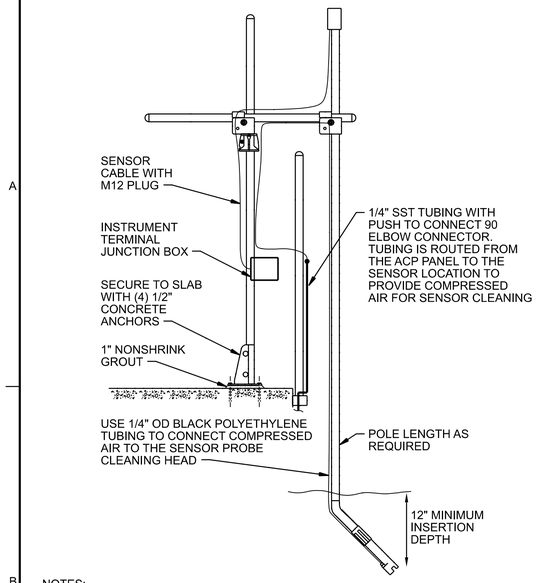
100% DESIGN SUBMITTAL

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	900-N-5001
SHEET	75

FILENAME: 900-N-5001_D3900000.dgn PLOT DATE: 10-SEP-2026 PLOT TIME: 19:42



NOTES:

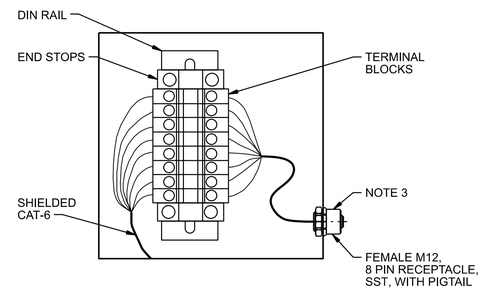
1. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS 09 90 00 FOR PAINTING.
2. REFER TO DRAWING 001-G-0071 AREA CLASSIFICATION TABLES FOR ANCHOR MATERIAL REQUIREMENTS.

DISSOLVED OXYGEN - IMMERSION INSTALLATION

NTS

DETAIL 1 OF 3

4091-159



INSTRUMENT TERMINAL JUNCTION BOX

NOTES:

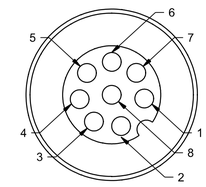
1. 8" x 8" TERMINAL JUNCTION BOX TO BE NEMA 4X, 304 SST.
2. LABEL TERMINAL BLOCKS 1 - 8 TO MATCH THE PINOUT OF THE RECEPTACLE.
3. USE A FRONT MOUNTED WASHDOWN RATED M12 RECEPTACLE, SUCH AS A TURCK WD-FKV 8-*/18.25
4. MAXIMUM CABLE LENGTH INCLUDING SENSOR CABLE IS 300FT.

DISSOLVED OXYGEN - IMMERSION INSTALLATION

NTS

DETAIL 2 OF 3

4091-159



SENSOR PLUG (M12) PINOUT ASSIGNMENT

SENSOR WIRING TERMINATION SCHEDULE

M12 PINOUT	CAT-6 CONDUCTOR COLOR	TRANSMITTER ASSIGNMENT	MEMOSENS CONDUCTOR COLOR	DESCRIPTION
1	BLUE	85 (+)	PINK	FIXED CABLE SENSOR (VOLTAGE)
2	BLUE/WHITE	86 (-)	GRAY	FIXED CABLE SENSOR (GROUND)
3	BROWN	87 (+)	BROWN	MEMOSENS SENSOR (VOLTAGE)
4	BROWN/WHITE	88 (-)	WHITE	MEMOSENS SENSOR (GROUND)
5	GREEN	97 (A)	GREEN	RS 485 (A)
6	GREEN/WHITE	98 (B)	YELLOW	RS 485 (B)
7	ORANGE	-	-	NOT USED AT TRANSMITTER
8	ORANGE/WHITE	-	-	NOT USED AT TRANSMITTER
-	SHIELD	GND	-	CONNECT TO TRANSMITTER GROUND BAR

DISSOLVED OXYGEN - IMMERSION INSTALLATION

NTS

DETAIL 3 OF 3

4091-159

REGISTERED PROFESSIONAL ENGINEER — Digitally Signed — DONALD PAUL WATSON — OREGON — 65833PE — November 14, 2025

EXPIRES: 06/30/2028

©JACOBS 2025. ALL RIGHTS RESERVED.

NO.	DATE	DSGN	REVISION	CHK	BY	APVD
		S SUNDAHL	J BOSS	S BAKKEN	T DYE	

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.

REUSE OF DOCUMENTS:

100% DESIGN SUBMITTAL

Water Environment Services

Jacobs

AERATION BASIN IMPROVEMENT PROJECT
TRI-CITY WATER RESOURCE RECOVERY FACILITY
CLACKAMAS WATER ENVIRONMENT SERVICES
OREGON CITY, OREGON

STANDARD DETAILS

INSTRUMENTATION AND CONTROL

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	SEPTEMBER 2026
PROJ	D3900000
DWG	900-N-5002
SHEET	76

FILENAME: 900-N-5002_D3900000.dgn PLOT DATE: 3-SEP-2026 PLOT TIME: 13:51